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OUTPUT 5.1.4
SURVEY ON PERCEPTION OF TROLLEYBUSES,
FINAL REPORT
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Note from the Authors

The authors of this study do not take responsibility for decisions resulting from generalisation of the presented estimations to the whole population of the trolleybus (henceforth referred to as: trolley) passengers in the surveyed cities.

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Introduction

The study presents the results of public perception of trolleybus transportation by citizens of Gdynia. The study takes into account the differences in socio-professional structure of residents. In the analysis of results of the research, the attention has been focused on identifying determinants affecting the assessment of transportation by respondents. When considering the various parameters of the image of trolleybuses, they were compared with results obtained for buses. This allowed to identify the similarities and differences between the image of buses and trolleybuses in the evaluation of the residents of Gdynia. All parameters were verified up to date with the transport offer during the ongoing research.

This report is a final version of TROLLEY Project output 5.1.4. The purpose of this study is to obtain information on the current and future expected role (position) of trolleybus transportation among various groups of city residents in Gdynia. The results will be used to create low-budget promotional instruments in order to increase the awareness of the advantages of the trolley bus (under action 5.1.5).
Methodology

The results presented in this report are based on an analysis of data gathered during research on transportation preferences and behavior of the inhabitants of Gdynia in 2010 carried out by the Public Transport Authority in Gdynia.

The data has been developed in a way that examine the impact on the relative assessment of the quality of bus and trolleybus transport from the perspective of cost, speed, convenience, cleanliness, punctuality and safety of inhabitants such features as:

- sex;
- age professional status;
- motorization status;
- way of urban travel;
- expected standard of travel;
- overall assessment of public transport;
- approach to maintaining and development of trolleybus transport;
- the way of travel on the day preceding the survey;
- evaluation of individual features in selected trolleybus and non-trolleybus districts.

The use of marketing research data from 2010 is due to the fact that the sample was randomly selected and took 1% of the population aged 16-75 in Gdynia (1975 people) taking into account the proportionality of sampling in relation to:

- gender;
- age interval;
- number of inhabitants in particular districts of Gdynia.

The research was conducted using in-house individual personal interview method.

Such marketing research are conducted every 2 years in Gdynia since 1994. The results from 2010 are the latest, which are available in Public Transport Authority of Gdynia as of October 2012.

For additional information about the perception of trolleybus transport and assessing the impact of individual features in shaping its image, the additional marketing research among passengers of urban transport was conducted in Gdynia in spring 2012.
The collected data and their analysis will be presented in a supplement to this report, which will be released in early 2013.
The sample and general features

Among 1975 of inhabitants 52.6% were women. Structure of sex and age has been presented on Fig. 1.

![Sex structure of inhabitants by age range](image)

**Fig. 1. Sex structure of inhabitants by age range**
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

The greatest diversity in terms of gender show residents whose age was 71-75 years, in which the participation of women was close to 59%, and in 51-60 and 61-70 years, which also have a higher percentage of women than for the entire sample.

On account of the areas where inhabitants live, they can be divided into two groups, namely, the inhabitants of the districts supported by trolleybus transportation and the inhabitants of the districts which currently do not have trolleybus transportation, hereinafter referred to as “trolley district” and "non-trolley district".
Transportation preferences and behavior of the inhabitants of Gdynia in 2010

For many years, the number of passengers using public transport services in Gdynia has been decreasing. This trend is observed practically in all cities in the countries of Central and Eastern Europe. The fundamental cause of this state of affairs is the dynamic development of the individual motorization. The number of passenger cars per 1000 inhabitants in Gdynia was 452 vehicles in 2010 (the average for Poland was 451 passenger cars/1000 inhabitants), although it should be noted that part of the vans/trucks (20 700 vehicles in 2010) were actually passenger cars registered as vans/trucks by self-employed.

The structure of inhabitants, according to how they travel through the city, has been presented on Fig. 2. It should be pointed out that, in the light of the results of marketing research, even 68.3% of residents had at least one passenger car in their household.

![Figure 2](image)

**Fig. 2. The structure of the inhabitants according to how they realize urban travel in Gdynia in 2010**

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
More than every fifth inhabitant always used solely the passenger car. More than 1/3 of all inhabitants use always or mostly a passenger car in their urban travel.

Most of the cars have been used by working (50%) and non-working (36%), while most users of public transport were students/pupils (83%), retirees (73%) and pensioners (67%), as shown in the Figure. 3.

**Fig. 3. The way of urban travel in the city of Gdynia and professional status of the inhabitants in 2010**

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

The most mobile groups of residents of Gdynia were working and learners who made over 2 journeys daily. Above the average for the entire population (in 2010 amounted to 1,51 of travel) were also working, working and studying and working pensioners (Fig. 4).
Public transportation still has a large share in mechanized travel structure of the inhabitants of Gdynia (excluding movements of pedestrians). In general, strong market position of public transport (especially of electric traction) is a characteristic feature of supply side of urban transport markets in cities of Central – Eastern Europe\(^1\). In 2010, 50% of the total travel number within the city of Gdynia was carried out by public transport. It is worth noting that 15% of all trips were made by residents of Gdynia on trolleybuses. The relatively low participation of PKP SKM - Fast Urban Railway (at the level of 6%) should be explained by its lower spatial availability and the fact that in 2010 a metropolitan ticket of public (municipal) transportation and the SKM, was only to gain in popularity. Also, travels realized by SKM are on average longer than by municipal transport (buses and trolleybuses). The high share of

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\(^1\) M. Wołek: Stosunek mieszkańców do trolejbusów jako czynnik społeczny determinujący rozwój komunikacji trolejbusowej – analiza wybranych miast Europy Środkowo-Wschodniej w ramach projektu TROLLEY [Relation of residents to trolleys as a social factor determining development of trolleybus transport - analysis of chosen cities on Central-Eastern Europe in the framework of TROLLEY project]. [W:] Funkcjonowanie i rozwój transportu. Pod red. W. Rydzkowskiego „Zeszyty Naukowe Uniwersytetu Gdańskiego. Ekonomika Transportu Łądowego” Nr 41, ISSN 0208-4821, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 2011, s. 105-117
passenger cars, reaching 49%, is the characteristic feature of the transport system of Polish cities. Factors such as the gradual increase in the prosperity of the society, accelerated processes of suburbanization ("urban sprawl"), and cultural changes have made a great impact on it.

Fig. 5. Modal split in Gdynia in 2010 (excluding pedestrians)
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Evaluation of trolleybus and bus transport by the whole population of inhabitants

For the presentation of the differences in the perception of the individual elements that make up the comprehensive assessment of the quality of the journey between the trolleybus and bus, a semantic profile was used. The analysis excluded Fast Urban Railway (SKM), which has a fully different role in serving the Tri-City metropolitan area.

The following qualitative elements were analysed:

- price of the ticket ("cheap ticket"-"expensive ticket");
- time of the travel ("fast"-"slow");
- comfort of the travel ("comfortable"-"uncomfortable");
- cleanliness of the vehicle ("clean" -"dirty");
- punctuality ("punctual" – “unpunctual”);
- safety (“safe” – “unsafe”).

The semantic profile for trolleybus and bus in relation to the individual features of the inhabitants was presented from Fig. 6 up to the Fig. 37.

![Semantic profile of bus and trolleybus (all inhabitants)](image)

**Fig. 6. Semantic profile of bus and trolleybus (all inhabitants)**
[blue – bus, red – trolleybus]

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
Fig. 6 shows the semantic profile of trolleybus and bus for all inhabitants. In the opinion of the residents, presented in Fig. 6, the assessment of travel safety, both by bus and trolleybus is high because in both cases it has been appraised at almost 4 on a scale of 1-5.

A similar opinion, do the residents have in relation to the punctuality and cleanliness of buses and trolleybuses. The biggest differences concern the assessment of travel time, for buses average rating is 3,75, while for trolleybuses only 3,5. Explanation for this state of affairs may be the fact, that almost all trolleybus lines in Gdynia (excluding line 31) run through the city center and the trolleybuses are more likely to be driven in congestion, which reduces their average speed. Another reason is that some bus lines are operated as fast lines on which the buses have to stop on fewer stops.

Differences in the convenience of bus and trolleybus journeys are also essential. Travel by bus is considered slightly more convenient than travel by trolleybus, but still it is close to 4. The reason can be that 40% of trolleybus fleet were (when research was conducted) high floor in the situation that almost 100% of the buses were low-floored vehicles. Low cost of travel, however, is rated by respondents at less than 3,5, these assessments are being equated for buses and trolleybuses. It should be noted that the prices of bus and trolleybus tickets in the period considered were identical.
Evaluation of bus and trolleybus transport and the sex of the inhabitants

Fig. 7. Semantic profile of bus and trolleybus (men) [blue – bus, red – trolleybus]

In their assessments, women are a little more stringent than men, particularly in relation to the cleanliness and punctuality, which presents the Fig. 7 and 8.

Fig. 8. Semantic profile of bus and trolleybus (women) [blue – bus, red – trolleybus]
Evaluation of bus and trolleybus transport and the age of the inhabitants

The age has a little impact on the attitude to the quality parameters of bus and trolleybus services, however there are some differences in regards to particular age intervals.

![Semantic profile of bus and trolleybus (age of 16-20 years)](image)

**Fig. 9. Semantic profile of bus and trolleybus (age of 16-20 years)**

[blue – bus, red – trolleybus]

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

The greatest differences in relation to the general average evaluations are perceptible in the youngest group of 16-20 year-olds (Fig. 9). In their evaluations, they are stricter than others. This is especially clearly noticeable in the punctuality as well as comfort and speed. It is surprising that the level of the cost of the journey is more acceptable for them than for other age groups, and in most cases they are not earning people. One explanation may be that people in this age range are entitled to reduced fares.

In addition, only 16-20 year olds feel that travel by trolleybus is cheaper than by bus. This may be associated with the fact that more often than other people, 16-20 year olds travel by fast bus lines, which is more expensive. All trolleybus lines in Gdynia, in the period considered, were the usual lines with unified tariff charge.
Convenience is better evaluated than the speed and cost of travel by all inhabitants, regardless of age. However, they all recognize that the trolleybus journey is slightly less comfortable than by ordinary bus. The biggest differences in the comfort of travelling by bus and trolleybus are noticed by people aged 21-30.

![Semantic profile of bus and trolleybus (age of 21-30 years)](image)

*Fig. 10. Semantic profile of bus and trolleybus (age of 21-30 years)*

*[blue – bus, red – trolleybus]*

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

The comfort of travel, both by bus and trolleybus, is assessed lowest by the youngest people (16-20 year olds). While better, so above 4, travel by bus and trolleybus is assessed by people above the age of 60. However, they usually travel sitting, while younger people-mostly standing. This is probably connected with the fact that young people are more likely to travel in peak hours and congested traffic, while older people choose more often traveling in off-peak periods, when it is easier for a seat.

While evaluating the comfort of travel it should be aware that all trolleybuses in Gdynia are short, 12 m long vehicles, whereas 40% of the buses are articulated vehicles with a length of 18 meters and of much more capacity.
Older people, more than 60 year olds also assess better the cleanliness of buses and trolleybuses than younger people do. The inhabitants are not aware of the difference in the buses and trolleybuses in cleanliness, and rate them on the same level.

Punctuality in the evaluation of the youngest, 16-20 year olds is at the lowest level. Assessment of punctuality increases with the growth of respondents’ age. Probably the pace of everyday life of the younger and the older has an impact on the evaluation.

![Graph showing semantic profile of bus and trolleybus (age of 31-40 years)](source)

**Fig. 11. Semantic profile of bus and trolleybus (age of 31-40 years)**
[blue – bus, red – trolleybus]
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

It is worth noting that the assessment of the punctuality of buses and trolleybuses are almost the same. Only among those aged 41-50 years differences in evaluating the punctuality of buses and trolleybuses are clear (Fig. 12).
Trolleybuses are in principle considered safe vehicles. However, also the influence of age on the assessment of this parameter is perceivable. Older people evaluate the level of security of bus and trolleybus travel higher than younger people. The worst rate is given by persons aged 16-20, travel safety of bus and trolleybus is identically rated by 51-60 year-olds (Fig. 13).
People aged 21-40 evaluate the cost of travel to a little above 3 on a scale of 1-5, and for those over 40 years old the assessment level of the cost of travel by bus and trolleybus changes with age.

The greatest differences in the assessment of travel speed undertaken by bus and trolleybus were seen among the youngest people (16-20 years), the smallest ones-among the people aged 61-70 years and 71-75 years (Fig. 14 and Fig. 15). However, all age groups have assessed travel speed of trolleybus a bit lower in comparison with a bus. The higher the age of inhabitants, the smaller the difference in assessment of travel time is. The differences in the speed of buses and trolleybuses are not noticed by 61-70 olds (Fig. 14).

![Fig. 14. Semantic profile of bus and trolleybus (age of 61-70 years)](blue – bus, red – trolleybus)
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
In segments of the older people over 50 years old there are women, who are more likely than men to use the trolleybuses. For those segments particularly cumbersome are:

- high floor of old trolleybus vehicles;
- struggling at start-up of old trolleybus vehicles (the difficulty of maintaining the balance after the entry to the vehicle and before the seating).
Evaluation of bus and trolleybus transport and the socio-economical status of inhabitants

The differences in the evaluation of quality parameters of bus and trolleybus services are correlated with socio-professional status of the inhabitants.

The most similar to the general semantic profile for assessing bus and trolleybus transport is the profile of working people (Fig. 16) and people working and at the same time retired or pensioners. This assessment is lower in relation to individual parameters than overall assessment - in case of the working. The working but at the same time retired or pensioners group assesses particular parameters slightly better (Fig. 21).

Fig. 16. Semantic profile of bus and trolleybus (working passengers) [blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

To the greatest extent does the profile created by the learners or students deviate from the general semantic profile (Fig. 17). This concerns mainly evaluation of speed. They see a larger difference in the speed of buses and trolleybuses, due to the high pace of modern life and the kind of modernity expected from public transport used by them. Also, below than the others, they assess comfort of travel, both by bus
and trolleybus. Trolleybus travel comfort is according to them worse than bus services. When speaking of the evaluation of cleanliness, punctuality and safety of travel, bus and trolleybus transport are almost the same. Among the selected analyzed quality parameters, learners or students rate the speed, cost, comfort and punctuality the worst.

![Fig. 17. Semantic profile of bus and trolleybus (learners and students) [blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010]

The level of the cost of the trip is the worst accepted by the non-working (Fig. 22) and the working (Fig. 16). It should, however, be taken into account that they are obliged to pay normal price for bus trolleybus tickets and, while learners, students and pensioners pay only 50% of the normal price. It should be also noted that the people above 70 years old travel by public transport in Gdynia for free.

Should not come as a surprise the fact that unemployed people consider bus and trolleybus transport expensive, especially, when they use one-way tickets, which are relatively more expensive than season tickets, used primarily by people working and learning or studying.

In relation to the assessment of other parameters, people non-working (Fig. 22) are more liberal. They evaluate comfort, cleanliness, punctuality and safety
definitely above, while do not see the differences in this respect in the bus and trolleybus transportation. The quality of public transport should preferably be assessed by health-pensioners (fig. 19) and retired persons (Fig. 20).

![Fig. 18. Semantic profile of bus and trolleybus (working and learning/studying) [blue – bus, red – trolleybus]]

Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Interesting is the comparison of semantic profile of buses and trolleybuses in the assessment of people working, who are retired or pensioners (Fig. 21) and people working and learners (Fig. 18). These groups are entitled to a cheaper travel when they work and earn. It is mostly their age which differs them. People working and learning or studying evaluate such items as the cost of travel and the speed, convenience and comfort more strictly than retired persons. The greatest differences in these groups can be seen in the assessment of punctuality. It is more important for people working and studying or studying at the same time.
Fig. 19. Semantic profile of bus and trolleybus (pensioners)  
[blue – bus, red – trolleybus]  
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Fig. 20. Semantic profile of bus and trolleybus (retired persons)  
[blue – bus, red – trolleybus]  
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Pensioners, and retirees in particular, have more time, hence are able to more fully accept the lower speed of travel.

The analysis of the profile reviews of learners/students and learners or studying while working confirms the impact of employment on the semantic profile of public transport. As far as safety and punctuality is similar, this is the evaluation of cleanliness, comfort and speed which shows greater variation. The people working evaluate the bus and trolleybus transport higher. The differences in the evaluation of bus and trolleybus transport by these groups of people are the biggest in respect of speed and cost. It should be noted that the people working and learning or studying as the only group indicated that travel by bus is more expensive than travel by trolleybus.

![Fig. 21. Semantic profile of bus and trolleybus (working pensioners / retirees)](Image)

[blue – bus, red – trolleybus]

Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Fig. 22. Semantic profile of bus and trolleybus (non-working)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Evaluation of bus and trolleybus transport and motorization status of the inhabitants

Having a personal car has a small effect on the evaluation of bus and trolleybus services.

**Fig. 23. Semantic profile of bus and trolleybus (households with car)**
[blue – bus, red – trolleybus]
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

**Fig. 24. Semantic profile of bus and trolleybus (households without car)**
[blue – bus, red – trolleybus]
Semantic profiles of bus and trolleybus created for the citizens from households without car (Fig. 24) and for the citizens from households with car are very close (Fig. 23). The people with a car rate the comfort as well as cleanliness, punctuality and travel safety a slightly worse. This is due to the fact that these people are more demanding, because they have the ability to choose between the means of transport and the greater awareness of the benefits of a passenger car. However, these differences are really low. It could only be pointed out that cleanliness, punctuality and safety of travel both by bus and trolleybus are rated identically. In these parameters, the citizens do not perceive differences in travelling by bus and trolleybus.
Evaluation of bus and trolleybus transport and the way of urban travel by the inhabitants

The fact, how often people travel by public transport affects the semantic profile of transportation less than the frequency of travelling by car. Profiles created by travelling always by public transport (Fig. 25) or travelling mostly by public transport (Fig. 26) and equally by car and public transport (Fig. 27) are convergent.

![Semantic profile of bus and trolleybus (travelling always by public transport)](image)

**Fig. 25. Semantic profile of bus and trolleybus (travelling always by public transport)**

*blue – bus, red – trolleybus*

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

People from these groups tend to see the differences in speed of buses and trolleybuses as well as comfort and do not see such differences in the evaluation of cleanliness, punctuality and safety. However, the evaluation of the punctuality by people travelling mostly by public transport (Fig. 26) is on a slightly lower level than the other two groups.

Whereas citizens travelling in equal measure by public transport and by car (Fig. 27) rate safety of collective travel slightly worse than the others.
Fig. 26. Semantic profile of bus and trolleybus (travelling mostly by public transport)
[blue – bus, red – trolleybus]

Fig. 27. Semantic profile of bus and trolleybus (travelling equally by public transport and car)
[blue – bus, red – trolleybus]

Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Fig. 28. Semantic profile of bus and trolleybus (travelling mostly by car) [blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Travelling mostly by car (Fig. 27) have created a definitely different semantic profile. Worse do they evaluate the cost of travel by bus and trolleybus, while better - speed, comfort, and in particular the cleanliness. They also see larger discrepancies between bus and trolleybus travel in speed, comfort, cleanliness and punctuality.

Definitely different from the other profiles created, is the one created by travelling always by car (Fig. 29). Evaluation of bus and trolleybus transport is different when speed, comfort and punctuality are taken into account, and identical in relation to cleanliness and cost. It is interesting that this was the only group that estimated safety of travelling by trolleybus slightly better than buses.

Out of all the parameters, there is punctuality which is of the greatest importance for people always travelling by car (Fig. 29) and comfort is the most important for people mostly travelling by car (Fig. 28).

However, it should be pointed out that those always travelling by car do not have their own experience of travelling by the public transport, and their assessment is based only on their preconceptions and possibly the opinions of other people.
Fig. 29. Semantic profile of bus and trolleybus (travelling always by car)  
[blue – bus, red – trolleybus]  
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
Evaluation of bus and trolleybus transport and the expected standard of travel by the inhabitants

Expectations for the conditions of travel have a negligible impact on the semantic profile of bus and trolleybus services.

Fig. 30. Semantic profile of bus and trolleybus (passengers always expecting seating place)  
[blue – bus, red – trolleybus]  
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Fig. 31. Semantic profile of bus and trolleybus (passengers mostly expecting seating place)  
[blue – bus, red – trolleybus]
Passengers always expecting seating place (Fig. 30), mostly expecting the seating place (Fig. 31) and those who accept a standing place in not burdensome conditions (Fig. 32) assess similarly security, punctuality, cleanliness, comfort, speed and cost of travel by bus and trolleybus. At the same time, the profiles defined by these groups of people in relation to the buses and trolleybuses comply in assessment of cleanliness, punctuality, safety and cost. They show, however, the differences in the evaluation of convenience and speed.

![Semantic profile of bus and trolleybus](chart.png)

**Fig. 32. Semantic profile of bus and trolleybus (passengers expecting standing place in convenient conditions)**

[blue – bus, red – trolleybus]

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

Only passengers permitting travel in crowded vehicle (Fig. 33) appraise the safety of trolleybuses more than buses. In the assessment of the remaining parameters they show conformity compatibility with other groups of travellers. This group of people notices a greater disparity in the speed of travel by bus and trolleybus.

General profile of bus and trolleybus travel is specified by the different groups identified on the basis of their relation to the expected travel conditions is very similar to the general profile, designated by all citizens.
Fig. 33. Semantic profile of bus and trolleybus (passengers allowing travel in crowded vehicle)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Evaluation of bus and trolleybus transport according to overall evaluation of the quality of public transport in Gdynia by the inhabitants

Assessment which passengers set to bus and trolleybus communication has a significant impact on semantic profile of buses and trolleybuses specified by the passengers.

Fig. 34. Semantic profile of bus and trolleybus (passengers evaluating public transport in Gdynia as “very good”)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Profiles of evaluating the bus and trolleybus transportation very well (Fig. 34) and well (Fig. 35) are close to each other and to the overall profile. Passengers evaluating public transport in Gdynia as “very good” appreciate in the same way the bus and trolleybus communication in terms of safety, punctuality, cleanliness and cost. Passengers evaluating public transport in Gdynia as “good” estimate quality, punctuality and cleanliness of trolleybuses slightly worse than buses.
Fig. 35. Semantic profile of bus and trolleybus (passengers evaluating public transport in Gdynia as “good”)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Fig. 36. Semantic profile of bus and trolleybus (passengers evaluating public transport in Gdynia as “satisfactory”)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Definitely different are the profiles designated by passengers evaluating public transport in Gdynia as “satisfactory” (Fig. 36) and “unsatisfactory” (Fig. 37). In evaluation of all parameters of the analysis have they given lower assessments than the others, while the better notes were given for cleanliness of buses and trolleybuses. In the opinion of the passengers evaluating public transport in Gdynia as “satisfactory” the cleanliness of buses is, however, worse than the cleanliness of trolleybuses. In opinion of passengers evaluating public transport in Gdynia as “unsatisfactory” is quite opposite.

The differences in the evaluation of transport are probably connected with punctuality, as it is evaluation of that particular parameter, especially in context of buses is the worst. Definitely, these people evaluate higher the punctuality of trolleybuses. Man can therefore involve low assessment of transportation with punctuality and the buses above all.

![Semantic profile of bus and trolleybus (passengers evaluating public transport in Gdynia as “unsatisfactory”)](image)

[blue – bus, red – trolleybus]

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
Evaluation of bus and trolleybus transport in relation to inhabitants’ approach to maintaining and development of trolleybus transport

One of the vital elements of the survey was to learn the opinions of the passengers of the municipal transportation on the future actions of local government in regards to the trolley network. Four main thesis were formulated and proposed (including two alternative ones, meaning substituting the trolleybus network with buses and vice versa) as well as an option where the respondent could point out that they did not have an own opinion.

More than half of the inhabitants prefer to maintain the existing proportion between trolleybus and bus transport, and every tenth resident would like to create new trolleybus lines. It is worth to point out that the number of respondents expecting the replacement of bus lines with trolleybus lines is slightly higher than the number of the opposite opinions, i.e. replacing the trolleybus lines with bus lines (Fig. 38). Every fifth inhabitant did not express strong opinions, which may indicate the achievement of a certain optimum by the modal split in Gdynia between bus and trolleybus transport. The part of the residents presenting this opinion is mainly travelling mostly by car.

![Pie chart showing opinions on future actions of the local government in regards to the trolleybus network in the light of the opinions given by the inhabitants in Gdynia in 2010](image)

**Fig. 38.** Future actions of the local government in regards to the trolleybus network in the light of the opinions given by the inhabitants in Gdynia in 2010

*Source: own study based on results of marketing research conducted by ZKM Gdynia in 2010.*
People who prefer to replace bus lines with trolleybus lines (Fig. 39) see some advantages of a bus, but not so big, and their expectations of the replacement of bus lines with trolleybus lines are determined likely by environmental factors. Furthermore, they have probably, as proponents of trolleybuses, the conscience of positive changes in the functioning of trolleybus transport along with investment in a modern fleet, modernization and expansion of infrastructure.

![Graph: Semantic profile of bus and trolleybus](image)

**Fig. 39. Semantic profile of bus and trolleybus (people preferring replacing bus lines with trolleybus lines)**  
[blue – bus, red – trolleybus]  
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

Inhabitants preferring replacing trolleybus lines with bus lines see the biggest differences in speed and comfort between these means of transport (Fig. 40). What is more, they evaluate worse trolleybuses also in terms of cleanliness, punctuality and safety. So this extremely unfavorable assessment of trolleybuses by this segment consequently leads to the formulation of expectation of replacement trolleybus lines with bus lines.
Fig. 40. Semantic profile of bus and trolleybus (people preferring replacing trolleybus lines with bus lines) 
[blue – bus, red – trolleybus] 
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Inhabitants expecting to maintain the existing proportion between the trolleybus and bus lines at the same level, evaluate safety, punctuality and cleanliness of vehicles. Buses have gained a higher rating for the speed and comfort of travel (Fig. 41).

People preferring the creation of new trolleybus lines find punctuality of trolleybuses slightly higher, while similar to respondents belonging to other segments, trolleybus gained worse assessment in the context of speed and comfort of travel (Fig. 42).
Fig. 41. Semantic profile of bus and trolleybus (people preferring to maintain existing proportions between buses and trolleybuses)
[blue – bus, red – trolleybus]
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

Fig. 42. Semantic profile of bus and trolleybus (people preferring creating new trolleybus lines)
[blue – bus, red – trolleybus]
*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*
Evaluation of bus and trolleybus transport according to the way of travel of the inhabitants on the day before the survey

Based on the analysis of the semantic profiles extracted according to the criterion of how to travel on the day before the research, a clear impact of means of transport on the assessment of bus and trolleybus cannot be seen.

![Semantic profile of bus and trolleybus](image.png)

**Fig. 43. Semantic profile of bus and trolleybus (citizens who travelled by trolleybus on the day before research)**

[blue – bus, red – trolleybus]

*Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010*

The passengers, who travelled on the previous day by trolleybus evaluated worse (compared to the bus) its speed and comfort. Cleanliness, punctuality and safety gained practically the same assessment both in the case of buses and trolleybuses (Fig. 43), as well as among the inhabitants who did not travel by trolleybus the previous day (Fig. 44).
Fig. 44. Semantic profile of bus and trolleybus (citizens who haven’t travelled by trolleybus on the day before research)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

Fig. 45. Semantic profile of bus and trolleybus (citizens who travelled by other mode of public transport than trolleybus on the day before research)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Fig. 46. Semantic profile of bus and trolleybus (citizens who travelled exclusively by car on the day before research)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Evaluation of bus and trolleybus transport by the inhabitants in selected districts in Gdynia

Majority of Gdynia’s districts are served by trolleybus system. Table 1 presents division on “trolley” and “non-trolley” districts in Gdynia.

Table 1. Trolleybus and non-trolleybus districts of Gdynia

<table>
<thead>
<tr>
<th>Trolleybus districts</th>
<th>Non trolleybus districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chyłonia, Cisowa, Dąbrowa, Działki Leśne, Grabówek, Karwiny, Leszczynki, Mały Kack, Orłowo, Pustki Cisowskie, Redłowo, Śródmieście, Wielki Kack, Wzgórze Św. Maksymiliana</td>
<td>Babie Doły, Chwarzno Wiczlino, Obłuże, Oksywie, Pogórze, Witomino,</td>
</tr>
</tbody>
</table>

Source: own study

The trolleybus network in Gdynia is presented on Fig. 47. Trolleybus lines are concentrated in main transport corridors and are also servicing the city of Sopot (lines nr 21 and 31). The present network was developed in few stages of which are2:

- Stage 1 – introduction and development of trolleybus transport in Gdynia (1943 – 1957). Trolleybus lines connected city center with few districts and the city of Sopot (1947);
- Stage 2 – peak of trolleybus development (1958 – 1971). Intensity of operation grew significantly, new lines and modern vehicles were introduced;
- Stage 3 – trolleybus decline (1972 – 1980). Cessation of trolleybus lines in Gdynia began. This stage was slowed down by global oil crisis which decreased economic attractiveness of diesel buses replacing trolleybuses;
- Stage 4 – trolleybus revival (1981 – 1997). Few lines were restored. Economic and political transformation brought independence to local self-government responsible for local public transport since 1990;
- Stage 5 – the beginning of the activity of separate trolleybus operator (1998 – 2004). According to restructurisation of public transport in Gdynia, a separate trolleybus operator – PKT Gdynia sp. z o.o. was set up in 1998;
- Stage 6 – redevelopment of trolleybus transport in Gdynia (2005 – up to now). Quality of trolleybus transport increased with new (Solaris Trollino) and

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2 O. Wyszomirski: Trolleybus thrives again in Gdynia under EU-funded projects. “Public Transport International” 2010, nr 4, ISSN - 1016-796X, p. 40-47
converted vehicles (Mercedes O405, Mercedes Citaro, Solaris Urbino),
construction of modern depot, extending and upgrading catenary network with
traction substations.

![Trolleybus network in Gdynia in 2012](image)

*Fig. 47. Trolleybus network in Gdynia in 2012*

*Source: M. Beister of PKT Gdynia sp. z o.o., Gdynia 2012*
Demographic data of particular districts are presented below. Total number of citizens in 2010 was 242,541 people. There were 77,660 citizens living in non-trolley districts, which stands for 32% of total population in Gdynia. Like most of bigger cities in Poland, Gdynia is affected by long-term trend of population decline.

**Table 2. Number of inhabitants of districts in Gdynia in 2010**

<table>
<thead>
<tr>
<th>District of Gdynia</th>
<th>Number of inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babie Doły</td>
<td>2,303</td>
</tr>
<tr>
<td>Oksywie</td>
<td>15,232</td>
</tr>
<tr>
<td>Obłuże</td>
<td>19,431</td>
</tr>
<tr>
<td>Pogórze</td>
<td>14,071</td>
</tr>
<tr>
<td>Cisowa</td>
<td>13,073</td>
</tr>
<tr>
<td><strong>Pustki Cisowskie - Demptowo</strong></td>
<td>8,732</td>
</tr>
<tr>
<td>Chylonia</td>
<td>25,599</td>
</tr>
<tr>
<td>Leszczynki</td>
<td>8,910</td>
</tr>
<tr>
<td>Grabówek</td>
<td>9,959</td>
</tr>
<tr>
<td><strong>Działki Leśne</strong></td>
<td>8,687</td>
</tr>
<tr>
<td>Śródmieście</td>
<td>17,991</td>
</tr>
<tr>
<td><strong>Wzgórze Św. Maksymiliana</strong></td>
<td>12,323</td>
</tr>
<tr>
<td>Redłowo</td>
<td>8,052</td>
</tr>
<tr>
<td>Orłowo</td>
<td>7,167</td>
</tr>
<tr>
<td>Mały Kack</td>
<td>7,895</td>
</tr>
<tr>
<td>Wielki Kack</td>
<td>10,719</td>
</tr>
<tr>
<td>Karwiny</td>
<td>10,983</td>
</tr>
<tr>
<td>Dąbrowa</td>
<td>14,701</td>
</tr>
<tr>
<td>Witomino</td>
<td>19,389</td>
</tr>
<tr>
<td><strong>Chwarzno - Wiczlino</strong></td>
<td>7,234</td>
</tr>
</tbody>
</table>

Source: [www.gdynia.pl](http://www.gdynia.pl), updated on 20.11.2012

Such a proportion is reflected in sample, which presents Fig. 48. 1/3\(^{rd}\) of respondents were citizens of districts without trolleybus services.
Among the fourteen districts serviced by trolleybus transport, Tab. 3 presents three, which reflect the specificity and spatial and social diversity. Cisowa and Grabówek are located on the main axis of transport in Gdynia. In turn, Dąbrowa is located behind the Tricity ring road, peripheral in relation to the downtown of the city. Cisowa and Grabówek are the areas which in recent years experienced significant transformations in their demographic structure, yielding aging, whereas the district Dąbrowa is relatively young with a high proportion of younger people.

The highest evaluation has trolleybus obtained among residents of Cisowa (apart from the cost and speed rated above 4). Residents of the area described the punctuality of trolleybuses as better in comparison to buses, as well as slightly better-the comfort and safety of travel (Tab. 3). Definitely, a higher rate among the residents of this district, has bus obtained only in the case of speed (4,02 bus, 3,85 trolleybus). The residents of Dąbrowa strongly higher rated the speed and comfort of buses. Cleanliness and safety of travel were rated lower. It can be presumed that such a significant difference in rating of speed is associated with the routes of trolleybus lines in the area (especially line 27), which is characterized by high spatial availability and as a result-longer travel time in a mid-district relation.

**Fig. 48. Share of respondents living in trolleybus and non-trolleybus districts in Gdynia in 2010.**
Source: own study based on results of marketing research conducted by ZKM Gdynia in 2010.
Small differences in the assessment of the trolleybus and bus are the characteristics of the inhabitants who are residents of Grabówek. It is a district characterized by a very good service of buses (including midi-buses) and trolleybuses. Noticeable difference in evaluation in favor of buses is about comfort and it may be a result of, as noted earlier, higher capacity of buses, some of which are articulated vehicles.

Table 3. Evaluation of buses and trolleybuses in chosen trolleybus districts of Gdynia in 2010

<table>
<thead>
<tr>
<th>feature</th>
<th>Cisowa</th>
<th>Dąbrowa</th>
<th>Grabówek</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bus</td>
<td>troll.</td>
<td>%</td>
</tr>
<tr>
<td>cheap ticket</td>
<td>3,36</td>
<td>3,36</td>
<td>-0,16</td>
</tr>
<tr>
<td>fast</td>
<td>4,02</td>
<td>3,85</td>
<td>4,30</td>
</tr>
<tr>
<td>comfortable</td>
<td>4,10</td>
<td>4,13</td>
<td>-0,57</td>
</tr>
<tr>
<td>clean</td>
<td>4,06</td>
<td>4,06</td>
<td>0,05</td>
</tr>
<tr>
<td>punctual</td>
<td>4,04</td>
<td>4,14</td>
<td>-2,41</td>
</tr>
<tr>
<td>safe</td>
<td>4,10</td>
<td>4,13</td>
<td>-0,80</td>
</tr>
</tbody>
</table>

Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

An interesting case of not-trolley district is Chwarzno-Wiczlino, whose inhabitants assessed trolleybuses much better than buses in the context of the characteristics such as cleanliness, comfort and punctuality. Also, safety and speed gained slightly higher scores for trolleybus (Table 4). Residents of the other two examples of areas devoid of trolleybus transport service, i.e. Obłuże and Pogórze gave higher rate for buses, especially in regard to speed, punctuality (in particular the residents of Pogórze) and comfort of journey.
### Table 4. Evaluation of buses and trolleybuses in chosen non-trolleybus districts of Gdynia in 2010

<table>
<thead>
<tr>
<th>feature</th>
<th>Chwarzno-Wiczlino</th>
<th>Obłuże</th>
<th>Pogórze</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bus</td>
<td>troll.</td>
<td>%</td>
</tr>
<tr>
<td>cheap ticket</td>
<td>3,00</td>
<td>3,00</td>
<td>0,00</td>
</tr>
<tr>
<td>fast</td>
<td>3,55</td>
<td>3,55</td>
<td>-0,05</td>
</tr>
<tr>
<td>comfortable</td>
<td>3,71</td>
<td>3,95</td>
<td>-6,08</td>
</tr>
<tr>
<td>clean</td>
<td>3,61</td>
<td>4,00</td>
<td>-9,68</td>
</tr>
<tr>
<td>punctual</td>
<td>3,84</td>
<td>4,00</td>
<td>-4,03</td>
</tr>
<tr>
<td>safe</td>
<td>3,90</td>
<td>3,95</td>
<td>-1,18</td>
</tr>
</tbody>
</table>

Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010

In districts with no trolleybus transport, differences in the assessment of the trolleybus in terms of convenience and speed are higher, which could mean that having a trolleybus in the district promotes a more favourable perception of this mode of transport.

![Fig. 49. Semantic profiles of bus and trolleybus (citizens living in “trolleybus districts”)](image)
[blue – bus, red – trolleybus]
Fig. 50. Semantic profiles of bus and trolleybus (citizens living in “non-trolleybus districts”)
[blue – bus, red – trolleybus]
Source: own study in the framework of TROLLEY project based on results of marketing research conducted by ZKM Gdynia in 2010
Summary

Based on analysis made on the basis of data collected during marketing research conducted in 2010 in Gdynia [ZKM Gdynia and University of Gdańsk, 2010], it can be concluded that there is little impact on perception of quality of bus and trolleybus in regards to:

- sex;
- age;
- motorization status of citizens;
- expected standard of travel;
- the way of travel on the day before the survey.

The quality of trolleybus transport was assessed similarly to bus transport in terms of cost, cleanliness, punctuality and safety, and worse in terms of speed and convenience, both for the entire population of residents and the residents belonging to separate segments.

Explanation for this state of affairs can be the following facts:

- in the year before the marketing research (2009) older vehicles (with high floor, more emergency, with inferior motor properties) still had a 40% share of total fleet, while almost all buses were already modern and low-floor;
- there are on average more passengers on trolleybuses and that’s why they are more crowded than buses due to the nature of routes (servicing the districts with the highest number of inhabitants, additionally, all trolleybus lines, except 31, lead by the Centre of Gdynia);
- lack of articulated trolleybuses, while articulated buses represent 40% of the bus fleet;
- part of bus lines were operated as fast lines with higher average speed\(^3\).

The differences in the evaluation of quality parameters of bus and trolleybus services are correlated with socio-professional status of the respondents. To the greatest extent does the profile created by the learners or students deviate from the general semantic profile.

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The fact, how often people travel by public transport affects the semantic profile of transportation less than the frequency of travelling by car. Profiles created by travelling always by public transport or travelling mostly by public transport and equally by car and public transport are convergent while inhabitants travelling mostly by car and always by car have created a definitely different semantic profile.

Assessment which passengers set to bus and trolleybus transport has a significant impact on semantic profile of buses and trolleybuses specified by the passengers.

Future actions of the local government in regards to the trolleybus network make inhabitants quite differentiated in case of their assessment of buses and trolleybuses.

Being a resident of trolleybus or non-trolleybus district also influences the perception of analyzed modes of public transport. In districts with no trolleybus transport, differences in the assessment of the trolleybus in terms of convenience and speed are higher, which could mean that having a trolleybus in the district promotes a more favourable perception of this mode of transport.

Summarising research, it can be concluded that general perception of trolleybus is worse than bus in regards to comfort and speed of travel and almost the same in terms of safety, punctuality, cleanliness and cost of travel.
References:

1. Beister M. of PKT Gdynia sp. z o.o., Gdynia 2012


5. Wyszomirski O.: Trolleybus thrives again in Gdynia under EU-funded projects. “Public Transport International” 2010, nr 4, ISSN - 1016-796X.