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## The Impact of Transport Exclusion on the Socioeconomic Development of the Nowosądecki District

### Abstract

*Objective:* The aim of the article is to present the phenomenon of transport exclusion related to limited access to means of public transport and its impact on the socioeconomic development of the Nowosądecki district. The article also presents aspects related to social exclusion caused by limited access to work, education, health care, and recreation resulting from the lack of sufficient means of transport.

*Research Design & Methods:* In order to achieve the assumed goal, the method of analysing the literature on the subject and empirical research in the quantitative approach (survey study) was used.

*Findings:* The analysis of the research results showed that more than half of the respondents have problems with the use of public transport in the Nowosądecki district, which makes them feel excluded in terms of communication. Moreover, the conducted research proves that the main problem affecting the resignation from using public transport is the lack of direct connections between the place of residence and work, school, or recreation used by the respondents. The conducted research also showed a correlation between the respondents' income and the frequency of using public transport; the higher the average monthly net income of the respondents, the less often they use public means of transport.

*Implications/Recommendations:* The results of the survey showed that the inhabitants of the Nowosądecki district feel excluded in terms of communication. The existing transport system requires significant improvements in the functioning of public transport.

*Contribution/Value Added:* The conducted research makes it possible to organise the knowledge on communication exclusion and its impact on the deepening of social exclusion. It also shows the motives of travellers when choosing a means of transport, thus indicating possible paths for further improvements in the transport system.

*Article classification:* research article

*Keywords:* transport, communication exclusion, social exclusion, public means of transport

*JEL classification:* R41, R42, R58

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## Introduction

Both the desire to achieve a stable professional and financial position as well as the search for new places of employment or residence is associated with the necessity to move between different areas. Having a wide range of responsibilities and scarce time resources leads to a widening circle of society that moves by private means of transportation. The increase in the number of cars not only contributes to traffic congestion, but also makes many areas financially unfavourable for the operation of public transport. The situation that has arisen often forces carriers to withdraw from areas that over time become unprofitable. These phenomena affect the occurrence of disorders in the existing transport system, which consequently lead to the post-emergence of transportation exclusion in the region. People who live in these areas and do not have private means of transportation are deprived of the possibility to reach their workplaces, schools, doctors, and other centres of social life, which, as a consequence, may contribute to the phenomenon of the social exclusion of the residents of the regions in question (Ng et al., 2017). Unfavourable transportation conditions deepen social exclusion through barriers in employment, exclusion from various types of services, the feeling of safety, decreased level of education, and inequalities in the sphere of access to health services (Delbosc & Currie, 2011; Clifton & Lucas, 2004).

The research conducted systematises knowledge of the phenomenon of transportation exclusion and provides information on the perception of this issue by the residents of transportation-excluded areas. The results of the research make it possible to identify the dependencies that affect the aggravation of this phenomenon, but also make it possible to set a direction for the elimination of bottlenecks in this area. In the literature, there is still a lack of scientific items based on social research dealing with the topic of communication exclusion in the regions; this article partly tries to fill this research gap.

The purpose of the article is to present the phenomenon of transportation exclusion associated with limited access to public transportation and its impact on the socioeconomic development of the Nowosądecki district. The Nowosądecki district is located in the southern part of the Lesser Poland voivodeship ([powiat.krakow.pl](#), 2015). It is an area inhabited by a growing population. In 2020, the county was inhabited by 214,502 people, while in 2022, it was already 214,933 people (GUS, 2023). In addition to the constant population growth in this area, it was selected for analysis due to the increasing economic development in these areas, the creation of new enterprises, which additionally favours internal migration of the population. Among other things, for these reasons, it is an interesting research area and can be a good basis for further research of this type in the area of transport exclusion at the regional level. To achieve the objectives, the method of analysis of the literature on the subject and empirical research in quantitative terms (questionnaire survey) was used. The following research questions were also formulated to help achieve the goal:

- What are the factors that guide the surveyed residents when choosing the way to get around in the Nowosądecki district?
- What are the most common reasons related to the abandonment of moving by public transport according to the respondents?
- Does the amount of income of the respondents affect decisions related to the choice of means of transport?
- Do the surveyed residents of the Nowosądecki district feel excluded by transportation?

The article consists of four parts. The first part presents a review of the available literature on the phenomenon of traffic exclusion at the level of regions in Poland. The second part presents

the research methodology, while the third one reveals the results of the conducted research. The article ends with research conclusions and recommendations.

## Literature review

The literature contains studies on traffic exclusion in Poland. Some of the studies cover the whole country, with a particular focus on rural areas and small towns (Dubicki, 2019), including the research presented by Kaczorowski (2019b) showing the causes of traffic exclusion. The increased motorisation of society, which has consequently led to a decline in the viability of public mass transportation, was identified there as the main source of the problem. Problems related to the privatisation of state-owned enterprises and the lack of an adequate system to subsidise public transportation were also presented (Kaczorowski, 2019b). In another article, Kaczorowski also points to the 1990 political system reform as the main source of the decline of the State Automobile Transport Company (PKS), and the consequent deepening of the phenomenon of transportation exclusion. The research also points to the lack of adequate regulations to influence the operation of private carriers, which would expand the transportation offer in excluded regions (Kaczorowski, 2019a; Soboń, 2022). Another problem identified in the research is the underinvestment of some regions in transportation and expansion of the road network, mainly concerning peripheral areas, such as the Warmian-Masurian voivodeship, which, as the research has shown, is at the risk of transportation exclusion (Wolny et al., 2019).

The literature also frequently discusses the causes of transportation exclusion in selected regions, such as the Lower Silesian voivodeship, where rail stations have been eliminated, thereby creating sub-regional areas of transportation exclusion (Smolarski & Raczyk, 2017), as well as in some urban centres of, e.g., Central Pomerania, such as the areas of the Wałecki, Drawski, or Bytewski districts, which are deprived of the possibility of reaching district power centres (Parol, 2021). Similar situation is in the Komańcza area, where many bus lines were eliminated after a major transportation carrier had withdrawn from the area (Ciechański, 2020).

When analysing the transport accessibility of individual areas, it is important to look at the problem comprehensively and to take into account, among other things, technical factors (including facilities for the disabled), spatial factors (the distance between the stop and the place of residence), informational factors (the availability of timetables), legal factors (luggage transport options), economic factors (the cost of tickets), and temporal factors (the frequency of departures) (Gadziński & Beim, 2009). When analysing time factors, transport delays associated with increased road congestion during peak hours should also be taken into account (Gadziński & Beim, 2010).

Available studies can be divided into those that discuss the overall transportation network (Parol, 2021) as well as those that point to the performance of a selected mode of transportation, such as railroads (Smolarski & Raczyk, 2017; Majewski, 2019).

Over the past few years, there has been the developing trend of household car ownership throughout the country. According to statistics from the Central Register of Vehicles and Drivers (CEPiK), between 2015 and 2020, the number of registered passenger cars increased by 53,367, or more than 10,000 per year (CEPiK, 2015, 2020). The increasing number of owned personal vehicles is causing a wide range of Polish residents to abandon the use of public transportation in favour of private means of transport. This leads to a decrease in interest in public mass transportation, i.e. public, systematic transportation of people that takes place at a fixed time and along a fixed line or transportation network (Gazette, 2021). Both the motorisation of society and economic

destabilisation dating back to the 1990s have contributed significantly to the regression of public transportation (Jakubowski & Dulak, 2018). The then-dominant bus services carried out by the PKS began to lose popularity to private carriers, which effectively took over passengers on profitable routes, leaving the state-owned companies with unprofitable routes (Kaczorowski, 2019, p. 11). The lack of profitability and the significant motorisation of society led to a reduction in the routes served, thus deepening the unpopularity of public mass transport. Between 1993 and 2016, interest in regular out-of-town bus transport, which is one of the means of public transportation, declined by 75%, while the availability of the offer decreased by 50% (Jakubowski & Dulak, 2018). It can be concluded that the decrease in interest in public transport was the reason for the reduction in the number of courses and areas of its operation. It is worth noting that, despite the growing trend towards the motorisation of society, there is still a wide group of people for whom public mass transportation is the only means of transportation. Adapting the existing infrastructure to private transport as well as limiting the area of operation of public transport contributes to the phenomenon of transportation exclusion. Transport exclusion means depriving the residents of an area of the possibility of using means of locomotion to get from one place to another (Warren, 2007).

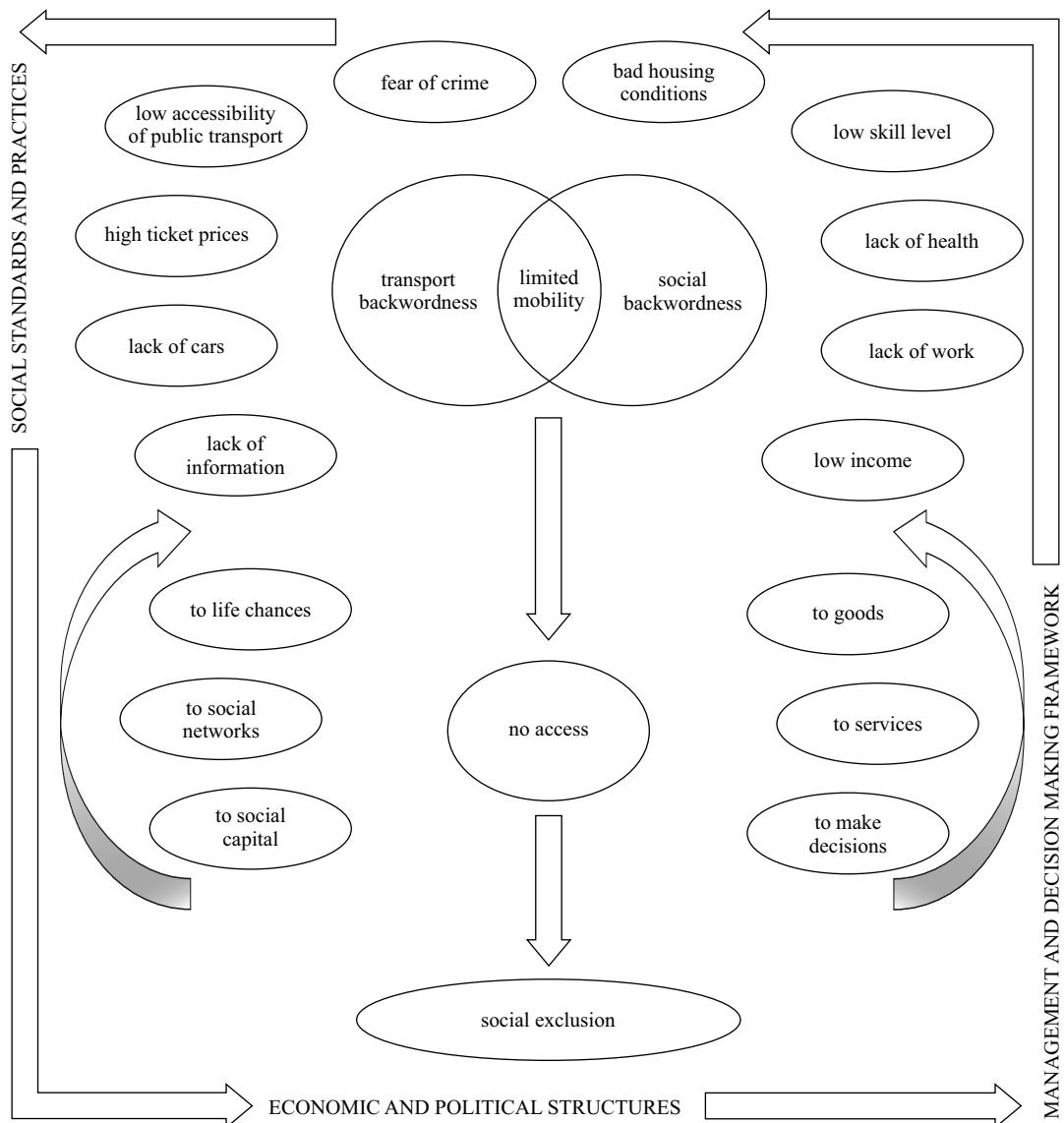
The literature distinguishes several types of transportation exclusion (Currie et al., 2006). For example, Komornicki (2019a) distinguishes its two dimensions: social, concerning a group of people who do not have access to transportation services, and spatial, referring to a specific area. Church, Frost, and Sullivan (2000), on the other hand, proposed a division into seven categories in terms of transport system characteristics related to transportation exclusion. They distinguished spatial exclusion, temporal exclusion, physical exclusion, object exclusion, geographic exclusion, economic exclusion, and fear-based exclusion (Church et al., 2000).

Limitations related to the availability of public transportation significantly affect the opportunities for personal development of people living in excluded areas, often forcing them to give up work, education, or certain forms of leisure activities. This phenomenon causes them to be excluded from participation in social life on many levels (Antrop, 2004; Błażewski, 2019).

The phenomenon of social exclusion manifests itself, among other things, in the inability to participate in common activities and relationships generally available to most citizens at many levels (economic, cultural, social, and political). This significantly affects not only the quality of life of individual citizens, but also the cohesion and equity of society as a whole (Lucas, 2012, p. 106; Koliński, 2021). When analysing the phenomenon of social exclusion, it should not be seen at one level with poverty. Social exclusion is a much broader concept and poverty is only one of its dimensions (Kenyon et al., 2002; Tselios & Rodríguez-Pose, 2022).

Social exclusion caused by the inaccessibility of transportation is defined in terms of individuals and households. It manifests itself in the inability to obtain the necessary connections to services or places of employment to function properly in society (Kiciński et al., 2022). The transportation handicap of rural and peri-urban residents is caused by the lack of their own means of transportation and the low accessibility of public transportation, which can also be influenced by high ticket prices, as well as the lack of sufficient information about departures (Lucas, 2012). When analysing the issue of accessibility of public transport timetables, with particular reference to passenger rail, it should be taken into account that, in accordance with Article 30e of the Railway Transport Act of 28<sup>th</sup> March, 2003 (Dz.U. 2003 No. 86 item 789), the manager of the route infrastructure is obliged to inform potential travellers about departures using websites (Beim et al., 2019).

Transportation handicaps, together with social handicaps (caused by poor housing, low skills and income, and the lack of health or work), contribute to limited mobility, resulting in a lack of access to goods, services, life opportunities, social capital, and many other constrictions, thus creating the phenomenon of social exclusion (Figure 1) (Lucas, 2012). Many studies emphasise the fact that socially-excluded people often do not find themselves in this situation by their own choice, but because of certain factors in their environment (Church et al., 2000). Moreover, despite their high level of willingness, they are not able to cope with the problem on their own (Zmuda-Trzebiatowski, 2016).



**Figure 1.** Social exclusion related to transport

Source: Own compilation based on conducted surveys.

The complete lack of availability of public transportation, or its inadequacy to meet the needs of travellers, has a negative impact on both the residents of rural and suburban areas, as well as on the cities themselves. An analysis of a report prepared by the Polish Academy of Sciences indicates the widespread nature of the problem in Poland, as more than 20% of villages do not have access to any means of public mass transit, and in many places, of the remainder, there are only two buses a day (Kaczorowski, 2019b, p. 12). During a survey of rural areas, it was discovered that by eliminating public transport connections, as many as 28% of the respondents had problems getting to work, thus forcing them to buy a car or give up their previous employment, thus losing their source of income (Taylor, 2007). Researchers point to the significant impact of the lack of the availability of adequate transportation on the problems of permanent unemployment, as it is often the case that for people living in rural areas, it does not pay to take jobs in remote, inaccessible places. Moreover, the presence of a transportation barrier limits the possibility of improving conditions in local labour markets, as employees, fearing the loss of their positions and the inability to obtain new employment, are forced to perform work under unfavourable contracts (Berezowski, 2017, p. 23). The problem of the lack of adequate transportation is also evident in the case of commuting to school. As many as 41% of students living in rural areas reach educational institutions via school bus, while 17% travel by a PKS bus. Despite the prevalence of using buses to reach educational sites, more than half of the trips (51%) were considered impractical. The lack of adequate transportation to get to school efficiently causes a significant proportion of students to choose inferior facilities with more favourable travel options over better ones with more complicated commuting options (Taylor, 2007, p. 177). Admittedly, the Act of 14<sup>th</sup> December, 2016, on Education Law imposes an obligation on municipalities to transport pupils to school if the distance from the school facility to home, as indicated in the Act, is exceeded. However, this only applies to pupils in grades I-VIII of primary schools and disabled persons up to the age of 21. As a result, young people are often forced to give up their plans and dreams of continuing their education in certain high schools (Łyszczarz, 2021). Moreover, the elimination of connections provided by public mass transportation has a negative impact on the health and lives of people living in rural and suburban areas, where access to health services is significantly limited. The reduction in the number of connections between the place of residence of the rural population and the areas where health centres, pharmacies, and specialty clinics are located means that those who require a medical visit rely solely on the assistance of motorists, which largely contributes to the development of serious diseases, as well as an increase in mortality among the rural population. The lack of mobility significantly affects not only sick people, but also the prevention of healthy people, who have limited access to many examinations due to the lack of transportation. Therefore, local governments, when analysing the transportation needs of residents, should give special consideration to the possibilities associated with reaching doctors and diagnostic points. The inaccessibility of public transportation is particularly felt by the elderly, who typically face health problems and are more likely to show the need for a medical visit. Due to their level of dexterity, these people rarely own their own vehicles, which not only affects the quality of their physical health, but also their mental health. The lack of transportation limits the ability to visit friends and family, thus causing isolation for the elderly and a deterioration in their standard of living. Transportation problems occurring in small towns have a significant impact on the formation of social distances and the development of differentiation among the population (Dybalski, 2018). Despite efforts to develop both rural and urban areas, the elderly and people with disabilities still have to face a number of problems caused by inadequate land use and the failure to adapt

infrastructure and public transportation to their needs. These barriers result in the exclusion of certain social groups, limiting their ability to use goods and services available to the public, both when moving by their own and public transportation, as well as when travelling on foot. In addition, the problem of transport exclusion was exacerbated during the COVID-19 pandemic in terms of reduced bus and rail routes and frequencies (Orchowska, 2022).

Despite readily apparent deficiencies in the adaptation of infrastructure elements, vehicles, and schedules to the needs of travellers, social exclusion caused by transportation problems often remains misunderstood and inadequately defined, which may be due to inadequate testing of measurable indicators. As a result, both theoretical and operational measures of transportation inconvenience are not evaluated when analysing social exclusion. Often, surveys are conducted for the purpose of immediate improvement, without adequate preparation, with the result that social groups that are actually disadvantaged are not properly identified. As a result, despite taking measures to improve the existing transportation system and reduce social exclusion, the problems of individuals may still remain unresolved (Kamruzzaman et al., 2016, p. 2). Therefore, it is important to first properly identify units and areas facing transportation problems, and then take adequate measures to improve the existing system.

## **Research methodology**

The purpose of the research was to assess and analyse the state of existing public transportation, elements of transport infrastructure, and the occurrence of the phenomenon of traffic exclusion in the Nowosądecki district. For the implementation of the study, the following research problems were identified:

- What are the factors that guide the surveyed residents when choosing the way to get around in the Nowosądecki district?
- What are the most common reasons related to the abandonment of moving by public transport according to the respondents?
- Does the amount of the income of the respondents affect decisions related to the choice of means of transport?
- Do the surveyed residents of the Nowosądecki district feel excluded by transportation?

The theoretical part of the study is based on a review of the literature on the occurrence of the phenomenon of communication exclusion and the consequences it entails. The empirical part, on the other hand, consists of an analysis of the results of our own research, conducted on a group of 141 respondents, using a survey method (questionnaire survey).

The survey of public opinion was conducted on the basis of a survey questionnaire tool. The questionnaire was aimed at the residents of Nowy Sącz and the Nowosądecki district, as well as people who do not live in but travel in the mentioned areas. The questionnaire was prepared in the electronic form and distributed using social media between mid-March and early May 2022. The form consisted of one verification question, five metric questions (Table 1), and twelve survey questions, three of which were open-ended questions and nine of which were closed questions.

Three of the closed-ended questions were single-choice and six consisted of determining with a scale the incidence of a particular factor or element. In addition to the verification question, the survey also included three filter questions designed to move the respondent to the appropriate section, depending on the given answer. A total of 147 people took part in the survey, of which six responses were rejected because the individuals do not live and have never travelled

within the Nowosądecki district. The selected group is not representative, although it allows the identification of transportation problems occurring in the Nowosądecki district.

**Table 1.** The characteristics of the respondents of the conducted research sample on the occurrence of the phenomenon of traffic exclusion in the Nowosądecki district

<b>N = 141</b>		<b>Number of responses Percentage share</b>	<b>Number of responses Percentage share</b>
Gender	Female	105	74
	Male	36	26
Age	Under 18 years	4	3
	18-25 years	38	27
	26-35 years	47	33
	36-50 years	44	31
	Over 50 years	8	6
Education	Elementary	5	3.5
	Basic vocational	5	3.5
	Secondary	56	40
	Higher	75	53
Employment situation	Student	20	14
	Unemployed	6	4.5
	Working	113	80
Average monthly net income Gender	Retired	2	1.5
	Less than PLN 1,000	17	12
	PLN 1,001-3,000	53	37.5
	PLN 3,001-5,000	46	32.5
	PLN 5,001-7,000	14	10
	PLN 7,001-10,000	4	3
	Over 10,000 PLN	7	5

Source: Own compilation based on conducted surveys.

## Findings

The first research problem concerned the rationale behind the choice of mode of travel in the Nowosądecki district. In order to find an answer to the posed question, the respondents were asked to rate on a scale from 1 (never) to 5 (always) factors that guide them when choosing a means of transportation. The respondents evaluated 6 criteria such as price, the availability of means of transportation, convenience, speed/speed, direct connections, and safety. Of all the respondents, the broadest group – 84 people (59.5%) – indicated that they always follow direct connections when choosing a means of transportation, and only 12 people (8.5%) never follow this criterion. The calculations clearly indicate that direct connections are the main criterion when choosing a means of transportation, while price plays the least important role. Detailed information showing the determinants of travellers' choice of mode of transportation is presented in Table 2.

**Table 2.** The determinants of the choice of a means of transport

Rating scale from 1 (never) to 5 always)	Please indicate on a scale of 1 (never) to 5 (always) what guides your choice of a means of transportation											
	Price		Availability of a means of transportation		Convenience		Speed		Direct connections		Safety	
	N	%	N	%	N	%	N	%	N	%	N	%
42	30	17	12	21	15	24	17	12	8,5	19	13	
1	27	19	9	6.5	23	16	13	9	8	6	11	8
2	19	13	17	12	31	22	32	23	23	16	38	27
3	22	16	16	11.5	12	9	15	11	14	10	24	17
4	31	22	82	58	54	38	57	40	84	59,5	49	35
5	141	100	141	100	141	100	141	100	141	100	141	100
Total		2.81		3.97		3.39		3.48		4.06		3.52

Source: Own compilation based on conducted surveys.

Another research problem concerned the reasons associated with the abandonment of the respondents from moving by public transportation. Analysing the above problem, the respondents were first asked to indicate the means of transportation by which they most often get around in the Nowosądecki district.

**Table 3.** The frequency of the use of various means of transport by travellers in the Nowosądecki district

Rating scale from 1 (never) to 5 (always)	How often do you move by particular means of transportation in the area of the Nowosądecki district?									
	Vehicle		Bike, scooter, skateboard, etc.		MPK bus		Private bus		Train	
	N	%	N	%	N	%	N	%	N	%
1	6	4.5	67	48	59	42	75	53	94	67
2	12	8.5	21	15	26	18	32	23	24	17
3	15	10.5	33	23	20	14	21	15	13	9
4	31	22	17	12	18	13	3	2	4	3
5	77	54.5	3	2	18	13	10	7	6	4
Total	141	100	141	100	141	100	141	100	141	100
Average		4.14		2.06		2.36		1.87		1.61

Source: Own compilation based on conducted surveys.

In order to accurately illustrate the obtained data, during the analysis of the results, the arithmetic average of the evaluated elements was calculated. The calculations show that the vehicle that is most often used by travellers is the car. Detailed information is presented in Table 3.

Looking for reasons for giving up moving by public transportation, only the responses of people who chose their own means of transportation as their main means of transportation

in the Nowosądecki district were analysed. There were a total of 105 respondents, of whom as many as 60% (63 people) are always guided by the availability of direct connections, and only 10 (10%) respondents never pay attention to this criterion. The least important for travellers is the price; only 15 (14%) of the respondents in the group indicated that they are always suggested by the price, and for as many as 32 (30.5%) respondents the price is not a determinant affecting the choice of means of transportation (Table 4).

**Table 4.** The determinants of the choice of a means of transportation by those most likely to move via their own means of transportation

Rating scale from 1 (never) to 5 (always)	Please indicate on a scale of 1 (never) to 5 (always) what guides your choice of means of transportation											
	Price		Availability of a means of transportation		Convenience		Speed		Direct connections		Safety	
	N	%	N	%	N	%	N	%	N	%	N	%
1	32	30.5	16	15	16	15	16	15	10	10	17	16
2	25	24	7	7	16	15	8	7.5	5	5	8	8
3	14	13.5	13	12.5	25	24	23	22	16	15	28	27
4	15	14	12	11.5	7	7	9	8.5	11	10	15	14
5	19	18	57	54	41	39	49	47	63	60	37	35
Total	105	100	105	100	105	100	105	100	105	100	105	100
Average	2.66		3.83		3.39		3.64		4.07		3.45	

Source: Own compilation based on conducted surveys.

Next, the influence of the amount of monthly income on decisions related to the choice of means of transportation was analysed. Aiming to solve the indicated problem, a summary showing the relationship between income and the most frequently chosen means of transportation was prepared in Table 5. In order to better observe the results, a column was prepared indicating what percentage of people in each income group choose the appropriate means of transportation. Among those earning less than 1,000 PLN net per month, 5 (3.5%) of the respondents choose their own means of transportation, which is 29% of the respondents in the group of people earning less than 1,000 PLN, and as many as 12 (8.5%) people use public transportation – this is as much as 71% of those earning less than 1,000 PLN net per month. All the respondents earning between 7,000–10,000 PLN net per month (4 people – 3%) and those earning more than 10,000 PLN net per month (7 people – 5%) indicated that they most often get around in the Nowosądecki district by their own means of transportation. The analysis of the results clearly indicates that as monthly income increases, the number of people using public means of transport decreases. In order to confirm the validity of the conclusions drawn, a statistical Chi-square ( $\chi^2$ ) test of concordance was conducted, which clearly indicates that the presented correlation is statistically significant, and thus the income of travellers has a significant impact on the means of transportation they choose.

The last analysed problem was the assessment of the surveyed residents of the Nowosądecki district regarding the occurrence of traffic exclusion in the district. Aiming to obtain an answer to the problem, the respondents were first asked to assess the number of transport infrastructure

elements present in the studied area. The availability of sidewalks, bicycle paths, paved roads, bus stops, information boards at bus stops, and timetables was assessed.

**Table 5.** The relationship between average monthly net income of the respondents and the most frequently chosen means of transportation in the Nowosądecki district

Average monthly net income	Please specify what means of transportation you use most often in the Nowosądecki district					
	Own means of transportation			Public transportation		
	N	% of total	% of row	N	% of total	% of row
Less than PLN 1,000	5	3.5	29	12	8.5	71
PLN 1,001–3,000	36	25.5	68	17	12	32
PLN 3,001–5,000	40	28.5	87	6	4	13
PLN 5,001–7,000	13	9	93	1	1	7
PLN 7,001–10,000	4	3	100	0	0	0
Over 10,000 PLN	7	5	100	0	0	0
Total	105	74.5	x	36	25.5	x

$\chi^2 = 29,3795; p = 0,000002$

Source: Own compilation based on conducted surveys.

**Table 6.** The availability of individual elements of transport infrastructure in the Nowosądecki district

Scale	Please rate the availability of selected elements of transport infrastructure in the Nowosądecki district											
	Sidewalks		Bike paths		Paved roads		Bus stops		Information boards at bus stops		Timetables	
	N	%	N	%	N	%	N	%	N	%	N	%
Very small	9	6.5	22	15.5	8	6	9	6.5	20	14	19	13
Small	43	30.5	63	44.5	28	20	33	23.5	39	28	35	25
Sufficient	58	41	40	28.5	71	50	76	54	55	39	59	42
Large	22	15.5	11	8	28	20	17	12	20	14	20	14
Very large	9	6.5	5	3.5	6	4	6	4	7	5	8	6
Total	141	100	141	100	141	100	141	100	141	100	141	100

Source: Own compilation based on conducted surveys.

Most of the respondents – 22 people (15.5%) – indicated that there are very few bicycle paths in the study area, and 63 respondents (44.5%) believe there are few. Only 5 people (3.5%) think there are very many bicycle paths in the Nowosądecki district. More than half of the respondents – 76 people (54%) – indicated that the number of bus stops is sufficient, and 71 respondents (50%) say that the number of paved roads is also sufficient. A detailed summary of the assessment of the availability of various elements of transportation infrastructure is presented in Table 6.

The respondents were also asked to indicate whether there is traffic exclusion on the territory of the Nowosądecki county. 74 (52%) of the respondents believe that there is traffic exclusion on the territory of the Nowosądecki district, while 67 people (48%) deny the existence of this phenomenon in the studied area. Despite the fact that the differences in the statements are small, based on the opinion of travellers, it can be concluded that the Nowosądecki district is in many respects transport-excluded.

The survey clearly shows that even small improvements in the operation of public transportation, such as changes in departure times, can contribute to its attractiveness. It is important to regularly study the needs of travellers and constantly strive to meet them, as often small changes requiring low financial outlays can significantly affect the development of the transportation system, thus reducing the occurrence of transportation exclusion in the study area.

## Conclusions

Despite the development of modern technologies, including in the field of urban transportation, in many areas it is still possible to observe problems related to the organisation of public transport. These difficulties lead to the occurrence of the phenomenon of traffic exclusion, which can consequently lead to social exclusion, which includes individuals deprived of the opportunity to get to work, school, doctor, or cultural and sports facilities.

Aiming to improve the transportation system, including the operation of public transportation, it is necessary to cooperate with both local governments and private carriers providing regular bus services. It is necessary to constantly survey public opinion on the functioning of public transportation, enabling the identification of problems associated with the use of carriers. Sampling for future surveys conducted in this area is also important. It would be worthwhile to reach out to more male respondents to also find out their opinion on transportation exclusion, and to find out the opinion of more diverse age groups, which would also benefit the survey results.

The research presented in the article made it possible to analyse the residents' assessment of the functioning of the transport infrastructure and public transportation occurring in the Nowosądecki district. Based on the results of the study, it can be concluded that the Nowosądecki district is a transport-excluded area. According to the opinion of travellers, this situation is significantly influenced by the lack of direct connections between the place of residence and work, school, and recreation centres, as well as the inadequacy of bus departure times to meet the needs of travellers.

Looking for opportunities to improve the functioning of public mass transit in the Nowosądecki district, many enhancements can be implemented, including not only changes in the bus timetable, but also expanding the areas where buses operate, or building transfer stations with a Park&Ride parking. Moreover, it is worth noting the potential of the region's railroads. The launch of local train lines would not only increase the comfort and satisfaction of travellers, but also reduce the level of pollution in the region through lower carbon dioxide emissions. It would be worthwhile to devote a little more space to this issue in future studies as well. The extension of the railroad in these areas could significantly improve the mobility of the population and reduce the phenomenon of transportation exclusion in these areas. The presented research has shown that traffic exclusion is a serious problem that often affects rural and suburban areas. The underestimation of its occurrence can prove disastrous in its consequences, bringing with it social exclusion with a negative impact on the level of the socioeconomic development of the excluded regions. The content presented in the article indicates the need for regular surveys of public opinion on satisfaction with

the functioning of public transportation and the desire to systematically introduce improvements in this area. The analysis carried out so far not only included a limited research sample, but was also significantly limited in time. When undertaking future research, it would be worth increasing the research sample, taking into account different age groups, genders, places of residence, social status, or education. An important factor that should be taken into account is the aforementioned expansion of the railway line in this area, repeating the study after the implementation of this plan and expanding its scope by the importance of the railway in the daily mobility of residents. It will make it possible to draw interesting conclusions and will be a stimulus for further research and analysis. Similar studies should also be conducted over a longer period of time due to disruptions that may be caused by factors such as season, weather, holiday period. A longer time perspective will also make it possible to see the impact of these factors on the perception of exclusion among the surveyed residents.

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All data will be available and shared upon request.