ANALYSIS OF THE TECHNICAL CONDITION OF THE ROAD INFRASTRUCTURE OF THE GREATER POLAND VOIVODSHIP FROM THE ASPECT OF ROAD TRAFFIC SAFETY IN 2010-2021

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Resume

Every year a large number of vehicles travel on Poland's roads. The technical condition of vehicles largely depends on the technical condition of the road infrastructure. For this reason, the purpose of the article was to analyze the technical condition of the road infrastructure. The analysis was carried out with the help of a questionnaire survey on a random group of 380 people living and using roads in the Wielkopolska province.

Based on the survey, it appears that drivers of the Wielkopolska province perceive changes in the state of road infrastructure in Poland. According to the respondents, these are changes for the better, and this is true regardless of whether they were asked about the road surface, signage, parking lots, toilets or the road network. They see the biggest positive changes over the past 10 years in pavement, while the smallest changes in infrastructure.

Article info

Received 15 August 2023
Accepted 9 November 2023
Online 27 November 2023

Keywords:

transport
safety
infrastructure
road
accident

Available online: https://doi.org/10.26552/com.C.2024.004

ISSN 1335-4205 (print version)
ISSN 2585-7878 (online version)

1 Introduction

People are changing their habits on a yearly basis. The need for the constant movement and the advancement of technology are two reasons for this. Due to increased transportation and traffic congestion, the state of the road infrastructure deteriorates.

According to the article by Hoy, shopping, following others, such as children to school, and helping with administrative duties are some of the things that motivate women to travel. The fact that "motivations to travel are not fixed, but rather depend on specific life situations and change with the stages of a person's life, [1]" should also be emphasized. The major life transitions that affect travel behavior include getting a job, having children, and retiring. The report also mentions that women are more likely to take public transit while men are more likely to drive a car. Women make up 18% of respondents in the article below, while men make up 82%.

Leaning into road safety is important. However, as the author Racynska-Bulawa noted, improving road safety necessitates changes to numerous public policy facets [2]. A forward-looking road safety policy should be taken into consideration in other EU policy areas, while also taking into account the goals of other policy areas, according to the European Commission's instructions for road safety policy for the years 2011 to 2020. Policy in the areas of energy, environment, employment, education, youth, public health, research, innovation, and technology, as well as in the areas of justice, insurance, trade, and international relations, are all directly related to road safety.

Humans unquestionably hold the top spot among the variables that have a significant impact on the road safety (human-road-vehicle as a causal component in accidents). According to [3], the behavior of specific groups of road users overall has an impact on the frequency of traffic accidents. There are a number of laws and norms that must be followed when driving on the road [4]. Numerous factors play a role in enhancing the road safety, including encouraging safe driving practices [5-7], as well as efficient traffic management and maintaining the technological efficiency of roads and cars [8-11].

Future drivers' education and testing should also

be taken into account. The above-mentioned elements of the road safety are studied by scientists, together with issues pertaining to traffic control, emergency medical services, and transport psychology [12]. Authors of [13-23] explore the issue with using the road for transportation in terms of safety.

The European Commission's initiatives to further enhance the road safety are founded on the established long-term EU objective of attaining zero fatalities and serious injuries in the road transport by 2050, often known as "Vision Zero" and "Safe System." The paper, which was made public on the website of the European Commission, aims to cut traffic fatalities and serious injuries by 50% by 2030 as compared to 2020 [24].

2 Research

2.1 Purpose and methodology of the survey

The subject of the research is the analysis of the technical condition of the road infrastructure in Greater Poland from the aspect of road traffic safety with special consideration of the years 2010-2018. In connection with the chosen research topic, the aim is to gain knowledge by means of studying the technical condition of the road infrastructure in Greater Poland from the aspect of road traffic safety. Taking into account the above objective, the following hypotheses were adopted:

MAIN HYPOTHESIS: In the period 2010-2021, the technical condition of road infrastructure in the Greater Poland had a positive impact on the road safety.

H1. The condition of road surfaces, road infrastructure and its elements in the Greater Poland has improved over the last 10 years.

H2. Do road managers care enough about development of the road infrastructure in Wielkopolska?

H3. The condition of the road infrastructure affects the road traffic safety.

H4. Road users feel safe in road traffic in the Greater Poland voivodship.

H5. Roads should be monitored.

To obtain answers to the questions and hypotheses posed, the survey covered 380 people residing in the Greater Poland who travel on Greater Poland roads on a daily basis by both private cars and public transport. The diagnostic survey was conducted on a group representative of the general population. The survey was conducted online using a questionnaire made available on the Internet and in a paper version. Participation in the survey was voluntary.

The actual survey was preceded by a pilot (pre-survey) to verify the community's good understanding of the questions in the survey questionnaire; the reason for conducting the pre-survey was to get to know the community better, as well. The minimum and required number of respondents for the survey was calculated using the formula below, with a confidence level of 95% and a maximum error of 5%, resulting in a representative sample of 380 people [25].

The responses of respondents to metric questions were also examined. Gender, age, driving experience, whether the driver is a professional, how frequently they use a vehicle, and the type of a vehicle they use. In addition, two analyses (by age and gender) were taken into account in the Chi-square context. To create hypotheses for random variables, this statistical test is employed. The common pattern of the outcomes can be used to determine whether the variables are related to one another. There is a significant link between the variables if the theoretical Chi-square was lower than the calculated one. The following form [25] is the formula for the chi square test of concordance:

$$x^2 = \sum_r^{i=1} \frac{(f_i - np_i)^2}{np_i} \tag{1}$$

where: χ^2 - Chi-square test,
f_i - how many values from a specific interval were seen,
n_{pi} - number (n) of units that should be present in an interval supplied (intervals' expected values).

2.2 Results

There were 217 women (57%) and 163 men (43%) who took part in the survey. However, the result is quite similar. Women tend to be more willing to participate in this type of survey on social media as well. Those in the 21-30 age bracket were the most likely to take part in the survey, with 228 respondents, giving a response rate of

Table 1 *Respondents' place of residence*

No.	Village	Town between 5000 and 50000 inhabitants	Town between 50001 and 100000 inhabitants	Town with more than 100000 inhabitants	Sum
women	35	25	50	107	217
men	22	20	45	76	163
sum	57	45	95	183	380
%	15.00	11.84	25.00	48.16	100

Table 2 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
3	0.05	1.39	7.8147

Table 3 *Length of time respondents have held a driving licence by gender*

No	Women	Men	Sum	%
I do not	7	0	7	1.84
Up to 2 years	16	4	20	5.26
2-10 years	52	51	103	27.11
11-18 years	101	48	149	39.21
19-26 years	20	41	61	16.05
27-34 years	4	4	8	02.11
35-42 years	8	8	16	4.21
43-50 years	7	5	12	3.16
Over 50 years	2	2	4	01.5
Sum	217	163	380	100

Table 4 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
8	0.05	30.92	15.5073

Table 5 *Frequency of motor vehicle driving by gender*

No	daily	several times a week	once a week	seldom	not applicable	Sum
Women	35	71	58	49	4	217
Men	33	73	56	1	0	163
Sum	68	144	114	50	4	380
%	17.89	37.89	30.00	13.16	1.05	100

Table 6 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
4	0.05	43.4	9.4877

60%. Respondents aged under 20 (13%) and those aged 31-40 (17%) gave a similar response rate. Respondents aged over 50 were represented by a group of 30 (8%). In contrast, the smallest group of respondents were those aged 41-50 (2%). Almost half of the respondents indicated that they live in a city with more than 100 000 inhabitants (48%), both among men and women aged 21-40. 25% of people indicated a city of between 50 001 and 100 000 inhabitants as their answer. On the other hand, a rural area and a smaller city, i.e., between 5 000 and 50 000 inhabitants, were marked by 15% and 12% of respondents respectively. These were mainly people aged under 20 years and over 50 years. The chi-square test showed that there was a relationship between the place of residence and gender (Tables 1 and 2).

As the largest group of respondents is made up of those aged 21 to 30 and 31 to 40, the largest group holding a driving licence is made up of those had it for 11 to 18 years (40%). In similar percentage groups are respondents holding a driving licence for 2 to 10 years (27%) and 19 to 26 years (16%). The smallest group of respondents are those aged over 50, so this is also the smallest group in the driving licence holding period question, accounting for 1%. Only 2% of respondents have held a driving licence for 27 to 34 years, 4% of respondents have held a driving licence document for 35 to 42 years and 3% for 43 to 50 years. In addition, % of respondents do not hold a driving licence at all, and up to 2 years of entitlement is held by 5% of respondents. The chi-square analysis shows that there is no correlation between the gender and the duration of holding a driving licence. Both women and men hold a driving licence at similar intervals (Tables 3 and 4). In this case, hypothesis 0 is not rejected.

Only 69 respondents (18%) drive a motor vehicle every day. Respondents who drive a motor vehicle only a few times a week are most likely to travel to work with other company employees in one vehicle or use public transport - 144 respondents (38%). Total of 114 (30%) respondents use a motor vehicle once a week, 49 respondents (13%) rarely use a motor vehicle and 4 respondents (1%) did not select any of the following answers. A chi-square analysis shows that there is correlation between gender and frequency of driving (Tables 5 and 6). Currently, both women and men are drivers, and the number of women working as drivers is increasing.

The next question of the survey concerns the form in which the respondents travel in traffic. The largest group, 171 people (45%), are passengers in a private

Table 7 *Form of traffic by gender*

No	Bicycle	Electric scooter	Public transport	Passenger in a private car	Company car driver	Private car driver	Pedestrian	Sum
Women	20	5	38	102	9	38	5	217
Men	3	10	26	70	21	26	7	163
sum	23	15	64	172	30	64	12	380
%	6.05	3.95	16.84	45.26	7.89	16.84	3.16	100

Table 8 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
6	0.05	22.6	12.5916

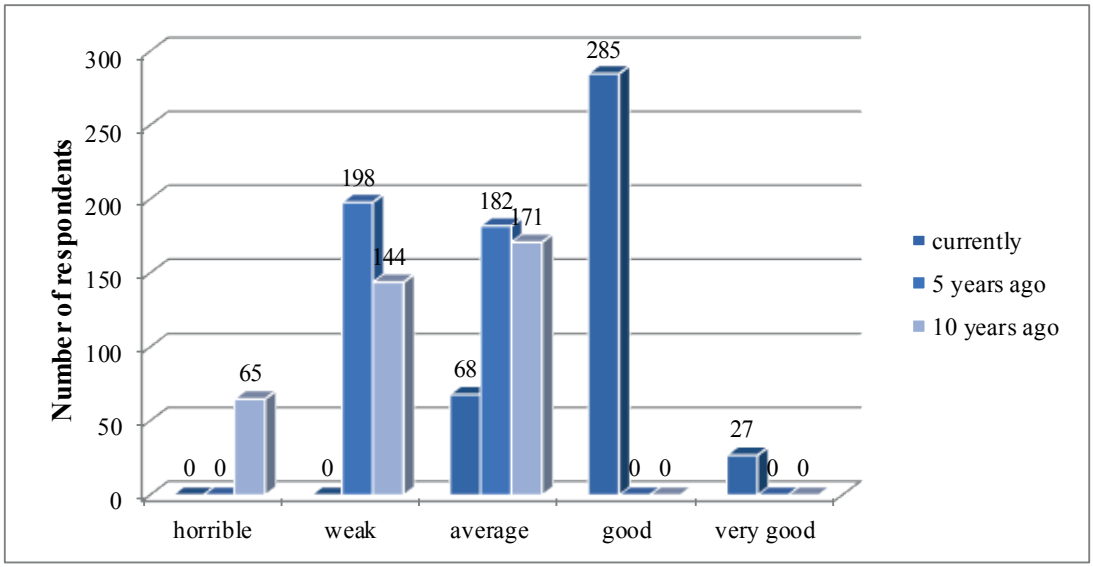

Figure 1 *Scale for evaluating the road surface in Greater Poland*

Table 9 *Pavement condition over the last 10 years according to respondents (in%)*

	horrible	weak	average	good	Very good
currently	0	0	18	75	7
5 years ago	0	52	48	0	0
10 years ago	17	38	45	0	0

car. In relation to this answer, the assumption that respondents move, for example, several people to work, is verified. Sixty-five (17%) respondents each indicated that they are most often the driver of a private car, but they take the public transport, as well. Thirty respondents (8%) get around in a company car and only 11 (3%) walk. Respondents were also given the opportunity to mark their own answer 15 of them (4%) indicated that one of the more common forms of mobility is the electric city scooter, which is however more common in larger cities. Unfortunately, only 23 respondents (6%) get around by bicycle. The chi-square test shows that there is correlation between the form of mobility and gender. Both men and women use different forms of transport (Figure 1, Tables 7 and 8)

The next part of the questionnaire concerns the whole road infrastructure in Greater Poland. These are questions not only about the condition of the road surface and network, but about the road signs, stopping places (car parks, toilets, petrol stations), etc. as well. In this section, respondents were also asked about safety on the roads of Greater Poland and whether roads should be continuously monitored.

According to the respondents, the condition of the road surface is currently good (75% of the answers given). Only 18% of respondents (68 people) indicated that the condition of the road surface is average and 7% (27 people) assess it as very good. Respondents think that 5 years ago the condition of the road surface was bad - 52% of responses and average - 48% of responses. In contrast, 10 years ago almost half of respondents - 45% rated the condition of the pavement as average, 38% (144 people) rated the condition of the pavement as bad and 17% rated the condition of the pavement as terrible (see Figure 1 and Table 9 for details).

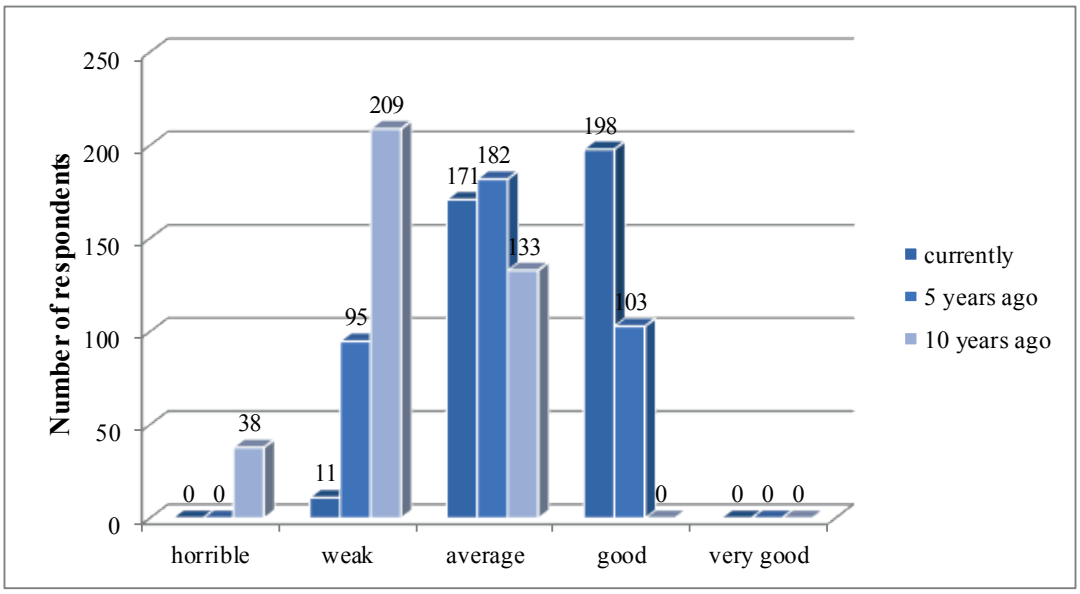

Figure 2 *Signposting of road infrastructure in Greater Poland over the last 10 years according to respondents*

Table 10 *Signage over the last 10 years according to respondents (in%)*

	horrible	weak	average	good	Very good
currently	0	3	45	52	0
5 years ago	0	25	48	27	0
10 years ago	10	55	35	0	0

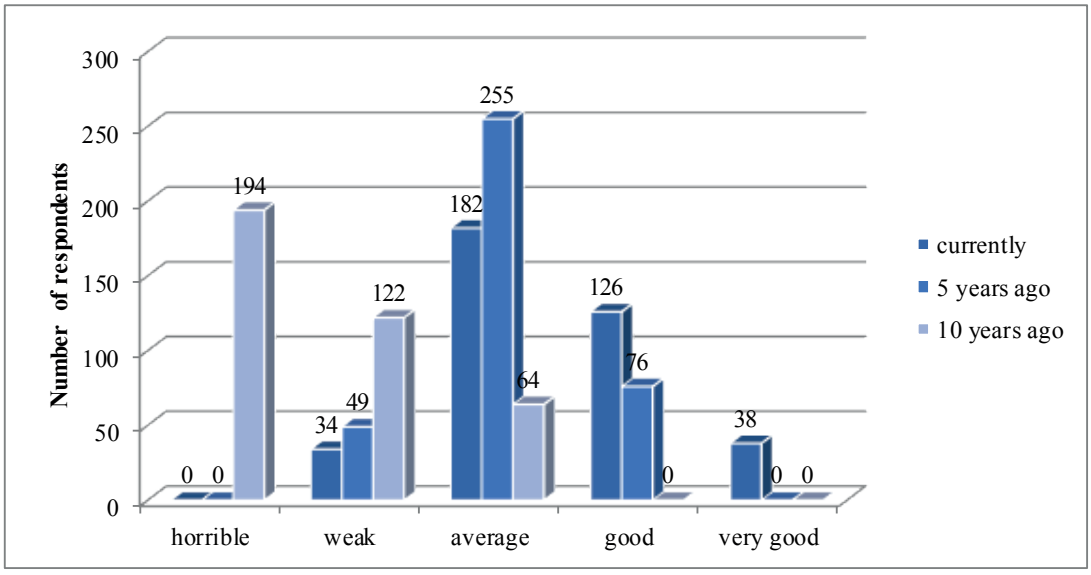

Figure 3 *Accessibility to point infrastructure in Greater Poland over the last 10 years according to respondents*

Table 11 *Availability of point infrastructure of Greater Poland province over the last 10 years according to respondents (in%)*

	horrible	weak	average	good	Very good
currently	0	9	48	33	10
5 years ago	0	13	67	20	0
10 years ago	51	32	17	0	0

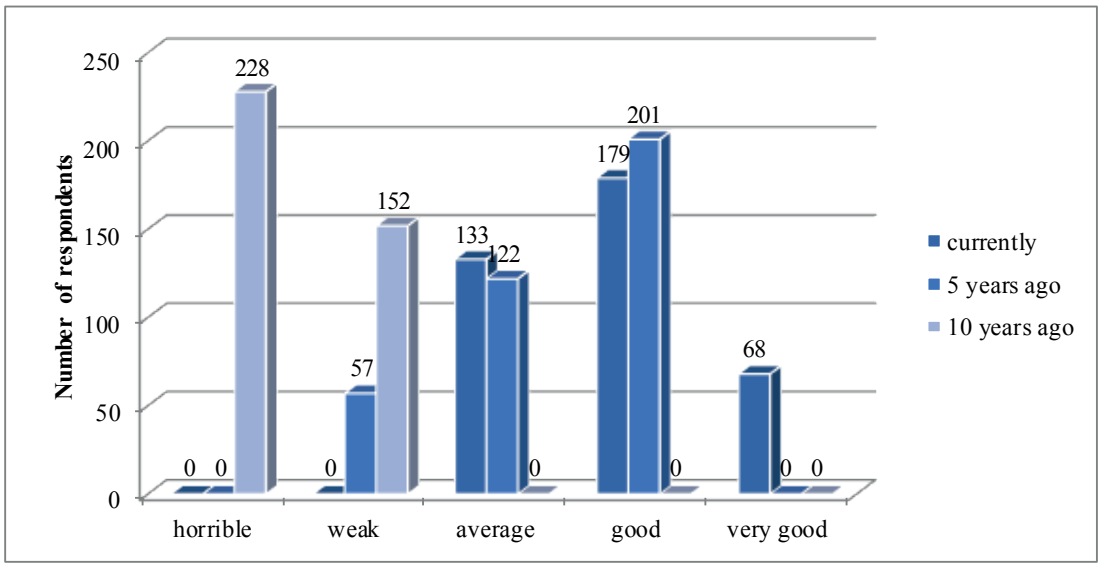

Figure 4 *The road network of Greater Poland province conditions over the last 10 years according to respondents*

Table 12 *The road network conditions over the last 10 years according to respondents (in%)*

	horrible	weak	average	good	Very good
currently	0	0	35	47	18
5 years ago	0	15	32	53	0
10 years ago	60	40	0	0	0

Table 13 *Whether Greater Poland should care about infrastructure development by gender*

No	Yes, especially about high-traffic roads	Yes, about all roads	Rather not	Definitely not	Sum
women	68	146	1	2	217
men	54	105	2	2	163
sum	122	251	3	4	380
%	32.11	66.05	0.79	1.05	100

Table 14 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
3	0.05	0.98	7.8147

Figure 2 and Table 10 show respondents' answers regarding road signage over the last 10 years in the Greater Poland. According to the respondents, signage is currently at a good (52%) and average (45%) level. Only 3% of respondents felt that signposting in Greater Poland is poor. Five years ago, according to respondents, signage was average (48%), which is similar to today. A further 27% and 25% of respondents indicated signage was at a good and poor level, respectively. In contrast, a decade ago, 55% of respondents (209 people) rated signage as poor, 35% (133 people) as medium and 10% (38 people) as terrible.

According to respondents, road infrastructure (car parks, toilets, petrol stations, etc.) has improved significantly over the last decade. More than half of the respondents (51%) felt that 10 years ago the road infrastructure was terrible and 32% described it as poor. Only 17% considered it to be average. On the other hand, already 5 years ago a significant part of respondents (67%) described road infrastructure as average, 20% (76 people) as good and only 13% (49 people) as poor. In technical terms, both the Greater Poland and Poland have moved forward. Currently only 9% of respondents considered road infrastructure as poor; 48% (182 respondents) as average, 33% (126 respondents) as good and 10% (38 respondents) as very good. Detailed results are shown in Figure 3 and Table 11.

Regarding the expansion of the road network in Greater Poland over the past 10 years, almost half (47%) of respondents indicated that the road network is currently good, 35% average, and 18% of respondents consider it very good. Five years ago, 53% of respondents (201 people) described the road network as good, 32% (122 people) as average, and 15% (57 people) as poor. In

Table 15 *Influence of infrastructure condition on traffic safety by gender*

No	Yes	No	I have no opinion	Sum
Women	165	29	6	200
Men	158	20	2	180
Sum	323	49	8	380
%	85.00	12.89	2.11	100

Table 16 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
2	0.05	15.37	5.9915

Table 17 *Sense of the road safety by gender*

No	definitely yes	rather yes	Yes	definitely not	rather not	Not	Sum
Women	2	79	90	12	32	2	217
Men	0	51	70	7	35	0	163
Sum	2	130	160	19	67	2	380
%	0.53	34.21	42.11	5.00	17.63	0.53	100

Table 18 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
5	0.05	6.44	11.0705

contrast, 10 years ago, as many as 60% of respondents indicated that the road network was terrible, and 40% indicated that it was poor. The results are shown in Figure 4 and Table 12.

Total of 258 (66%) respondents believe that Greater Poland should take more care of all roads, not just expressways. 122 (32%) respondents marked the answer "yes, especially with heavy traffic," 3 marked the answer "rather not," and 4 marked the answer "definitely not." "The chi-square concordance test shows that there is a no correlation between the gender and assessment of care for the road infrastructure development (Tables 13 and 14). Women are more likely to pay attention to such factors.

When asked whether the condition of the road infrastructure affects traffic safety, as many as 323 respondents (85%) answered in the affirmative. Only 49 respondents (13%) answered in the negative, and 8 respondents (2%) had no opinion on the subject. It seems that the answer to this question is obvious. It is true that there are times when, for example, a worse road surface forces vehicle drivers to reduce their speed, but this is not the rule. The chi-square test shows that there is a correlation between the gender and the assessment of the impact of infrastructure condition on traffic safety. Both men and women have similar opinions (Tables 15 and 16).

In the question about the feeling of safety in traffic in Greater Poland, although opinions were divided, it can be considered that a significant proportion of respondents have such a feeling of safety. The above analysis shows that 160 respondents representing 42% marked the answer "yes" and 130 (34%) respondents marked "rather yes," for a total score of 76%. This is a significant majority. Sixty eight respondents, representing 18%, feel rather not safe on the road, and 5% or only 19 respondents definitely do not feel safe. It is worth noting that negative answers were marked by more women, which also coincides with the chi-square test conducted, which shows that there is a no correlation between the gender and feeling safe on the road (Tables 17 and 18).

Is monitoring on the roads a good idea? It should be noted that respondents are almost unanimous 266 respondents, or as many as 70%, answered in the affirmative, 64 respondents, or 17%, in the negative, and only 50 or 13% of respondents did not express an opinion. Certainly, monitoring would facilitate the investigation.

In many cases, especially in accidents involving vulnerable road users, the unprotected road users are the least attentive. Cyclists often forget to signal a turn with their hand, and young people often cross lanes while looking at their phones or listening to music. Monitoring would certainly help settle the dispute over who was the perpetrator of the incident. A chi-square test shows that there is correlation between gender and the answers given, with both women and men thinking the same (Tables 19 and 20).

The last question in the survey questionnaire was an open-ended question, so respondents had the opportunity to type in many of their own suggestions for improving the road infrastructure to increase safety.

Table 19 *Assessment of the need for monitoring by gender*

No	Yes	No	I have no opinion	Sum
Women	140	37	40	217
Men	126	27	10	163
Sum	266	64	50	380
%	70.00	16.84	13.16	100

Table 20 *Results of the chi-square test of compatibility*

df	p	chi^2	theoretical chi^2
2	0.05	12.8	5.99146

Table 21 *Suggestions for improving road infrastructure to increase safety according to respondents*

Respondents' proposals	Number of responses	Percentage of responses*,%
construction of sidewalks and bicycle paths	304	80
reconstruction of intersections into „traffic circle" type intersections	247	65
improvement of visibility conditions at intersections and entrances to roadways, including entry and exit lanes	152	40
installation of lighting or illumination especially in particularly dangerous places	133	35
improvement of roadway performance	122	32
construction of left turns	87	23
construction of pedestrian bridges	65	17
more frequent renewal of horizontal signs	30	8
use of barriers separating sidewalks from the roadway	27	7

*% responses do not add up - there was an opportunity to write many suggestions for improving road infrastructure to increase the road safety.

Table 22 *Average rating of the road condition in the last decade by respondents*

Assessment of the condition of roads in the Greater Poland province in terms of:	Fatal	Poor	Average	Good	Very good
pavement	0.16	0.90	1.12	0.75	0.06
marking	0.10	0.83	1.28	0.78	0
infrastructure	0.51	0.53	1.31	0.53	0.10
road network	0.60	0.55	0.66	1.0	0.18

The vast majority of respondents (80%) said that more sidewalks and bicycle paths should be built along roads connecting large cities with smaller towns and villages. The next most frequently mentioned suggestion was the reconstruction of ordinary intersections into "traffic circle" type intersections - 65% of responses. The following responses were on a similar level: improved visibility conditions at intersections and road inlets, including entry and exit lanes - 40%, installing lighting or illumination especially in particularly dangerous places - 35%, and improving roadway parameters 32%. Respondents also noted that the construction of left turn lanes (23%), construction of pedestrian bridges (17%), more frequent renewal of horizontal signs (8%) and the use of barriers separating sidewalks from the roadway (7%) would have an impact on traffic safety (Table 21).

To find out the respondents' opinions on the state of infrastructure in Greater Poland in 2010-2021, respondents were asked questions assessing the state of roads in terms of pavement, signage, infrastructure (parking lots, gas stations, toilets, etc.) and road networks. Respondents answering the above questions were allowed to select only one answer from the following: horrible, poor, average, good, very good. In addition, to get an indication of whether their opinion had changed over the past decade, they were asked to refer to their condition now, 5 years ago and 10 years ago. For each response, the average of each time interval was determined (Table 22).

The average was calculated by dividing each response by the number of people surveyed. Averaging across all the survey periods, respondents gave the best rating to the current road infrastructure. Respondents consider it to be at least average. In terms of pavement, signage, parking lots, gas stations, etc., the state of infrastructure was rated as average by respondents. In contrast, the road network was rated as good by respondents. Signage in Greater Poland was rated by

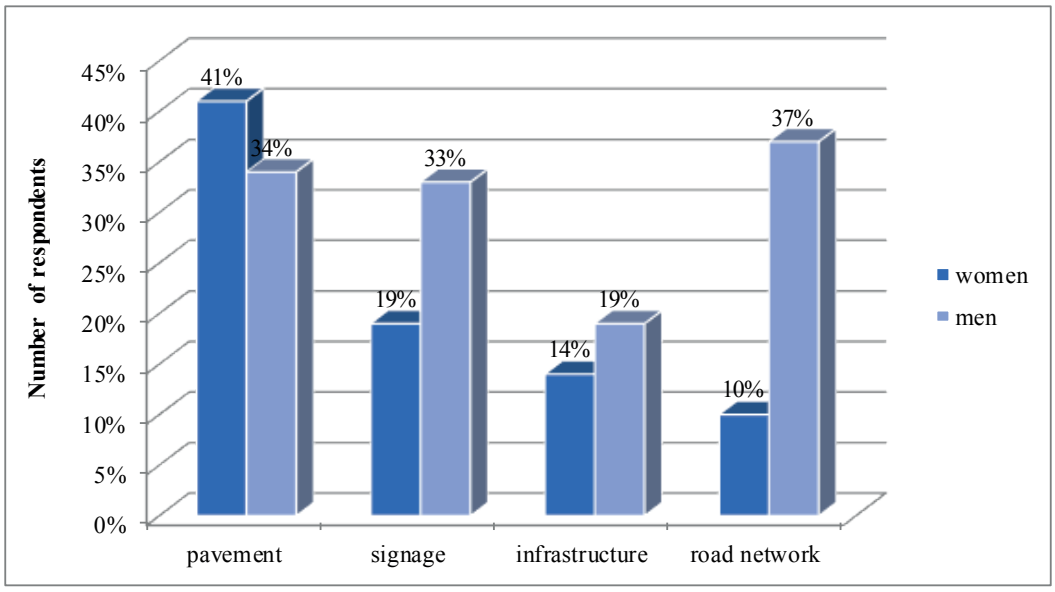

Figure 5 *Percentage of respondents who answered that the current state of infrastructure in Greater Poland province is good, by gender*

respondents at a similar level now and 5 years ago. When asked about the condition of the pavement, signage, infrastructure and road network now, respondents most often answered well. Figure 5 shows the responses of respondents by gender who rated the current state of infrastructure in Greater Poland as good.

Leaning into the specific problems posed, the first question, which complements the main research problem, can be considered confirmed. Although, among the respondents, women are more convinced only about the condition of sidewalks in Greater Poland - 41%. More men rate signage (33%), infrastructure (19%) and the road network (37%) as good. It is worth noting that no matter what the respondents were asked about, i.e., sidewalk, signage, infrastructure or road network, their opinion changed for the better over time. An upward trend can be observed. At the same time, specific hypothesis one was confirmed.

The second specific research problem was: "Should the road managers care more about the development of road infrastructure in Greater Poland?". Respondents - 68% in question 11 of the survey questionnaire - felt that the Greater Poland region should care more about the development of road infrastructure on all the roads, not just those with heavy traffic. The remaining respondents said Greater Poland should also take care of roads with heavy traffic. The second specific hypothesis was disproved. None of the respondents believe that there is no need for further infrastructure development.

At the same time, the third specific research problem

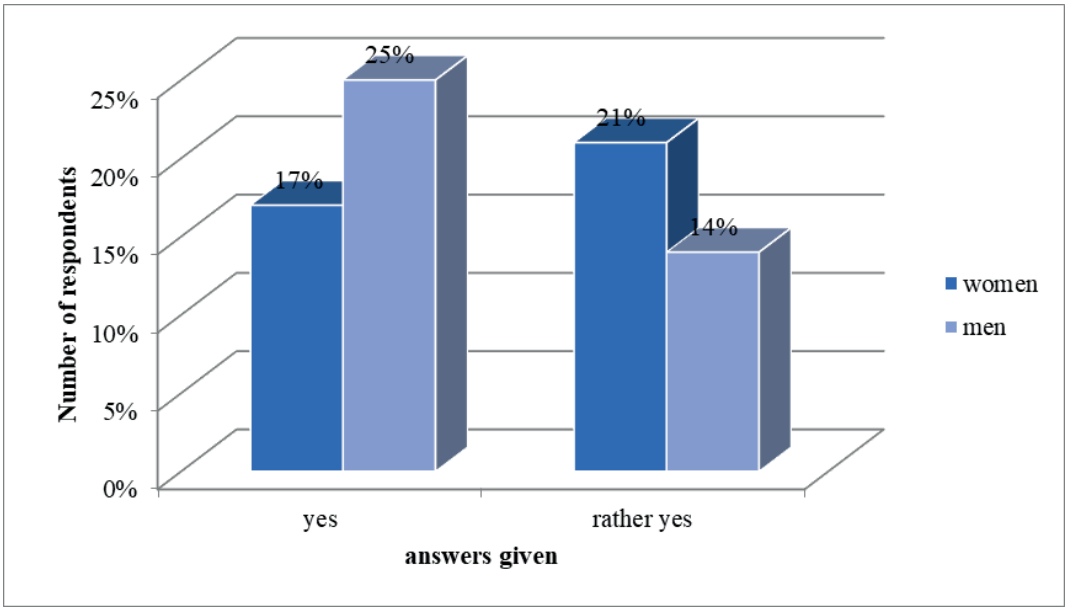

Figure 6 *Percentage of respondents who feel safe on the road in Greater Poland province by gender*

should be addressed. To the question "Does the condition of road infrastructure affect traffic safety?" respondents answered to question 12 of the survey questionnaire. Total of 85% of respondents believe that well-maintained and developed infrastructure has an impact on the traffic safety. Furthermore, only one in four respondents does not feel safe in traffic in Greater Poland (question 13 of the survey). Figure 6 shows the percentage distribution of respondents who feel safe in traffic in Greater Poland by gender.

Figure 6 shows that men are more decisive and 25% of them answered without hesitation that they feel safe in traffic in Greater Poland. Only 14% of them answered "rather yes." Women, on the other hand, are not so decisive, as a higher percentage - 21% - marked the answer "rather yes." It can be seen from the above that hypotheses three and four are confirmed. Respondents from Greater Poland believe that the state of road infrastructure influences the traffic safety and that they feel safe (77% of responses).

The last specific question was about monitoring roads. Respondents believe that roads should be monitored (70%). The results of affirmative responses by gender are similar. Both 140 women (51%) and 126 men (49%) believe that all roads in Greater Poland should be continuously monitored. They have in mind, among other things, sectional speed measurements, a network of speed cameras and the use of unmarked police cars with recording devices. In connection with such a response, the fifth specific hypothesis is confirmed. A negative answer was given by 17% of respondents, and 13% of respondents evaded answering.

3 Summary

Transportation infrastructure is one of the most important factors in a country's economic development. As already written, Poland's road infrastructure improved after Poland's accession to the European Union in 2004, as well as before 2012, when Poland began hosting the Euro 2012 European Football Championships. This event necessitated the expansion of the national road network and the modernization of existing roads to enable fast connections to neighboring countries, airports and stadiums where the soccer matches were to be played.

The development of the road infrastructure plays an important role in society. It is worth noting that Poland is striving to bring this infrastructure up to European Union standards. The road transport in EU countries plays an important role, and the adaptation of Polish roads to European requirements promotes international exchange. The development of highways and expressways positively influences the inflow of foreign investment and promotes the development of industry and services. The mobility of the labor force is also increasing, and thus unemployment is falling. The consequence is an improvement in the competitiveness of the Polish economy. All this allows to conclude that investment in the road infrastructure is a key element, ensuring the socio-economic development of the country.

The considerations undertaken, unfortunately, do not exhaust the entire issue of the road safety, but identify some of the most important factors affecting this level. The analysis of the level of the state of road infrastructure in Greater Poland, carried out and compiled in this article, indicates its upward trend. However, its further development is advisable, of course. The EU funds obtained by the Greater Poland region are only a supplement to national outlays, it is also necessary for local authorities to act. Increase their activity to obtain additional funds for the road infrastructure.

In conclusion, the analysis shows that drivers in Greater Poland recognize the changes taking place in the state of road infrastructure in Poland. According to respondents, these are the changes for the better, and this is true regardless of whether they were asked about pavement, signage, parking lots, toilets or the road network. They see the biggest positive changes over the past 10 years in pavement, and the smallest in infrastructure. Respondents also believe that the state of the road infrastructure affects the traffic safety and that they feel safe on the road. A significant number of respondents also believe that all roads in the Greater Poland province should be monitored, which may be a rather difficult task to accomplish. The only specific hypothesis that was not confirmed is hypothesis two. Residents of Greater Poland believe that road managers should not stop developing and improving road infrastructure. In addition, a large group of respondents, moved by motor vehicle only a few times a week, most likely to travel to work with other company employees in one vehicle or use public transportation. The largest group, 171 people (45%), are passengers in a private car. In connection with this answer, the posed idea was that the respondents move, for example, to work in several people is verified.

Grants and funding

The authors received no financial support for the research, authorship and/or publication of this article.

Conflicts of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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