

Review article

Road traffic safety analysis on the example of selected national roads in the Lubelskie Voivodeship

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INFORMATION

Article history:

Submitted: 27 March 2020

Accepted: 19 October 2020

Published: 15 September 2021

ABSTRACT

The article shows the essence of road safety in the Lubelskie Voivodeship on the example of two longest and most dangerous No. 19 and 74 national roads running through the voivodeship. The article aims to diagnose the current state of road safety in the Lubelskie Voivodeship and identify opportunities for its improvement. The statistical data of the Central Statistical Office in Lublin, annual reports on road accidents of the Police Headquarters in Warsaw, reports of the National Road Safety Council, and documents of the General Directorate for National Roads and Motorways Branch in Lublin were used to analyze the safety. The analysis of the statistical documents allowed the conclusion that ten national roads run through the Lubelskie Voivodeship. Roads No. 9, 17, and 74 are the longest ones. However, on a national scale, roads No. 19 and 74 are of great importance to road safety. It has been observed that the number of road accidents in the Lubelskie Voivodeship is decreasing year by year; thus, the number of accident victims is also falling. The national road No. 19 remains the most dangerous. Passenger car drivers most frequently caused road accidents since they did not adopt the speed to road conditions or obey the right of way. The Provincial Road Safety Improvement Program in Lublin assumed a significant reduction in the number of victims killed and injured on the roads. Unfortunately, after analyzing the statistical data over the years, it can be stated that even though the assumed goal was not achieved, the accident victim rate improved.

KEYWORDS

safety, road traffic, road accidents



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Introduction

Safety is an essential issue in road traffic. In the literature, it can be defined as a state in which the task is to protect life, health, property, other values against actions that pose a threat, and the principles of coexistence in society and relationships that are regulated by legal norms [1]. W. Kitler defines safety as the situation of an individual, the state of affairs that allows them to feel safe, i.e., free and protected against potential or real threats, and sure of tranquil existence and development, with the help of all available means, as well as act

creatively for achieving such a state [2]. According to R. Zięba, in the general social sense, security includes securing the needs of existence, survival, certainty, stability, identity (identity), independence, protection of the level and quality of life. While being the overriding need of human and social groups, security is at the same time a basic need of states and international systems, and its lack causes anxiety and a sense of threat [3]. However, according to the Dictionary of National Security Terms, security is a kind of guarantee of society's survival and development. It is an unstable state that requires constant care, gives a sense of confidence, guarantees the preservation of such a state, and gives opportunities for development [4].

Road safety

The term road safety covers mainly the subject of ensuring safety to road users (including pedestrians), mainly on roads, in residential areas, and traffic zones. The effects of disruptive events can determine road safety. Road accidents are most often reported along with the number of people who died or were injured in incidents and collisions [5]. According to Z. Szmidt, road safety is a factual state that enables road users to participate in it without endangering the life, health, and property of individuals, regardless of the cause of its violation [6]. Similarly, K. Rajchel believes that road safety is the real state of affairs on public roads which enables – without endangering for any reason – the normal functioning of the locomotion, in particular preserving life and exercising individuals' subjective rights for all road users [7]. Road safety will be a set of applicable rules for moving on the roads, and it is also a field of knowledge that deals with shaping proper behavior and road conditions. This term is related to the elements or issues related to road traffic supervision, traffic organization, driver training and examination, transport psychology, medical rescue, technical condition and requirements for vehicles, roads, and signage, and promoting the desired behavior in road users [8].

1. Roads in the Lubelskie Voivodeship

According to the National Road Safety Council data, the area covered by the Lubelskie Voivodeship is 25,122 km², while in 2018, the number of inhabitants was 2,121.6 thousand, and the length of public roads was 36,997 km. Table 1 shows the length of roads by category in the Lubelskie Voivodeship in 2014-2018.

When analyzing the data in Table 1, it can be noticed that the number of roads in the Lubelskie Voivodeship has increased in the last five years. In 2014, the length of all roads was 34,263 km, and compared to 2018, this number increased by 2,734 km. Mostly commune and voivodeship roads are built, while a decrease in the number of kilometers of national roads can be observed. The reason for this may be the fact that commune self-governments obtain funds from EU programs for the construction of new roads belonging to the commune category.

According to the General Administration of the National Roads and Motorways Directorate (GDDKiA) Branch in Lublin and the state as of 04/12/2019, the national road network total length in the Lublin Voivodeship is 1,055.381 km, while the GDDKiA manages 1,006.091 km of the road networks [10]. Table 2 presents the list of national roads in the General Administration of the National Roads and Motorways Directorate in Lublin.

When analyzing the data from Table 2, it can be concluded that ten national roads, No. 2, 12, 17, 19, 48, 63, 68, 74, 76, and 82, run through the Lubelskie Voivodeship. The longest national road, No. 19, is 193,515 km long and has 15,837 km-long dual carriageways. The entire road connects the state border with Belarus in Kuźnica with the state border with Slovakia

Table 1. Length of roads by category in the Lubelskie Voivodeship in 2014-2018

Road category	Road length in km				
	2014	2015	2016	2017	2018
national	1 077	1 104	1 086	1 090	1 076
voivodeship	2 218	2 217	2 241	2 254	2 259
powiat	10 626	10 626	10 618	10 631	10 612
commune	20 342	21 029	22 265	22 526	23 050
Total length of roads	34 263	34 971	36 210	36 501	36 997

Source: Own study based on [9].

Table 2. List of national roads in the GDDKiA Administration in Lublin

Road number	Route	Road length (km) in the Lubelskie Voivodeship	
		in total	including dual carriageway sections
2	state border–Świecko–Pniewy–Poznań–Konin–Warszawa–Siedlce–Terespol–state border	62,338	2,195
12	state border–Błaszki–Sieradz–Łask–Piotrków Trybunalski–Sulejów–Opoczno–Radom–Zwolen–Puławy–Kurów–Lublin–Piaski–Chełm–Dorohusk–state border	133,281	64,119
17	Warszawa (Zakręt)–Garwolin–Ryki–Kurów–Kublin–Piaski–Krasnystaw–Zamość–Tomaszów Lubelski–Hrebennie–state border	172,188	56,927
19	state border–Kuźnica–Białystok–Siemiatycze–Międzyrzec Podlaski–Kock–Lubartów–Lublin–Kraśnik–Janów Lubelski–Nisko–Rzeszów	193,515	15,837
48	Tomaszów Mazowiecki–Białobrzegi–Głowaczów–Kozienice–Nowe Słowiki–Sieciechów–Opactwo–Dęblin–Moszczanka–Kock	47,690	
63	state border–Węgorzewo–Giżycko–Pisz–Łomża–Zambrów–Sokołów Podlaski–Siedlce–Radzyń Podlaski–Wisznice–Sławatycze–state border	108,101	
68	state border–Kukuryki–Wólka Dobryńska	5,197	
74	Sulejów–Żarnów–Kielce–Opatów–Ożarów–Annopol–Kraśnik–Janów Lubelski–Frampol–Gorajec–Szczepieszyn–Zamość–Hrubieszów–Zosin–state border	164,353	0,105
76	Wilga–Garwolin–Stoczek Łukowski–Łuków	37,578	
82	Lublin–Cyców–Włodawa–state border	81,850	1,444
Total		106,091	140,627

Source: [10].

in Barwinek. The second longest road No. 17, which is 172,188 km with dual carriageways of 56,927 km. The entire road connects Warsaw with the state border with Ukraine in Hrebennie. The third longest national road, No. 74, goes through the Lublin Voivodeship. It is 164,353 km

long, and its dual carriageway sections are only 0.105 km. It connects the Junction in Wieluń with the border crossing with Ukraine in Zosin. The shortest national road running through the Lubelskie Voivodeship is No. 68, its length is 5,197 km. It connects the border crossing with Belarus in Kukuryki with the national road No. 2 in Wólka Dobryńska. Figure 1 shows a map of national roads running through the Lubelskie Voivodeship.



Fig. 1. Map of national roads in the Lubelskie Voivodeship
Source: [10].

2. Means of transport in the Lubelskie Voivodeship

Means of transport are significant in the field of security. According to the Central Statistical Office in Lublin, 1,762,835 vehicles were registered in Lublin in 2018, which is 3.14% more than in 2017, and 33.32% more than in 2010. Considering the type of registered vehicles, in the Lubelskie Voivodeship in 2018, the following were registered: passenger cars in the amount of 1,256,265, buses – 7,192, trucks and tractors – 188,295, ballast and agricultural

tractors – 216,463, and motorcycles – 94 620. The data in Table 3, which presents the vehicles registered in the Lubelskie Voivodeship in 2010-2018, shows a growing tendency over the last years with more and more of each of these types of vehicles registered.

Table 3. Vehicles registered in the Lubelskie Voivodeship in 2010-2018

Vehicle type	2010	2015	2016	2017	2018
Passenger cars	905627	1100685	1156110	1205507	1256265
Buses	6198	6793	6985	7072	7192
Trucks and tractors	145217	170771	176975	182114	188295
Ballast and agricultural tractors	191768	207889	211462	214262	216463
Motorcycles	65870	81065	85625	90068	94620
Total	1322252	1576418	1646850	1709175	1762835

Source: [11].

In the Lubelskie Voivodeship, the national roads, which are transit routes, are also used by vehicles other than registered ones. It is evidenced by the General Traffic Measurement (traffic volume) survey conducted by the General Directorate for National Roads and Motorways throughout Poland. Such surveys are carried out on selected sections of the existing road network every five years and last the entire calendar year. The last one was made in 2015, and earlier in 2010. The categories of vehicles registered during the USAR Team included motorcycles, passenger cars, light trucks (vans), trucks without trailers, trucks with trailers/semi-trailers, buses, farm tractors, and bicycles. Now, the traffic volume is also being measured, and the results will be known at the end of 2021. Therefore, referring to the available research results, in 2015, the average daily traffic volume on national roads in the Lubelskie Voivodeship was 8,100 vehicles/day, which was an increase of 8.59% compared to the traffic intensity in 2010, which amounted to 7,459 vehicles/day. However, taking into account the type of roads, in 2015, the average number of vehicles traveling on national roads of an international nature was 10,660 vehicles/day, which was an increase by 5.93% compared to the measurement from 2010. On the other roads, the traffic intensity in 2015 was 6,833 vehicles/day, which was an increase by 10.12% compared to 2010 [12]. Table 4 shows the average daily vehicle traffic in the Lubelskie Voivodeship in 2010-2015 alongside the change index.

Table 4. Average daily vehicle traffic in the Lubelskie Voivodeship in 2010-2015

Traffic intensity on national roads in the Lubelskie Voivodeship (SDR)								
international (vehicles/day)			others (vehicles/day)			total (vehicles/day)		
2010	2015	rate of change in %	2010	2015	rate of change in %	2010	2015	rate of change in %
10028	10660	5.93	6205	6833	10.12	7459	8100	8.59

Source: Own study based on [12].

3. Analysis of road accidents and their causes in the Lubelskie Voivodeship

According to article 177 of the Criminal Code, anyone who, even if unintentionally violating the safety rules in the land, water, or air traffic, unintentionally causes an accident in which another person suffers bodily injuries specified in article 157 §1, namely, violation of an organ of the body or health impairment other than specified in Article 156 §1, i.e., severe damage to health in the form of depriving a person of sight, hearing, speech, fertility, other severe disability, serious incurable or long-term disease, a genuinely life-threatening disease, permanent mental illness, total or significant permanent incapacity to work in the profession or permanent, significant disfigurement or distortion of the body. A human's death may be the consequence of the act, as mentioned earlier [13]. According to W. Rychter and E. Rzeszkowicz, a road accident is a collision with another vehicle, a human, or a solid obstacle, overturning or driving off the road of a motor vehicle, falling out of a motor vehicle, an event inside the vehicle. The collision must begin or end on a public road and vehicle traffic [14]. A. Bachrach described a road accident and, according to him, the term is as follows: it takes place on the road or at least begins on the road, at least one vehicle in motion is involved in it, and it causes at least bodily injury or material damage [15]. On the other hand, according to W. Kotowski, a road accident is an event consisting in a collision of at least two vehicles, as well as obstacles on the road or hitting a road participant, who has suffered damage in the form of bodily injury that violates the functioning of the organism or health disorder [16].

According to the Polish Road Safety Observatory annual report, in 2019, there were 1,139 road accidents in the Lubelskie Voivodeship, including 170 fatalities, which is 8 per 100,000 people, and 1,233 injured, which is 58.4 per 100 thousand people [17]. The Central Statistical Office in Lublin gave information that there were 1,216 road accidents in the Lubelskie Voivodeship in 2018, which gives seven road accidents per 10,000 motor vehicles. Taking the victims of road accidents into account, 179 people died in the Lubelskie Voivodeship in 2018, which is 8.4 per 100,000 people, while 1286 people were injured, i.e., 60.6 per 100 thousand people. The total number of road accident victims in the Lubelskie Voivodeship was 1,465 people in 2018. Table 5 shows the number of road accidents and their victims in the Lubelskie Voivodeship in 2010-2019.

When analyzing the data in Table 5, it can be seen that the number of road accidents in the Lubelskie Voivodeship is decreasing year by year. Unfortunately, in 2018 the number of fatalities increased by 22 people compared to the previous year, and in 2019 it fell indiscriminately by 9. The number of injured people is decreasing every year. Therefore, it can be noted that in 2019 the number of accidents decreased by 6.76% compared to the previous year and in 2018 by 2.14% compared to the year before. Given the road accident victims (people in total killed and injured) in 2019 in the Lubelskie voivodeship, there were fewer of them by 4.42% compared to the previous year, while in 2018, the total number of accident victims was 8.46% less than the year before.

According to the Reports of the Police Headquarters in Warsaw, in 2019, in the Lublin Voivodeship, the death rate per 100 accidents was 14.9 and thus ranked third in Poland, just behind the Kujawsko-Pomorskie Voivodeship, where the indicator was 22.4, and the Podlaskie Voivodeship, where the death rate per 100 accidents was 18.1. According to the same report, the most dangerous roads in terms of road accidents in the Lubelskie Voivodeship are the national roads No. 19 and 74. The roads mentioned are crucial for shaping road safety in Poland and, therefore, data concerning accidents on these roads were analyzed. Table 6 shows the number of road accidents on national roads No. 19 and 74 in the years 2014-2018.

Table 5. Road accidents and their victims in the Lubelskie Voivodeship in 2010-2019

Year	2010	2015	2016	2017	2018	2019
Total accidents	1820	1252	1262	1242	1216	1139
for 10,000 motor vehicles	14	8	8	7	7	No data
Accident victims	2544	1624	1662	1589	1465	1403
Killed	256	188	178	157	179	170
per 100 thousand population	11.7	8.8	8.3	7.4	8.4	8.0
Injured	2288	1436	1484	1432	1286	1233
per 100 thousand population	104.9	67	69.5	67.3	60.6	58.4

Source: Own study based on [11; 17].

The data in Table 6 on the national road No. 19 allows the conclusion that the most accidents occurred in 2015, their number was 192, and each year it decreased, because in 2018 there were 36 fewer accidents, and their number was 156. Unfortunately, in 2019 there was an increase by 33 road accidents. Therefore, it can be noticed that in 2015-2018 the number of accidents on the national road No. 19 decreased by 23.07%. However, the sudden increase was 21.15% in 2019. Considering the number of people killed in road accidents, most people died in 2019, but in 2014-2016 the number of fatalities decreased, and in 2016 it amounted to 25 people. From 2017, an upward trend can be assumed, as in 2018, the number of fatalities in road accidents was 32, and in 2019 – 45 people. In the case of injured in road accidents, in 2017, there were the most injured people, their number was 259, and the fewest injured in 2018 – 179. When analyzing the data on the national road No. 74, it can be concluded that most road accidents were on the mentioned road in 2016 – 204. In 2017, there were almost half of them, and their number was 103, while in 2018, the number of accidents on the road began to grow and amounted to 110; the year 2019 saw 148 accidents on that road. Taking into account those killed in road accidents, most people (33) died in 2016. The fewest (8)

Table 6. Road accidents on national roads No. 19 and 74 in 2014-2018

Year	National road No.					
	19			74		
	accidents	killed	injured	accidents	killed	injured
2014	186	37	237	146	32	194
2015	192	28	196	159	23	222
2016	168	25	242	204	33	293
2017	176	28	259	103	8	131
2018	156	32	179	110	10	140
2019	189	45	219	148	26	189

Source: Own study based on [18].

people died in 2017, 10 in 2018, while in 2019, the number of fatalities increased to 26 people, which means 260%. In 2016, 293 people were injured in accidents, which is the highest number in the last six years. In 2017, the number of people injured in road accidents was the lowest – 131, while in 2018 – 140. In 2019, there was a growth of up to 189 injured. While comparing the data from the above table for both the above-mentioned national roads, it can be concluded that in 2016 alone, there were 36 more accidents on the road No. 74 than on the road No. 19. When it comes to the number of fatalities, also in 2016 alone, there were eight on the road No. 74 than on the road No. 19. As for people injured in road accidents, it can also be noted that only in 2016 there were 51 more people on the road No. 74 than on the road No. 19. In the remaining years, it is possible to a reverse situation, i.e., there were more road accidents and more killed and injured on the national road No. 19 than on the national road No. 74. Thus, when comparing the two national roads running in the Lubelskie Voivodeship, namely the national road No. 19 and the national road No. 74, it can be concluded that road No. 19 is more dangerous in terms of accidents on the road. Table 7 displays the percentage share of road accidents on the national roads No. 19 and 74 to the total number of accidents in the Lubelskie Voivodeship in 2014-2018.

Following the data in Table 7, one can conclude that since 2016 there has been a smaller number of accidents in total in the Lubelskie Voivodeship. Considering the percentage share of accidents on the national road No. 19 to the total number of road accidents in the Lubelskie Voivodeship, it can be noted that in 2015 the share of accidents was the highest – 15.34% of the total. In 2017, the share of accidents was 14.17% total; in 2018, the percentage of accidents decreased and amounted to 12.83%, while it increased to 16.59% of the total in 2019. Analysis of the percentage of accidents on the national road No. 74 to the total number of road accidents in the Lubelskie Voivodeship proves that in 2016 the percentage of accidents was the highest, i.e., 16.16% of the total accidents, while the lowest proportion of accidents on the road in question was in 2017 and it amounted to 8.29% of all road accidents in the Lubelskie Voivodeship. After comparing the two mentioned national roads, it can be noticed that more road accidents occur on the national road No. 19. Therefore, the percentage share of accidents on this road in the total road accidents in the Lubelskie Voivodeship is higher than on the national road No. 74.

Table 7. Percentage of road accidents on national roads No. 19 and 74 to the total number of road accidents in the Lubelskie Voivodeship in 2014-2018

Year	National road No.				total number of accidents in the Lubelskie Voivodeship
	19		74		
	number of accidents	% to total	number of accidents	% to total	
2014	186	13.21	146	10.37	1408
2015	192	15.34	159	12.70	1252
2016	168	13.31	204	16.16	1262
2017	176	14.17	103	8.29	1242
2018	156	12.83	110	9.05	1216
2019	189	16.59	148	12.99	1139

Source: Own study based on [18].

When delving into the issue of road accidents, it is worth paying attention to the reasons they arose. Table 8 shows the causes of road accidents in the Lubelskie Voivodeship in 2015-2018.

When analyzing the data included in Table 8, it can be seen that in 2015-2018 in the Lubelskie Voivodeship, the road accidents were mainly caused by vehicle drivers and then by pedestrians. Drivers most frequently did not adjust their speed to the prevailing road conditions, did not obey the right of way, and behaved incorrectly towards pedestrians. As for the type of vehicle, it can be concluded that accidents on the road were most often caused by passenger car drivers, followed by cyclists and truck drivers. Intoxicated road users caused about 14% of road accidents in the Lubelskie Voivodeship. Most of them drove passenger cars under the influence of alcohol, then road accidents due to intoxicated pedestrians and cyclists.

Table 8. The causes of road accidents in the Lubelskie Voivodeship in 2015-2018

Specification	2015	2016	2017	2018
Accidents	1252	1262	1242	1216
Due to the fault of vehicle drivers, including:	1065	1105	1073	1039
speed not adjusted to traffic conditions	290	305	284	265
right of way not respected	260	249	260	255
incorrect overtaking	61	48	54	66
incorrect behavior towards pedestrians	151	145	132	136
failure to maintain a safe distance between vehicles	61	82	75	65
Due to the fault of pedestrians	116	108	111	114
including careless entering the road	67	66	69	66
Other	71	49	58	63
Driving vehicles responsible for accidents:	1065	1105	1073	1039
Passenger cars	795	826	804	777
Motorcycles	42	51	43	48
Bicycles	80	81	72	81
Mopeds	45	30	33	25
Trucks	68	88	77	70
Other vehicles	35	29	44	38
Accidents involving drunk road users, including those caused by intoxicated ones:	173	132	149	123
Drivers of	89	78	86	80
passenger cars	65	55	55	56
motorbikes	7	7	8	4
bicycles	10	7	8	10
mopeds	3	5	10	6
trucks	1	2	3	1
other vehicles	3	2	2	3
Pedestrians	28	25	23	43

Sources: [11].

4. Evaluation of road safety in the Lubelskie Voivodeship

In the Lubelskie Voivodeship, road safety is supervised by the Voivodeship Road Safety Council in Lublin. It was established on June 20, 1997, by the Act on Road Traffic Law (Journal of Laws of 2012, items 1137 and 1448) and operates at the Marshal of the Lubelskie Voivodeship as a voivodeship coordination team for road safety. Its tasks include developing a strategy for improving road safety in the Lubelskie Voivodeship based on the National Road Safety Program 2013-2020, developing regional road safety improvement programs, issuing opinions on draft acts of local law in the field of road safety, approving expenditure plan of voivodeship road traffic centers in part intended for improving road safety, initiating education and training of public administration staff in the field of road safety, initiating inter-voivodeship cooperation, co-operating with the National Road Safety Council and with relevant social organizations and non-governmental institutions, initiating educational and information activities, as well as analyzing and evaluating the actions taken. The vision of improving road safety in the Lubelskie Voivodeship includes "VISION 0", which in the long-term means the complete elimination of accident victims, i.e., people killed and injured on the roads of the Lubelskie Voivodeship. However, by the end of 2020, this vision includes reducing fatalities by 50% compared to 2010, i.e., no more than 128 fatalities in 2020 and no more than 141 in 2019. Besides, it assumes a reduction in the number of seriously injured by 40% compared to 2010, i.e., no more than 504 seriously injured in 2020 and no more than 538 in 2019 [19].

When assessing the improvement of road safety, it can be noted that at the end of 2019, the number of fatalities in the Lubelskie Voivodeship was 170, while the number of injured was 1,233. Thus, it is a significant improvement in road safety in the Lubelskie Voivodeship. Nonetheless, the goals set in the program for 2019 were not pursued. Forty-two more than assumed in the program people died on the roads, and 695 more people were injured.

According to the Road Safety Strategy for 2014-2020, actions to improve road safety in the Lubelskie Voivodeship are to be based on five pillars [20]:

1. Management system – a regional road safety observatory is to be established, and the current staff is to be properly trained. The development of the management system will allow thorough monitoring of the program operation. After each year, a report on the previous year and a detailed program for the next 12 months is to be prepared.
2. Safe road users – educating the society about safety and better contact with the society. Greater emphasis on pedestrian protection, special precautions in the vicinity of schools.
3. Safe roads – investments in speed bump infrastructure and introducing safe solutions in terms of traffic organization, also taking care of safe road surroundings. The entire road networks are also to be transformed.
4. Safe vehicles – optimization and intensification of inspections of the vehicle technical condition performed by the Police and the Road Transport Inspection. Additionally, modern safety systems in vehicles are to be promoted.
5. Effective rescue and post-accident care system – actions of rescue services are to be streamlined and coordinated. Increased supervision is to be introduced at especially dangerous points. A system of assistance to road accident victims is also to be created.

Conclusions

In summary, security is a state in which a specific entity can feel free and safe from all threats. This subject must have a tranquil existence and ensured the possibility of development. Thus, road safety is designed to protect each road user with applicable rules and under road traffic regulations. Ten national roads run through the Lubelskie Voivodeship; two of them, numbered 19 and 74, cause the most significant number of accidents, resulting in deaths or injuries. The accident rate on these roads is so large that they are classified as the most dangerous roads in Poland. Comparing the roads as mentioned above, the national road No. 19 is more dangerous. From the statistical data, it can be concluded that the number of accidents, and consequently, the number of deaths, is decreasing each year on Lublin roads. The accidents were most often caused by the vehicle drivers' fault, who did not adjust the speed to the driving conditions, and the fault of pedestrians. The subject of the impact of road traffic on road accidents should be taken in more detail. Based on the data collected so far, it can be stated that there are more and more vehicles on the roads, but in the measurement years, there was a downward trend in road accident rates in the Lubelskie Voivodeship. Due to the General Road Traffic Measurement's ongoing studies, a thorough analysis of the impact of road traffic on road safety on individual national roads running through the Lubelskie Voivodeship should be made. The Voivodeship Safety Improvement Program assumed a reduction in the number of road fatalities and injuries. Unfortunately, the set goal was not achieved, which means that in 2019 more people than expected were killed and injured on the Lubelskie Voivodeship roads.

Acknowledgement

No acknowledgement and potential founding was reported by the author.

Conflict of interests

The author declared no conflict of interests.

Author contributions

The author contributed to the interpretation of results and writing of the paper. The author read and approved the final manuscript.

Ethical statement

The research complies with all national and international ethical requirements.

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References

1. Czupryński A. *Bezpieczeństwo w ujęciu teoretycznym*. In: Czupryński A, Wiśniewski B, Zbojna J. *Bezpieczeństwo. Teoria – badania – praktyka*. Józefów: Wydawnictwo CNBOP-PIB; 2015.
2. Kitler W. *Bezpieczeństwo narodowe RP. Podstawowe kategorie, uwarunkowania, system*. Warszawa: Akademia Obrony Narodowej; 2011.
3. Zięba R. *Pojęcie i istota bezpieczeństwa państwa w stosunkach międzynarodowych*. Sprawy Międzynarodowe. 1989;10.
4. *Słownik terminów z zakresu bezpieczeństwa narodowego*. Warszawa: Akademia Obrony Narodowej; 2002.

5. Ogrodniczak M, Ryba J. *Bezpieczeństwo ruchu drogowego w świetle wybranych aktów prawnych*. Bezpieczeństwo i Ekologia. 2016;6.
6. Szmidt Z. *Administracyjnoprawna działalność MO w ochronie bezpieczeństwa i porządku publicznego*. Warszawa: Departament Szkolenia i Doskonalenia Zawodowego MSW; 1981.
7. Jurgilewicz M, Nowakowski Z, Rajchel J, Rajchel K. *Prawne aspekty bezpieczeństwa ruchu drogowego*. Warszawa: Towarzystwo Naukowe Powszechne; 2011.
8. Zbyszyński M. *Bezpieczeństwo niechronionych uczestników ruchu drogowego – stan obecny i przyszły*. Transport Samochodowy. 2017;1:49-61.
9. *Raporty Krajowej Rady Bezpieczeństwa Ruchu Drogowego*, [online]. Krajowa Rada Bezpieczeństwa Ruchu Drogowego. Available at: <http://www.krbrd.gov.pl/pl/test.html> [Accessed: 8 May 2019].
10. *Sieć dróg krajowych w woj. lubelskim*, [online]. Generalna Dyrekcja Dróg Krajowych i Autostrad Oddział w Lublinie. Available at: <https://www.gddkia.gov.pl/pl/333/siec-drog-krajowych> [Accessed: 8 May 2019].
11. *Transport. Telekomunikacja*, [online]. Główny Urząd Statystyczny w Lublinie. Available at: https://lublin.stat.gov.pl/files/gfx/lublin/pl/defaultstronaopisowa/1105/1/1/xvii_3.pdf [Accessed: 8 May 2019].
12. *Generalny Pomiar Ruchu*, [online]. Generalna Dyrekcja Dróg Krajowych i Autostrad. Available at: <https://www.gddkia.gov.pl/pl/1231/generalny-pomiar-ruchu> [Accessed: 9 May 2019].
13. Ustawa z dnia 6 czerwca 1997 r. – Kodeks karny (Dz. U. 1997 Nr 88 poz. 553 z późn. zm.).
14. Rychter W, Rzeszkowicz E. *Wypadki drogowe*. Warszawa: Ministerstwo Obrony Narodowej; 1957.
15. Bachrach A. *Elementy ogólnej profilaktyki wypadków drogowych*. Warszawa: Wydawnictwa Szkolne i Pedagogiczne; 1981.
16. Kotowski W. *Prawne problemy ruchu drogowego. Komentarz*. Warszawa: Wydawnictwo C.H. Beck; 2007.
17. Polskie Obserwatorium Ruchu Drogowego. *Raport 2019*, [online]. Instytut Transportu Samochodowego. Available at: <https://www.obserwatoriumbrd.pl/resource/6e0b633f-026c-40a9-b0d5-3e7e113e67ab:JCR> [Accessed: 14 May 2019].
18. *Wypadki drogowe – Raporty Roczne*, [online]. Komenda Główna Policji. Available at: <http://statystyka.policja.pl/st/ruch-drogowy/76562,Wypadki-drogowe-raporty-roczne.html> [Accessed: 14 May 2019].
19. *Lubelski Program Bezpieczeństwa Ruchu Drogowego na lata 2014-2020*, [online]. Wojewódzki Ośrodek Ruchu Drogowego w Chełmie. Available at: <http://www.word.chelm.pl/images/kampanie-brd/program.pdf> [Accessed: 15 May 2019].
20. Dolecki L. *Lubelskie. Najniebezpieczniejsze województwo ma plan poprawy BRD*, [online]. BRD24.pl Portal o Bezpieczeństwie. 30.11.2014. Available at: <http://www.brd24.pl/spoleczenstwo/lubelskie-najniebezpieczniejsze-wojewodztwo-plan-poprawy-brd/> [Accessed: 17 May 2019].

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Analiza bezpieczeństwa w ruchu drogowym na przykładzie wybranych dróg krajowych w województwie lubelskim

STRESZCZENIE

W artykule ukazano istotę bezpieczeństwa w ruchu drogowym w województwie lubelskim na przykładzie dwóch z najdłuższych oraz najbardziej niebezpiecznych dróg krajowych o numerach 19 i 74, które przebiegają przez wymienione województwo.

Celem artykułu jest diagnoza aktualnego stanu bezpieczeństwa w ruchu drogowym w województwie lubelskim oraz określenie szans poprawy tego bezpieczeństwa. Do analizy bezpieczeństwa wykorzystano dane statystyczne Głównego Urzędu Statystycznego w Lublinie, Raporty roczne o wypadkach drogowych Komendy Głównej Policji w Warszawie, Raporty Krajowej Rady Bezpieczeństwa Ruchu Drogowego oraz dokumenty Generalnej Dyrekcji Dróg Krajowych i Autostrad Oddział w Lublinie. Po przeprowadzeniu analizy dokumentów statystycznych, można stwierdzić, że przez województwo lubelskie przebiega dziesięć dróg o zasięgu krajowym. Najdłuższymi drogami są te o numerach 19, 17 i 74. Jednak w skali kraju duże znaczenie jeśli chodzi o bezpieczeństwo w ruchu drogowym mają poddane analizie drogi 19 i 74. Zaobserwowano, że w województwie lubelskim liczba wypadków drogowych z roku na rok spada, zatem liczba ofiar wypadków również ulega zmniejszeniu. Najbardziej niebezpieczną pozostaje droga krajowa 19. Wypadki drogowe najczęściej spowodowane były przez kierujących samochodami osobowymi, poprzez niedostosowanie prędkości do warunków panujących na drodze oraz nieprzestrzeganie pierwszeństwa przejazdu. W Wojewódzkim Programie Poprawy Bezpieczeństwa Ruchu Drogowego w Lublinie zakładano znaczne obniżenie liczby ofiar zabitych i rannych na drogach, niestety po analizie danych statystycznych z przestrzeni lat stwierdzić można, że nie udało się osiągnąć założonego celu, jednak wskaźnik ofiar wypadku uległ poprawie.

SŁOWA KLUCZOWE bezpieczeństwo, ruch drogowy, wypadki drogowe

How to cite this paper

Stefaniak R. *Road traffic safety analysis on the example of selected national roads in the Lubelskie Voivodeship*. Scientific Journal of the Military University of Land Forces. 2021; 53;3(201):572-84.

DOI: <http://dx.doi.org/10.5604/01.3001.0015.3410>



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