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CRITERION FOR ASSESSING THE CAUSES OF ROAD ACCIDENTS ACCORDING TO A SPECIFIC AGE GROUP OF DRIVERS IN POLAND BASED ON ROAD INCIDENTS OCCURRED IN 2020

Abstract

This research analyses the main causal factors that lead to road accidents. Particular focus has been on the demographics of drivers and in particular on the age group given that younger drivers account for the highest number of road safety-related incident/ accidents and fatalities. Other factors impacting road safety include the adequacy of the national driver training system, legislative requirements and organisational solutions for ensuring road safety. Behavioural and characteristics of drivers are considered as part of the causal analysis.

Keywords: traffic, driver, road incident, causes, effects, safety

Introduction

The occurrence of road accidents is accompanied by many different factors, such as the type and condition of the road infrastructure, traffic congestion and its organisation, the type and technical condition of vehicles, the development of scientific and technical facilities in the field of motoring, the involvement of administration in the implementation of tasks in the field road safety and many other elements more or less noticeable or palpable¹. However, the most important reason influencing

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¹ J. Rolisona [et. al.], *What are the factors that contribute to road accidents? An assessment of law enforcement views, ordinary drivers' opinions, and road accident records*, "Accident Analysis & Prevention", June 2018, Vol. 115, pp. 11-24, doi: 10.1016/j.aap.2018.02.025.

the occurrence of road accidents in the human-vehicle-road relationship is definitely the human factor². Due to the fault of human, both as a vehicle driver and being an unprotected participant in traffic, a total of over 90% of all road incidents in a given calendar year occur. When analysing this factor, attention should be paid to the age of vehicle drivers, which for years indicates a certain age group in which the highest number of accidents and consequently victims.

The study presents a statistical analysis of road accidents taking into account the age criterion of perpetrators. In terms of selecting the age group that is most often the culprit of road accidents, an attempt was made to identify and analyse the causes of the increased accident rate of a statistically selected group and to answer the following questions whether: is the fault caused by an inadequate training system and on drivers obtaining a driving license for the first time? What can be considered one of the main research problems? Or maybe not fully functional legal and disorganised solutions or even threatening road safety are the main cause of road accidents due to human factor? This question should also be treated as one of the equivalent research problems. There were also postulates *de lege lata* and *de lege ferenda* in the scope of improving the state of safety in road traffic, which should be treated as the main goal of research carried out using statistical and comparative methods as well as by means of analysis.

This comprehensive approach to analysing the causes of road accidents is a novel study on a national scale. Also, in foreign-language literature, there are rather single studies that analyse the effects of accidents depending on one specific cause. The analysis of the effects of road accidents so far has been carried out, inter alia, on the basis of three separate reasons. For example, due to speed, the research was carried out by Ci2N University of Strasbourg for the VINCI Autoroutes

² M. Jurgilewicz [et. al.], *Prawne aspekty bezpieczeństwa ruchu drogowego*, Warszawa 2011, p. 432. See M. Jurgilewicz, N. Malec, *Analiza przestępczości i bezpieczeństwa w ruchu drogowym w latach 2018-2022* [in:] *Prognozowanie kryminologiczne w wymiarze społecznym*, vol. 2: *Modele prognostyczne. Przestępczość. Wiktyimizacja. Profilaktyka*, red. B. Hołyst, N. Malec, Z.M. Wawrzyniak, Warszawa 2018, pp. 831-851; M. Jurgilewicz, *Безпека автомобілів у технічній огляд транспортних засобів*, „ВІСНИК, Науково-технічний збірник”, 2014, No. 30, pp. 389-398. See: P. A. Supel [et al.], *Edukacja i wychowanie na rzecz bezpieczeństwa i obronności – wybrane aspekty*, „Polityka i Społeczeństwo”, 2020, nr 3, pp. 180-190; M. Barć, *Planning and Organising Protection of Critical Infrastructure*, „Polityka i Społeczeństwo”, 2022, nr 2, pp. 5-10; M.J. Bednarski, *Postępowanie dyscyplinarne w Policji*, Warszawa 2010.

Foundation as the cause of road accidents³, however, due to the age of drivers – by the Ministry of Transport of Great Britain, and due to the training system – by the “British School Motoring” (one of the most famous driving schools in Great Britain). The article uses statistical data from 2020 made available by the Road Traffic Office of the Police Headquarters.

Age of drivers

Analysing the statistics of road accidents, their effects, circumstances and causes of occurrence, it can be seen that the source of the largest number of road accidents is human error as a participant in road traffic.

In 2020, the road users caused 22,712 road accidents (96.5% of the total), in which 2,350 people were killed (94.31% of all fatalities) and 25,592 were injured, 96.7% of all victims (Fig. 1).

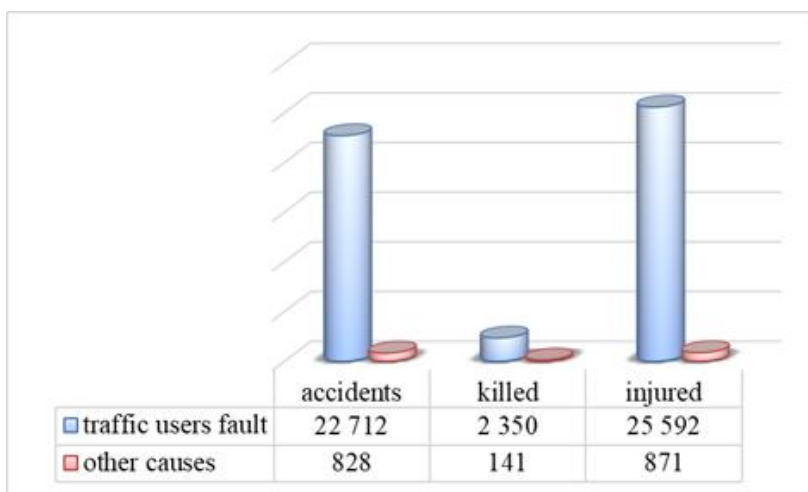


Fig. 1. Report on the occurrence of road accidents in 2020

For years, most road accidents have been caused by the fault of drivers, putting them in the first place of all statistics, “reaching” numbers exceeding ten times higher than the perpetrators of other accidents due to the fault of pedestrians and passengers (Fig. 2).

³ *Tours Mobilisés. Rapport d'activité 2020*, Vinci Autoroutes, <https://www.vinci.com> (20.12.2021).

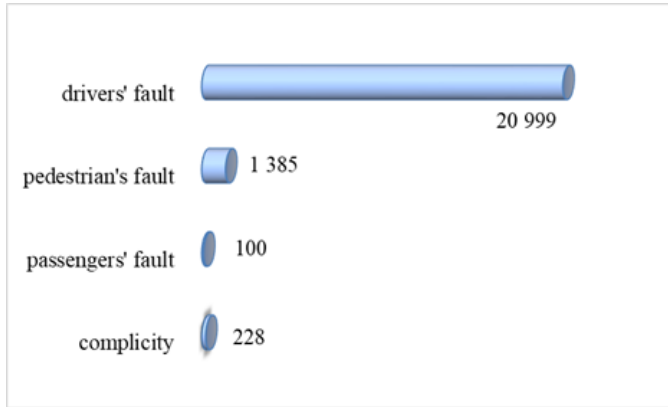


Fig. 2. Road accidents in 2020 by agency

In 2020, drivers of vehicles were the perpetrators of 20,999 road accidents, in which 24,123 people were injured and 2,020 were killed. Comparing the data from 2020 and 2019, a clear decrease in the number of road incidents and their consequences is noticeable in 2020, which was directly related to the restriction of road traffic introduced due to the SARS-CoV-2 pandemic. The reduction in road traffic has reduced the number of road incidents and their consequences.

Particular attention should be paid to the group of so-called “young drivers” between 18 and 24 years old, which has the highest rate of road accidents per 10,000 population (Fig. 3).

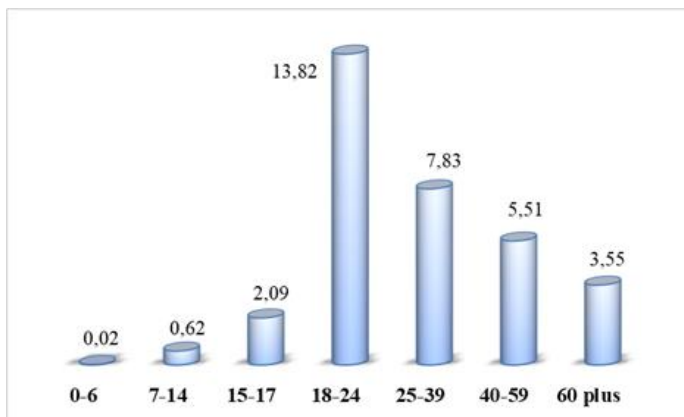


Fig. 3. Accident rate per 10,000 population by age group (2020)

In 2020, 3,774 road accidents were caused by “young drivers” aged between 18 and 24 years old, which accounted for 18% of all accidents

that were generally caused by the drivers. As a result of these events, 431 people were killed and 4,714 were injured. In addition, it should be noted that within the age group directing from 18 to 24 years of age there is also the largest number of fatal and injured victims (Fig. 4).

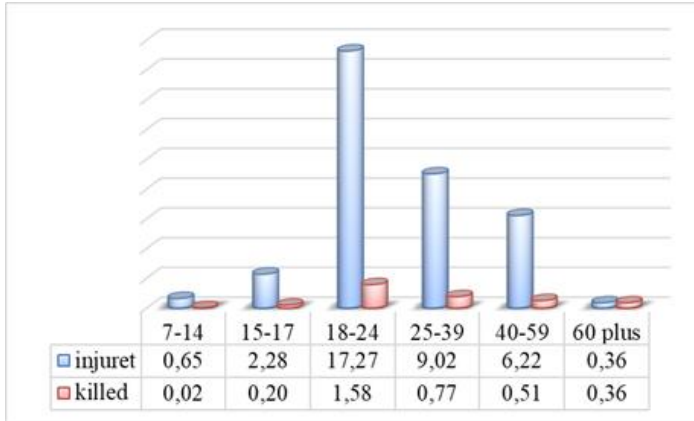


Fig. 4. Rate of deaths and injuries per 10,000 population in 2020 (by age of the perpetrators)

It is also disturbing that the number of fatalities in 2020 due to “young drivers” exceeded the number of road accidents for the first time since 2011. The main types of accidents included running into a tree – 28.2% of events, frontal collision – 20.3%, side collision – 13.1% and hitting (invading) a pedestrian – 8.3% of the total (Fig. 5).

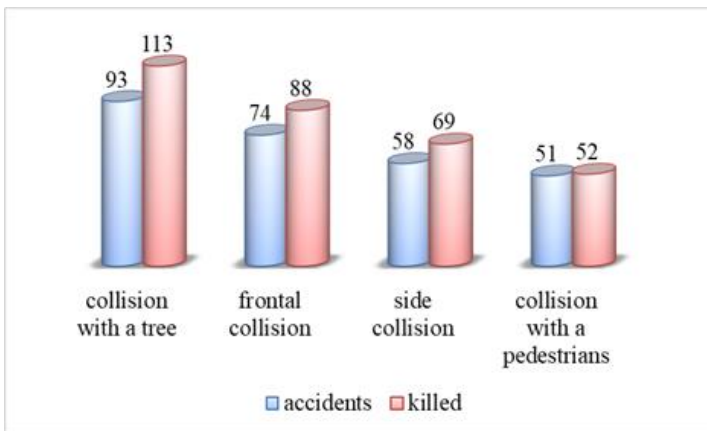


Fig. 5. Type of road accidents in 2020 with a fatal outcome caused by “young drivers” in the age range 18-24

The most common causes of accidents caused by drivers in this age group were: inadequate speed to traffic conditions, failure to give priority to crossings, incorrect or unlawful overtaking and failure to give priority to pedestrians at a pedestrian crossing (Fig. 6).

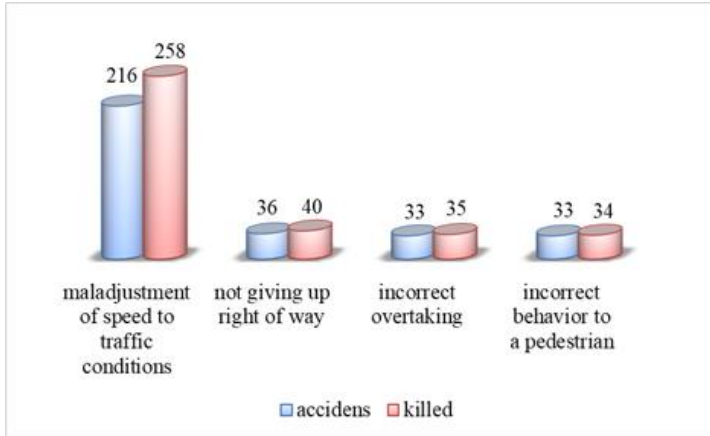


Fig. 6. The main causes of fatal accidents caused by drivers in the 18-24 age group in 2020

The main cause of road accidents in “young drivers” group was attributed to, and has been for years, the mismatch of speed to traffic conditions. Speed, as a source of road accidents depends on the class, function of the road, nature of traffic and development of the surroundings⁴. Therefore, it can be concluded that a factor threatening road safety is the lack of ability for young drivers to adapt their speed to the type of road, technical solutions and traffic solutions⁵. It should be noted that one of the reasons for drivers exceeding the speed limit is the vehicle manufacturers themselves, who are constantly working on increasing the speed of designed cars. Studies conducted on a group of young drivers indicate that they achieve driving pleasure from excessive speeding and in conditions that allow for fast driving⁶. Ergonomic studies show, however, that

⁴ R. Ziółkowski, *Speed management efficacy on national roads – early experiences of sectional speed system functioning in Podlaskie Voivodship*, “Transport Problems”, 2008, Vol. 13, Issue 2, doi: 10.20858/tp.2018.13.2.1.

⁵ K. Jamroz [et. al.], *Protection of pedestrians, speed management and safe roads construction – fundamental determinants of implementation of Vision Zero in Poland*, [in:] Materials from the 11th International Road Safety Seminar, Development of Road Innovation for Safety, Gdańsk, 17-18 of November 2016.

⁶ *Learner drivers on motorways from 4 June 2018*, UK Government, <https://www.gov.uk> (20.12.2021).

at speeds above 130 km/h. the driver of the vehicle decreases its level of perception and response time to external stimuli (road signals and other road users)⁷. This is due to reaching the biological limit of mental fitness at this speed, and especially if excessive speed is accompanied by heavy traffic. The driver of the car is obliged to constantly make choices and actions regardless of the perception and assessment of the situation. At high speeds, the probability of making a mistake increases significantly, while the possibility of corrective actions decreases⁸.

There are probably several sources contributing to “young drivers” exceeding speed limits. Undoubtedly, one of them is the lack of appropriate practical knowledge and experience, which often results in faulty judgement of road conditions and inadequate speed adjustment to these conditions. For example, during heavy rainfall, in the fog or after dark, it is much more difficult to maintain control over a vehicle moving especially at excessive speed. Lack of the right skills and the mentioned practical knowledge means that young drivers in bad weather are not able to accurately assess the distance between vehicles, braking distance, or vehicle driver behaviour during a sudden cornering⁹. Driving skills (such as safe driving manners, recognising dangers on the road, maintaining a safe – not always acceptable – speed, the ability to combat distraction, or coping with difficult or urgent situations on the road) are not acquired during the preparatory courses for obtaining a license. driving – this is the result of many years of practice and driving in various conditions: weather, road or psychophysical.

Another reason affecting speeding by young drivers is ignorance of their psyche and automotive skills. Negative factors of everyday life, or the desire to impress peers can cause the driver to be aggressive or bravao on the road. The driver’s personality function manifests itself either in cautious driving or in excessive self-confidence. And with the lack of knowledge of his or hers personality that is the hidden cause of road accidents, the source of which is excessive speed¹⁰.

⁷ Ci2N research of the University of Strasbourg conducted for the VINCI Auto-
routes Foundation – 2017, Partnerstwo dla Bezpieczeństwa Drogowego, <http://www.pbd.org.pl> (20.12.2021).

⁸ E. Lehtonen [et. al.], *Gaze doesn't always lead steering*, “Accident Analysis & Prevention”, December 2018, Vol. 121, pp. 268-278, doi:10.1016/j.aap.2018.09.026.

⁹ L. Zheng, T. Sayed, A. Tageldin, *Before-after safety analysis using extreme value theory: A case of left-turn bay extension*, “Accident Analysis & Prevention”, December 2018, Vol. 121, pp. 258-267, doi: 10.1016/j.aap.2018.09.023.

¹⁰ O. Oviedo-Trespalacios, B. Scott-Parker, *Young drivers and their cars: Safe and sound or the perfect storm?*, “Accident Analysis & Prevention”, January 2018, Vol. 110, pp. 18-28, doi: 10.1016/j.aap.2017.09.008

The mismatch of speed to traffic conditions by young people is a problem that is present not only in Poland but also all over the world. For example, in 2015 Goodyear's tyre company commissioned a survey in Europe, the Middle East and Africa regarding speed limits and compliance with traffic rules¹¹. The survey was addressed via the Internet to drivers under 25 years of age. Research results have shown that the speed in a given section is usually exceeded by young drivers in Poland, which 81% of respondents admitted. Slightly less in Africa – 79% and in Russia – 60%. The most responsible young drivers turned out to be residents of Great Britain (54%) and Spain (40%) who also much less often try to achieve the maximum speed of their vehicles. This state of affairs is probably explained by the effective enforcement of the law and the numerous number of speed cameras. The leader in testing the speed of their vehicle turned out to be young drivers from Germany (53%). It can be explained by the fact that most German highways, as few, do not have speed limits¹².

Statistics also indicate that the cause of road accidents caused by “young drivers” of vehicles was not only the failure to adapt speed to traffic conditions, but also incorrect overtaking, incorrect driver behaviour towards pedestrians, or failure to give priority to another traffic user. Drivers in this age group, adopt these bad practices most often in urban traffic or in places with heavy traffic. Here the so-called thrill present at excessive speed gives way to bravado and a desire to impress, which is manifested in extreme overcoming the difficulties of city traffic, or the satisfaction of poor (sometimes imaginary) competition with other drivers. Research indicates that incorrect overtaking is the effect of rush or is dictated by the desire to show off the “young driver” of their skills, while slow and compliant with traffic rules for many of them means weakness and cowardice¹³.

Analysing the above behaviours and characteristics, it is possible to present a general profile portrait of the “young driver”, which has the following features:

¹¹ The research was conducted by the IPSOS agency. The scope of the research was to analyze the level of knowledge of young drivers on road safety, beliefs and practices while driving. Available at: *Młodzi kierowcy: Przepisy drogowe to tylko sugestia*, Bankier.pl, <https://www.bankier.pl> (20.12.2021).

¹² S.Q. Xie [et. al.], *Bayesian approach to model pedestrian crashes at signalized intersections with measurement errors in exposure*, “Accident Analysis & Prevention”, December 2018, Vol. 121, pp. 285-294, doi: 10.1016/j.aap.2018.09.030.

¹³ L. Yang [et. al.], *Driving behaviour recognition using EEG data from a simulated car-following experiment*, “Accident Analysis & Prevention”, 2018, Vol. 116, pp. 30-40, doi: 10.1016/j.aap.2017.11.010.

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- treats his vehicle in a utilitarian way, which he only uses to travel quickly;
 - extraordinary focus on the appearance of the vehicle, i.e. either does not show a clear interest in the car, or - in order to stand out and want to impress – unduly focuses his attention on various accessories and modifications (e.g. modernisation, tuning, installation of equipment for loud listening of music, etc.); it is this negative attitude of the driver towards the environment means that he drives his vehicle carelessly, automatically and without proper concentration or attention to his driving style;
 - while driving, often uses the telephone (sometimes also without the required hands-free kits), which focuses on conversation, instead of safety, smokes cigarettes, which in turn limits manual operations;
 - shows constant rush resulting from permanent lateness;
 - does not respect traffic regulations, which is due to lack of concentration, lack of involvement in driving and educational gaps;
 - park the vehicle in a prohibited area with no parking (most likely out of convenience, laziness or as a result of thoughtlessness);
 - behaves selfishly, e.g. by forcing priority, so-called driving on the road, or preventing drivers on subordinate roads from joining traffic, of which this manoeuvre is sometimes only possible with the appropriate behaviour of another driver;
 - derives satisfaction from dangerous driving, often above the speed limit, and in relation to properly moving drivers can be aggressive and rude;
 - as a tendency to decide on performing risky ones and dangerous activities and behaviours, such as overtaking at excessive speeds in places with no overtaking.

The characteristics of “young drivers” indicated above are confirmed both by statistics on the road accidents caused by them and the results of numerous observations of their use of roads. Both should be a premise for reflection that will force all drivers to verify their driving style and complement this style with quality. This applies in particular to young drivers (not seniority) of drivers, because any vehicle they use is like a dangerous tool in the hands of the wrong person, because they lack the imagination and responsibility for themselves and for other road users (passengers, pedestrians, other drivers etc.). This is indicated by offenses with the participation of “young drivers”, which in most cases have a tragic ending (Fig. 7).

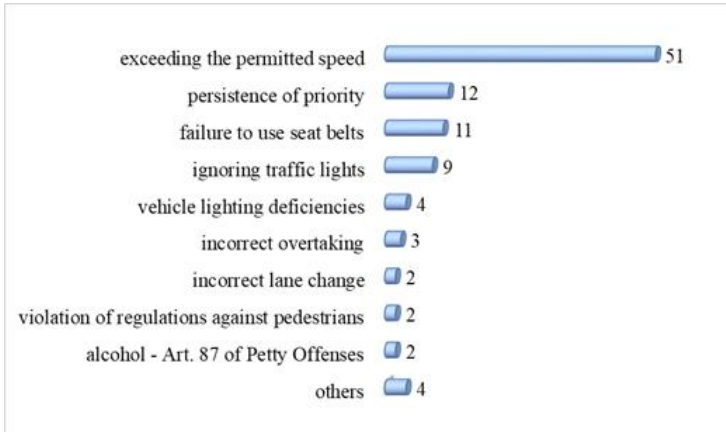


Fig. 7. Structure of offenses committed by “young drivers” revealed by the Police in 2020.

The offenses indicated proof that the existing preventive systems (fines, penalty points) used by the Police proved to be ineffective. In the present world, with deeply rooted democracy, in which there are no authorities, even police officers no longer give due respect. Society requires more rights, more privileges and more benefits from the state, without any obligations. This applies especially to young people, who are a group of people who respect the law the least (although you cannot generalise here, because it could be far from being harmful to honest and righteous younger people). Although this inexperience and/or behaviour is often explained by youthful enthusiasm, joy of life and independence, which is the receipt of a second (after ID card) important document - driving license, this law does not justify neither vices nor offenses. However, information about road incidents, or tragic statistics in this area do not have causative power and are not able to influence the reason of some “young drivers”. It is hardly surprising, because the source of all methods is psychological background. By submitting to smaller or greater temptations, we all feel free and we have the right to make various choices. However, this does not absolve anyone from responsibility, and motivation, reflection and analysis of their own conduct should be elements of teaching at a very early stage of life, and when referring to education of participation in road traffic - at the level of the first theoretical classes in the training centre. This approach to the issue of “young drivers” as road participants will probably make it more friendly and attractive, and thus – safer¹⁴.

¹⁴ S. Raicu [et. al.], *Road accident estimation model in urban areas*, “Transport Problems”, 2016, Vol. 11, Issue 3, doi: 10.20858/tp.2016.11.3.4.

Lack of trust in road signs as a cause of traffic incidents

An important factor influencing the occurrence of road incidents (collisions, accidents and disasters) is undoubtedly non-compliance of road traffic rules and law by vehicle drivers. The statistics cited above indicate that the largest number of road incidents occurs in the group of “young drivers” blamed for many negative behaviours, such as bravado, recklessness, lack of experience, or permanent non-compliance with traffic rules, including road signs and signals. All drivers navigating on known sections of roads are aware of traffic hazards existing in these places and set up various types of road signs. However, even an experienced driver sometimes moves in an uncertain manner, while performing many activities, such as tracking the map, controlling traffic on the road and reading important information from road signs. However, if these signs are obscure or do not comply with accepted rules or their appearance goes beyond the norm, it is difficult not only to notice, but also to follow. Therefore, the driver is not always liable for causing cause a traffic accident.

In Poland, the issue of road signs and signals in road traffic, their significance and scope of validity was set out in the *Regulation of the Ministers of Infrastructure and Interior and Administration of 31 July 2002 on road signs and signals*¹⁵. In accordance with art. 3. on roads apply: 1) vertical signs in the form of shields, boards with inscriptions or symbols, which also appear in the form of illuminated signs; 2) horizontal signs in the form of lines, inscriptions and symbols placed on the road surface; 3) light signals transmitted by signalling devices; 4) signals given by authorized persons; 5) sound or vibration signals sent by devices placed on the road. It is recognised that compliance to road signs: order, prohibition and warning are placed on roads to ensure orderly traffic organisation and to maintain safe driving. Everything would be straightforward if road signs were set up for each threat or required information. However, on Polish roads you can meet many absurdities disorganising this movement, or even affecting the emergence of threats. This is explained in the following six considerations:

a) **first:** speed limit signs. As you can easily see, the antidote for every threat (although not always a threat) is speed limit (i.e. sign B-33 limiting speed to 40 km/h). However, the road situation does not always require road users to make such a decision. In Great Britain, for example,

¹⁵ Regulation of the Minister of Infrastructure and Interior and Administration of 31 July 2002 on road signs and signals (consolidated version, Journal of Law of 2019, item 2310 with changes).

where drivers and other road users have to use their experience and judgement, there are many sections of winding roads with no speed limit, and yet statistics show that in this country there are fewer accidents and fewer number of victims;

b) **secondly**: marking errors can cause confusion. This problem particularly applies to drivers who, without knowing the map or making the area are forced to perform dangerous manoeuvres, e.g. sudden stopping, turning back or reversing on busy roads, because road signs have been placed wrongly or are illegible. From road signs (especially those on express roads), information must be read by drivers quickly to be able to choose the appropriate response (e.g. change of lane);

c) **thirdly**: setting the B-20 signs, i.e. “stop” at closed or rarely used level crossings. Of course, maintaining special safety in such places is indisputable, but drivers ignore such restrictions, because in combination with a straight section of the road without special hazards, they consider the presence of such signs to be meaningless. Even patrolling policemen enforce compliance with regulations without thinking about the legitimacy of introducing restrictions. As a consequence, such situations result in a lack of respect for road signs on busy unguarded crossings where accidents are common;

d) **fourthly**: irremovable signs after completion of road works. The problem here is that despite the completion of construction works, road signs still restrict movement along this section of the road. In addition, having erected signs related to the repaired road section (e.g. speed limits), no reference signs are placed. Drivers become confused, resulting in slow driving, until the next intersection cancelling the restriction. Rarely do drivers follow orders and simply ignore this restriction;

e) **fifth**: defective system solutions and lack of consistency due to municipalities or county pursuing their own road marking policy. The same threats are marked in different ways in different communes or counties. Ridiculous speed limits are simply ignored by drivers. In addition, positioning of traffic signs are often set too close to the danger or too far in advance, which causes chaos and loss of orientation by the driver;

f) **sixthly**: clutter and excessive information compounded by additional banners placed and hung. Their appearance or setting rules have not been regulated in any legal act. Traffic signs are no longer visible or readable with bright, shining or even moving advertisements. An uninformed driver is not able to see a road sign important for road safety. Road signs informing about e.g. petrol stations (D-23), restaurants

(D-28) or vulcanization (D-26a) are the biggest problem, which are replaced by the advertisement of a given service provider.

The method of setting road signs and signals is regulated by the *Regulation of the Minister of Infrastructure of 3 July 2003 on detailed technical conditions for road signs and signals and road safety devices and conditions for their placement on roads*¹⁶. Currently, the regulations indicate a large number of road signs and signals, both in type, size, colour and purpose, therefore their setting should be thought out, i.e. they should appear only where they are really necessary and in a manner appropriate to the prevailing conditions and situations.

These are examples of inadequate road marking causing misinformation and ignoring of important warnings by drivers, thus not complying with the law. This problem affects drivers of all ages, not just “young” ones. In addition, the excessive amount of information on the road for any driver makes it impossible to “register” even when travelling at the applicable speed. Traffic has the characteristic that it can change radically at any time and to prevent hazards drivers must constantly monitor the traffic situation (e.g. other moving vehicles or road users).

Conclusions

This research article for the first time presents results and recommendations on the causes and effects of road accidents based on a detailed analysis of; the aggregate age of drivers, the current training regime and level of confidence in the rules governing specific road behaviour. The author has analysed the general profile and common characteristics of the “young driver”, attributed by typical behaviour of young people and reflected on the inefficient and inadequate training system for such challenges. The authors believe that a significant factor that has a negative impact on shaping the silhouette of a “young driver” are irregularities that occur in road signage and markings.

To improve the level of trust in road signs, we should focus on systemic solutions for:

- amendments to the rules on setting road signs and their regular updating in order to harmonize these rules across the country,
- designation and appropriate training of persons responsible for setting road signs and for designing traffic organisation, since at present no qualifications or permits are required of these persons.

¹⁶ Regulation of the Minister of Infrastructure of 3 July 2003 on detailed technical conditions for road signs and signals and road safety devices and conditions for their placement on roads (consolidated version, Journal of Law of 2019, item 2311 with changes).

Currently, traffic signs can be erected by any employee in this position. Sometimes, they are arranged in a mutually exclusive way, or in excess. Road signs are set by road owners, i.e. the General Directorate for National Roads and Motorways, it can also be done by heads of provinces and communes, county executives, or presidents of cities with county rights. Railway workers and employees of road repair companies also have the right to set signs. According to the law, road signs can be set by any official who has been employed in such a position and there is no requirement for these individuals to have a driving license.

In addition, in order to improve the level of road safety and reduce risks in this traffic, you should focus on control systems and the use of preventive and repressive measures against a group of so-called “young managers”. The effectiveness of these projects should be achieved by:

- selective approach to the application of penalties for the group of “young managers”,
- introduction by the services responsible for maintaining road safety and order of the obligation to create detailed risk maps in the subordinate area,
- focusing on identifying groups of “young drivers” who frequently violate traffic law (e.g. organizing races on the road in built-up areas),
- creating a palette of educational measures.

It cannot be prejudiced that all drivers when driving a vehicle do so in a manner that is unreasonable or bypassing applicable law. Many of them do it wisely and properly, not only by taking into account traffic law, but through proper observation of the environment and the ability to predict the behaviour of other road users. An experienced driver is able to predict the behaviour of another driver and react early enough to the threat to prevent a traffic incident with various effects.

Among the “responsible” group of drivers, there are also road accidents due to, for example, improperly functioning road infrastructure limiting the possibility of proper driving on the road, as well as due to the lack of driving culture of other drivers, i.e. by non-compliance with regulations, lack of experience or recklessness. The aforementioned driving culture together with the broadly understood communication culture and with the entire legal and institutional system normalizing road traffic is part of the safe space surrounding the human being and the road¹⁷.

¹⁷ B. Bajorski, *System zarządzania bezpieczeństwem ruchu drogowego na tle społecznych i ekonomicznych kosztów wypadków drogowych w Polsce – wybrane problemy podstawowe*, „Kultura Bezpieczeństwa. Nauka-Praktyka-Refleksje”, 2018, nr 29, pp. 255-256, doi: 10.24356/KB/29/11.

In addition, driving culture (along with driving safety) should be part of the training process for candidates for drivers who for any reason have lost their driving license. Training tailored primarily among the “young drivers” will contribute to improving road safety and the entire management system, which will contribute significantly to reducing the risk of road hazards, i.e. collisions, road accidents or disasters that result in tragic events.

The research undertaken in this article will be further developed, both in terms of the proposed aspects and also through benchmarking with other countries, taking into account the analysis of the application of practical solutions which provide much better road safety statistics.

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Kryterium oceny przyczyn wypadków drogowych według określonej grupy wiekowej kierowców w Polsce na podstawie wypadków drogowych w 2020 roku

Streszczenie

Niniejsze badanie analizuje główne czynniki sprawcze, które prowadzą do wypadków drogowych. Szczególny nacisk położono na demografię kierowców, a zwłaszcza na grupę wiekową, biorąc pod uwagę, że młodsi kierowcy odpowiadają za największą liczbę incydentów/wypadków i ofiar śmiertelnych związanych z bezpieczeństwem drogowym. Analizie poddano także inne czynniki wpływające na bezpieczeństwo ruchu drogowego, takie jak adekwatność krajowego systemu szkolenia kierowców, wymagania prawne i rozwiązania organizacyjne zapewniające bezpieczeństwo ruchu drogowego. Zachowanie i cechy kierowców są brane pod uwagę jako część analizy przyczynowej.

Słowa kluczowe: ruch, kierowca, zdarzenie drogowe, przyczyny, skutki, bezpieczeństwo