

## Hazards, safety and health of drivers in road transport

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**Summary.** The 21st century is primarily characterized by the economic development of countries that are closely linked to the growth of human mobility, and many feel the benefits of organizing their lives around the car. However, the experience of EU countries shows that the rapid development of motorization can entail serious socio-economic problems. Road transport is attended by people who have the legal right to drive vehicles. A very important aspect in this area is the safety that guarantees the health of the driver and safe driving. However, many factors affect the dangers of the road, resulting in injuries, as well as death. It is therefore very important to observe the rules and regulations in road transport.

The aim of the study is to present the dangers that occur to drivers on Polish roads. This article compares the results obtained after the survey among professional drivers and non-professional drivers. They tried to determine whether the age of drivers and the period of their driving license influenced their safety on the road. Safety is the most important aspect of the journey, so the research was to determine whether drivers know safety rules and use them while driving.

**Key words:** hazard, safety, road transport, driving license.

### INTRODUCTION

Today a very large number of people use the car. It is not only a passenger car, but also a truck or other vehicle that can be driven on the road. Polish law has introduced traffic regulations on Polish roads for safety reasons. If society would follow these rules, the statistics of accidents involving drivers would be much smaller. It is becoming more and more common to hear about the risks of dangerous driving that threatens the drivers themselves, but also passengers and other road users. Ignorance of road rules, or their neglect, exposes another man even to the loss of his life. It is important to follow the regulations on road transport and appreciate the license you have acquired so that one will not be deprived of life on the road.

Freight by the Act of 6 September 2001 defines road transport as a national road transport or international road

transport; This term also covers: a) any road crossing by a trader in favor of a business activity that does not meet the conditions, b) an economic activity with regard to the intermediary of the carriage of goods. In contrast, non-profit road transport - transport for their own needs is every passing vehicle on public roads with passengers or without loaded or unladen, to be free of national and international road transport of passengers or goods performed by the entrepreneur alternative, in relation to its core business, (C) in the case of passing of a loaded vehicle, the goods are transported by the trader or sold by the trader; (b) the trader carries on his or her right to dispose of the vehicle; Bought, rented, leased, produced, extracted, processed or repaired, or the purpose of the journey is to transport people or things from the company or to the company for its own needs, and also transport of employees and their families, d) is not carriage in the course of business in the area of tourism services [7]. Road transport is characterized primarily by: the possibility of commutation of the cargo delivery virtually anywhere, high service operability, involving the availability of relatively large Number of transport centers, high flexibility of travel, high speed of transport, significant importance on small and medium distances and punctuality and punctuality of service delivery. This branch of transport is very much developed and closely related to the mobility of practically every human being. The car is now available to anyone authorized by law. There is no problem with its purchase [5]. Most people choose a car as a means of transportation. Auto allows for easier access to places without waiting for another means of communication to arrive. Many people feel the benefits of organizing their lives around the car. Road transport is attended by people who have the legal right to drive vehicles. A very important aspect in this area is the safety that guarantees the health of the driver and safe driving. Safe driving is dependent on the psychophysical condition of the driver. To maintain proper functions, speed and range of perception, speed and reliability, the driver must observe minimum breaks and rest periods and maximum driving periods [13]. However, many factors affect the dangers of the road, resulting in injuries, as well as death. It is therefore

important to observe the rules and regulations in road transport.

Transport is very necessary, evolving with the development of societies and their economies. It transformed into purposeful and organized forms of displacement of people, loads and messages. For technical and utility purposes, road classes have been introduced: motorways, expressways, major acceleration, main, collective, local, access roads. The basic parameter characterizing the road is the speed with which the vehicle can move safely. This speed depends on the geometrical properties of the road, inclination, technical condition of the pavement, intensity and structure of the motion, atmospheric conditions, and the behavior of other road users. Oversaturation of urban roads with cars causes queues at intersections, particularly signalized ones, which have low capacity in comparison with other elements. Consequently, drivers and passengers of public transport are additionally irritated, transporters get lower incomes, expenses of individual cars are higher, the ecology of urban air basin is being deteriorated [8]. Security is treated as a non-threat and in this respect it is necessary to concentrate on analyzing the subject's actions to protect important inner values. [6] The threat is a phenomenon of natural or human forces that causes a sense of security to diminish or to completely disappear [3]. Some of the consequences of the development of motorization are readily perceived by road users (congestion, noise), others due to their dispersion or deferred effects are recorded less frequently: these include traffic accidents. Road accidents are a serious social problem, and their reconstruction is an important area of work for the judiciary (the court, the prosecutor's office), the police, as well as insurance companies, due to the high cost of compensation for victims of accidents. The effects of the accident depend to a large extent on the collision speed of the objects, which is related to their kinetic energy at the time of impact [1]. Traffic is related to the risk that safety depends on many factors. These factors are increasingly being analyzed as interactions of the movement participant-vehicle-environment system. The most important factors affecting road safety include:

- human - his knowledge, skills, concentration;
- environment - marking, road infrastructure, traffic volume, noise level
- and vehicle - apart from its dimensions, mass, also important due to the effects of accident: technical condition, impact resistance, deformability, braking efficiency and lighting [5].

Typical hazards that occur throughout the driver's working life are the following:

- fire, explosion while driving a tank with flammable materials,

- collision, accident with other means of transport moving on public roads due to fatigue, fall asleep while driving,
- poisoning from chemical fumes of harmful and hazardous substances emitted during, eg, fire, leakage, etc.,
- hit on getting into the cab,
- fall from the vehicle when cleaning windows (front or side windows) or mirrors,
- pierce, cut, pierce while checking the load on the vehicle and closing the sides,
- bruising, crushing, abrasion by moving vehicles around the vehicle or on the cargo box of the vehicle transporting pallets with loads,
- injury, abrasion by sharp protruding elements of transport means or cargo itself,
- crushing, blowing, abrasion during supervision when unloading or loading pallets onto the vehicle,
- fall from the load box during supervision when loading, unloading the vehicle,
- crushing, crushing, rubbing as a result of falling cargo from the load box of the vehicle,
- hitting the driver when loading materials (loose, bulky, heavy weight) on the truck,
- piercing, cutting, puncturing as a result of attaching loads on the vehicle,
- injury, abrasion by sharp protruding elements during daily inspection of the technical condition of the vehicle,
- burns due to transported hazardous materials (eg liquid fuels, chemicals, etc.)
- piercing, cutting, piercing by checking the location and fixing of loads on the vehicle,
- As a result of the setting of the vehicle's securing against displacement (underpinning the wedge),
- cut, pierced when closing and sealing the load box or container,
- slipping, tripping, falling on the slippery and uneven surfaces of maneuvering yards, parking spaces or office spaces,
- burns when using hot water,
- fall from height when washing high vehicles,
- burn a hot engine or its components while performing repair work on the route,
- crushing, crushing, laceration as a result of the falling driver's cab that has been raised for the purpose of making an emergency vehicle repair on the road,
- injury, abrasion due to work on the engine,
- pulling, catching, engaging parts of the driver's body with the moving parts of the engine during repair work while the engine is running,
- hit, puncture, injury when connecting the vehicle to the hall [12].

To be able to become a driver you need to be over 18 years of age, obtain a medical certificate of no medical contraindications for driving and a psychological judgment on the absence of psychological contraindications to drive a car, and that person must have completed a course of the appropriate category and receive a license [4]. The working time of a professional driver has little in common with the working time of an employee employed in the office, for example. The office worker usually works for 8 hours. Driver's work is not so easy. The profession of a bus driver or a truck driver is at great risk and at the same time the level of stress. Most people who have never run a bus or a large truck do not realize how hard and responsible they are. For those who use their amateur vehicles - the profession of the driver is something fantastic. He sits high, looking at all in advance, rides, tours, rests and relaxes. These are myths that have nothing to do with reality, but most think that is the case. [14].

Many people not only drive a car for private every day purposes, but also use their skills at work. Increasingly common is the profession of the driver. A person's job is to assign a car and a route to follow. Such a person usually has the task of transporting a cargo / goods to a designated place by van or truck. Professional driver is also a taxi driver who transports clients on a daily basis and is responsible for their safety. Each participant is obliged to maintain safety on the road so that the journey is pleasant and does not pose a danger. Unfortunately, statistics of accidents and collisions involving drivers are constantly growing. This is due to ignorance of regulations or non-compliance. People are characterized by haste or recklessness. It is important to fully reimburse the expected consequences if an accident occurs and does not reduce the rate of development of society [6]. These are one of the main reasons for the carelessness of drivers on the road [11]. However, it must be borne in mind that driving a vehicle is especially important in order to avoid harming yourself and other people.

#### AIM OF THE STUDY

Traffic safety is a very important aspect in today's world. More and more people are choosing a car as a means of transport. Also, a large number of people use driving licenses for gainful employment. In the 21st century mainly men work as professional drivers. The aim of this study is to present the risks they happen to drivers on Polish roads. They tried to determine whether Polish drivers know safety regulations and whether they use them while driving. The purpose of the work is also to compare the driving of professional drivers and those who

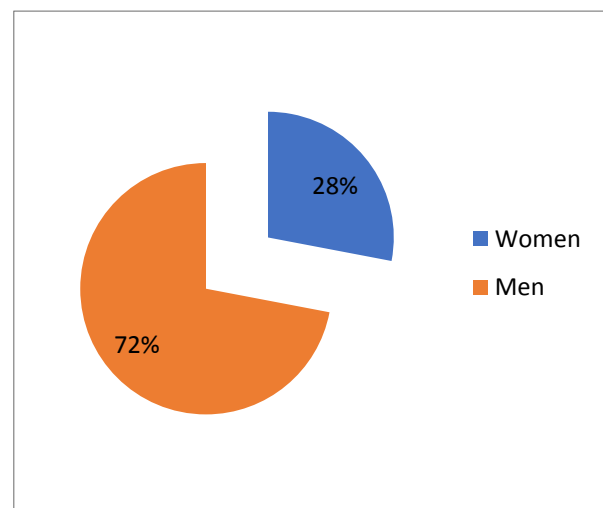
use the car privately and whether the age and duration of the driving test affects the health and safety of drivers.

#### MATERIAL AND METHOD

The author's questionnaire survey was used to develop the article. The study was conducted among 100 Polish drivers, both professional and casual. The respondents had different driving licenses and different driving experience. The questionnaire consisted of 20 closed and open questions. The research was used to produce results in graphical form.

#### RESULTS AND THEIR DISCUSSION

After analyzing the results of the research, it turned out that Polish drivers are exposed to numerous threats, resulting from i.a. not knowing the rules or not observing them. Both men (72%) and women (28%) participated in the survey (Figure 1).



**Fig. 1.** Percentage share of women and men in questionnaire survey

The age of respondents was varied. Most people were in the 22-25 age group, but there were also people aged 20 to 46 years. In the question of education, 66% of respondents rated average, 20% higher, 12% occupational, and 2% with basic education. The next question was about the period of your license. Most people have a driving license in the range of 2-5 years (40%), 6-9 years (24%) and 10-20 years (18%). Over 20 years of driving license has 8% of people, less than a year only 2 people, and from 1-2 years 8 people. 100% of the subjects have a B category license. In addition, 24% have a B + E driving license, 28% C category, 32% C + E and 7% category T. None of the respondents has a driving license. D and D + E (Fig.2).

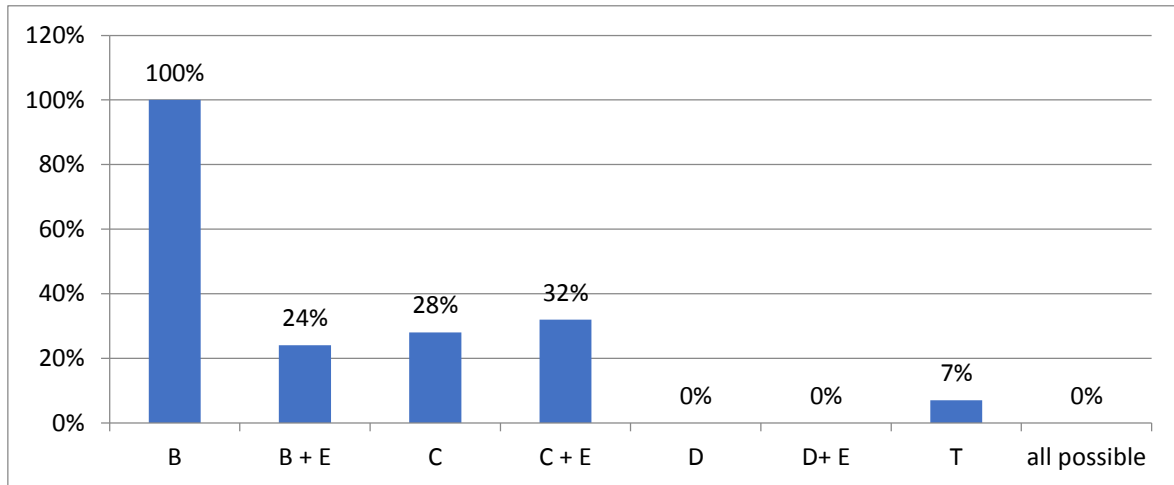


Fig. 2. Percentage of categories of driver's license

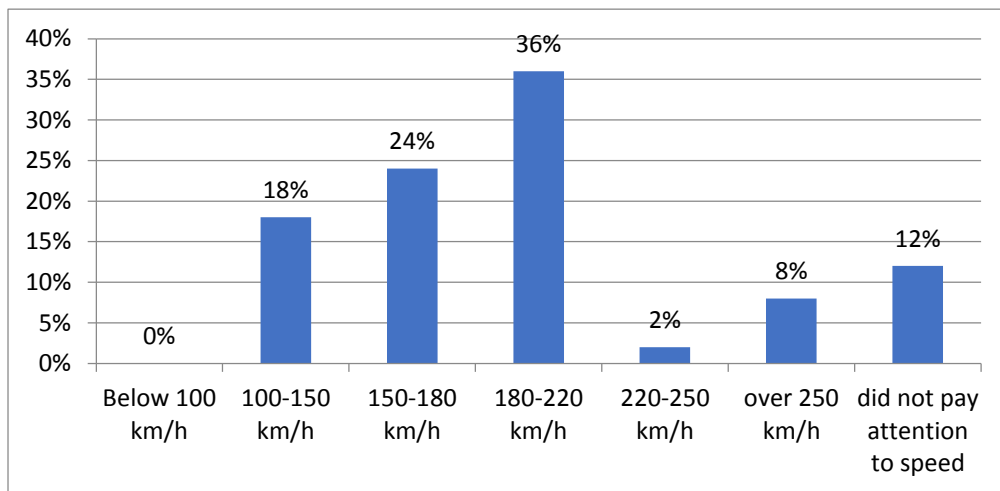


Fig. 3. Maximum speed with which the respondents were moving

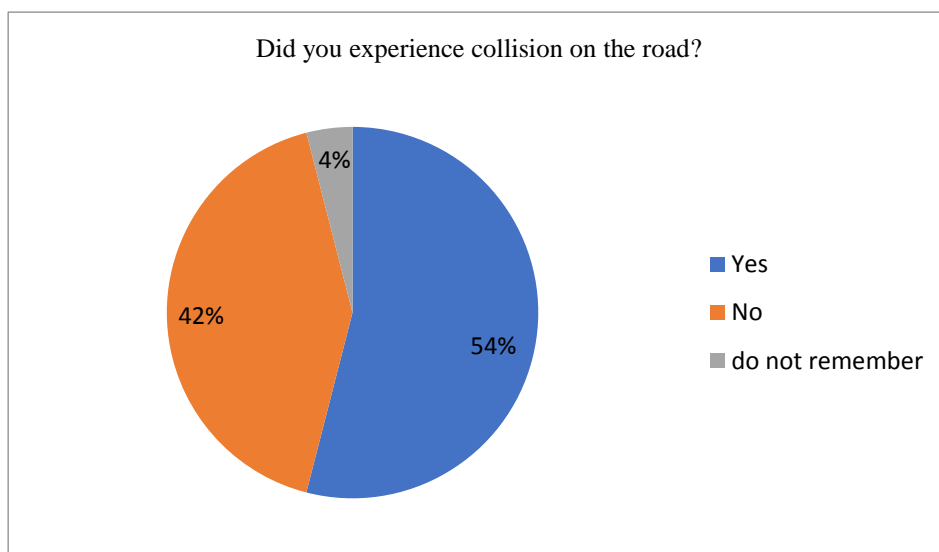


Fig. 4. Percentage share of respondents in a traffic collision

The survey was conducted on professional drivers (46%) and private drivers (54%). To be able to analyze the work of drivers was asked to observe the organization of the working day. 68.9% of respondents said that they did i.a rest breaks, 17.8% only occasionally, and 13.3% do not follow the organization of the work day. Passenger car tests (89%), driver's license (34%) and delivery van (12%), and 11% of drivers interviewed chose a different motor vehicle (motor, scooter). No one chose the bus as a means of transport. 72% of drivers use the car daily, 18% several times a week, occasionally 6%. Once a week and once a month 2% of respondents choose a car as a way of moving. To analyze safety on the road also asked about the maximum speed with which people test. There were several speed compartments and the most common response was between 220-250km / h (2%), 180-220km / h (36%), 150-180 km / h (24%), and 100-150 km / h (18% %). Over 250 km / h there were 8% of respondents, and 12% did not look at the counter. No one has ticked below 100 km / h (Figure 3).

The low values on the counters were mostly women, with none of them driving over 180 km / h.

In Poland a collision with a car is very common. More than half (54%) experienced one collision in life, 4% did not remember, and 42% reported no collision (Figure 4).

Most of the respondents were injured in a collision (67.7%), the rest (32.3%) themselves collided with another vehicle. Fortunately, the respondents were not involved in a car accident (78%), only 22% had an accident. However, 80% of accidents were victims. In the event of an accident, the injured party suffered material damage (37.5%), 49.5% did not suffer any damage and only 2 were injured. In no case was this a fatal accident. The respondents say they know the speed rules (96%), only two people have admitted that they do not know the rules, and the other two were not sure and said "I do not know". This question was asked "Did you ever get a speeding ticket?" And here 50% of respondents said no, 48% of people said yes, and the remaining 2% admitted that it was not a single mandate. Road safety is the most important aspect of society. Polish law defines traffic safety rules.94% of respondents said they knew the rules and 6% remembered them. However, no one commented on these principles negatively. However, the mere knowledge of safety rules does not preclude the driver's dangerous behavior. These rules must also be applied on the road and, in the case of the surveyed persons, 72% apply to safety rules and 24% only sometimes. Nobody has answered the question, but 4% of the respondents admitted that they did not follow the safety rules. The last question was a checker question. It concerned the speed with which the car should be driven in the built-up area after 22 o'clock. No-one answered 70 km / h and 40 km / h. The answers were divided into 60

km / h and here 62% chose the answer, while the remaining 38% chose a speed of 50 km / h. Polish law says that from 5 am to 10 pm in the built-up area you can move at 50 km / h. Only from 23.00, the speed increases to 60 km / h. Unfortunately, over half of the respondents responded badly and thus confirmed their ignorance of regulations in road transport.

## SUMMARY

In summary, road transport is a very common and dangerous aspect of human life. It is important to maintain adequate safety and precautions to avoid risk. Inattention or discordance on the road can cause loss of life. Today, most injuries are caused by road accidents involving people. The number of these events from year to year is falling, but still high. It is good to obey the rules, comply with the regulations, and take care of your and other health on the road.

After analyzing the results, it turns out that drivers feel they know the rules of traffic well, but in most cases this is outdated knowledge. The law of road traffic must be updated from time to time, it is not enough to believe that nothing in this matter has changed. Sometimes unawareness of changes in traffic regulations can lead to greater damage. As it turns out women behave safer on the road, they do not "close the speedometer", perhaps because of fear of consequences or more careful. Keep in mind that bravado can bring enormous effects. The attitudes, values, and behavior rooted in the society affect the drivers. The work of a professional driver is of great importance to the safety of his and other participants in his career. The main prerequisite for the safe work of drivers is the reduction of stressors and the ability to cope with stress. Breaks that are in place for professional drivers are not a time to be ignored. Fatigue causes lack of concentration or reduced attention while driving. The driver can not be selfish. The fact that driving alone in a car does not mean that he is alone on the road. Any mistake made can affect other drivers. Therefore, it is important to remember that safety is most important.

## REFERENCES

1. **Aleksandrowicz P. 2014.** Biomechanics in the analysis of road accidents. Ed. University of Technology and Life Sciences in Bydgoszcz. Bydgoszcz. 8-13.
2. **Bienczak K., Starkowski D., Zwierzycki W. 2009.** Car Transport National and International - a compendium of practical knowledge. Legal regulations volume II. Ed. II supplemented. Systherm technician. Poznan. S. 59-69, 679.

3. **Drabik L. and inn. 2007**, *Dictionary of the Polish language: ..* Warsaw: PWN, p. 1252
4. **Galusz M., Uzarczyk A., Wojciechowska-Piskorska H. 2011**. Health and safety in transport. Ed. Tarbonus. Krakow-Tarnobrzeg.
5. **Karbowiak H. 2009**. Infrastructure of Transport Infrastructure.. Ed. Higher School of Humanities and Economics in Lodz. Boat. 10-25.
6. **Lyfar. V. 2016**. The information model of technogenic risk management. Teka. Commission Of Motorization And Energetics In Agriculture . Vol. 16, No. 2, 15-20.
7. **Rydzkowski W. and Wojewódzka-Król K. 2009**. Transport. Ed. PWN. Warsaw. 25-55, 530-538.
8. **Ye. Fornalchyk, I. Mohyla, V. Hilevych**, Econtechmod. An International Quarterly Journal – 2015, Vol. 04, No. 2, 45–50, The Influence of Dynamic Characteristics of Vehicles on the Passenger Car Equivalent and Traffic Delay
9. State of 6 September 2001 on road transport (online, access: 01.04.2017)
10. <https://en.wikipedia.org/wiki/Canada> (access: 03.04.2017)
11. [https://www.ciop.pl/CIOPPortalWAR/appmanager/ciop/en?\\_nfpb=true&\\_pageLabel=P30001831335539182278&html\\_tresc\\_root\\_id=353&html\\_tresc\\_id=353&html\\_key=19558](https://www.ciop.pl/CIOPPortalWAR/appmanager/ciop/en?_nfpb=true&_pageLabel=P30001831335539182278&html_tresc_root_id=353&html_tresc_id=353&html_key=19558) (access: 03.04.2017)
12. <http://archiwum.ciop.pl> (access: 6.04.2017)
13. [http://www.gitd.gov.pl/\\_\\_data/assets/pdf\\_file/0009/34677/p/oradnik\\_organizatora.pdf](http://www.gitd.gov.pl/__data/assets/pdf_file/0009/34677/p/oradnik_organizatora.pdf) (access: 6.04.2017)
14. <http://bezpiecznykierowca.eu/zawod-kierowca-pracoponad-sily> (access: 7.04.2017)

## ZAGROŻENIA, BEZPIECZEŃSTWO I ZDROWIE KIEROWCÓW W TRANSPORCIE DROGOWYM

**Streszczenie.** XXI wiek charakteryzuje przede wszystkim rozwój ekonomiczny państw, który jest ściśle związany ze wzrostem mobilności ludzi, a wiele osób odczuwa korzyści z faktu organizowania swojego życia wokół samochodu. Z doświadczeń krajów UE wynika jednak, że szybki rozwój motoryzacji może wiązać się z poważnymi problemami społeczno-ekonomicznymi. W transporcie drogowym udział biorą ludzie, posiadający prawnie dokument umożliwiający im prowadzenie pojazdów. Bardzo ważnym aspektem w tej dziedzinie jest zachowanie bezpieczeństwa, które gwarantuje zdrowie kierowcy oraz bezpieczną jazdę. Jednak wiele czynników ma wpływ na zagrożenia występujące na drodze, stwarzające urazy, a także śmierć. Dlatego bardzo ważne jest przestrzeganie zasad i regulacji prawnych w transporcie drogowym.

Celem pracy jest przedstawienie zagrożeń jakie przytrafiają się kierowcom na polskich drogach. Artykuł zawiera porównanie wyników uzyskanych po przeprowadzeniu ankiety wśród kierowców zawodowych, a niezawodowych kierowców. Starano się określić czy wiek kierowców oraz okres posiadanego prawa jazdy wpływa na ich bezpieczeństwo na drodze. Bezpieczeństwo jest najważniejszym aspektem na drodze, dlatego też badania miały na celu określenie czy kierowcy znają zasady bezpieczeństwa i stosują je podczas jazdy.

**Słowa kluczowe:** zagrożenie, bezpieczeństwo, transport drogowy, prawo jazdy.