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Special measures for the prevention of criminal offenses in the realm of road transport sector

Mykola Rudyk*

Igor Kopotun**

Viktoriya Beschastna***

Anton Chubenko****

Olha Kovalova*****

ABSTRACT

Objective: The purpose of the article was to identify and explore the principal specific crime prevention efforts with a view to controlling criminal offenses in the realm of road transport sector. Methodology: The overriding methodological tools were methods of observation and comparative legal analysis. Results and conclusions: The study demonstrated that in order to effectively prevent criminal offenses pertaining to road transport sector, as well as to reduce crime and enhance security, it is expedient to pay attention to the implementation of special crime prevention strategies. Priority areas to be addressed should be efforts to monitor compliance with traffic safety rules, road condition, and technical condition of vehicles. Relevant work should also be carried out to improve the level of "passive safety", as well as to conduct preventive activities for pedestrians, and educational work with professional drivers. Particular attention should be paid to the prevention efforts carried out by investigating agencies, courts and penitentiary bodies.

KEYWORDS: Source of increased danger, motorized vehicle accident, crime prevention, traffic safety, passive safety, accident, car operation.

*Lecturer of the Department of Police Law, National Academy of Internal Affairs, Kyiv, Ukraine. ORCID: <https://orcid.org/0000-0003-1031-9982>. E-mail: Rudikmmn@ukr.net

**Professor, Vice-Rector, Academia HUSPOL, Kunovice, Czech Republic. ORCID: <https://orcid.org/0000-0002-2947-8599>. E-mail: lhor.kopotun@gmail.com

***Lecturer of the Department of Journalism, Faculty of International Relations, National Aviation University, Kyiv, Ukraine. ORCID: <https://orcid.org/0000-0002-7354-475X>. E-mail: vibeschastna445@gmail.com

****Professor, Head of Legal Support Office for Central Administration of the Asset Recovery and Management Agency, National Agency of Ukraine for finding, tracing and management of assets derived from corruption and other crimes (ARMA), Kyiv, Ukraine. ORCID: <https://orcid.org/0000-0002-0887-5667>. E-mail: chubegnk@i.ua

*****Head of Department of Operational and Search Activities and Information Security of the faculty № 3 Donetsk State University of Internal Affairs, Donetsk, Ukraine. ORCID: <https://orcid.org/0000-0003-4555-0172>. E-mail: kovaletva88olga@gmail.com

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Medidas especiales para la prevención de delitos en el ámbito del sector del transporte por carretera

RESUMEN

Objetivo: El propósito del artículo fue identificar y explorar los principales esfuerzos específicos de prevención del delito con miras a controlar los delitos en el ámbito del sector del transporte por carretera. Metodología: Las herramientas metodológicas predominantes fueron los métodos de observación y análisis jurídico comparado. Resultados y conclusiones: El estudio demostró que para prevenir eficazmente los delitos penales relacionados con el sector del transporte por carretera, así como para reducir la delincuencia y mejorar la seguridad, es conveniente prestar atención a la implementación de estrategias especiales de prevención de la delincuencia. Las áreas prioritarias que deben abordarse deben ser los esfuerzos para monitorear el cumplimiento de las normas de seguridad vial, el estado de las carreteras y el estado técnico de los vehículos. También se deben realizar los trabajos pertinentes para mejorar el nivel de "seguridad pasiva", así como realizar actividades preventivas para los peatones y trabajos educativos con conductores profesionales. Debe prestarse especial atención a la labor de prevención que realizan los órganos de investigación, los juzgados y los órganos penitenciarios.

PALABRAS CLAVE: Fuente de mayor peligro, accidente de vehículo motorizado, prevención del delito, seguridad vial, seguridad pasiva, accidente, operación de automóvil.

Introduction

Motorized vehicle accidents pose a serious danger to contemporary society, as they entail injuries, disabilities, and even death, alongside with significant economic and social consequences (Yan et al., 2021). According to WHO (2018), about 1.35 million people perish worldwide on roads annually. New advances in automotive technology, such as rear-view cameras, adaptive headlights, and forward collision systems (FCS), do not essentially reduce the number of car accidents. Road accidents are the eighth most important cause of death worldwide for all age groups and the leading cause of death for children and young adults aged 5 to 29. This appears to be the case with young drivers, who are more likely to exceed the set speed limit than older drivers. Consequently, this demographic group is overrepresented in traffic accident statistics (Truelove et al., 2022). What should be stressed here is that fatal and non-fatal accidents will cost the global economy about 1.8 trillion from 2015 to 2030 (Chen et al., 2019).

In fact, low-income and middle-income countries account for 60 percent of the world's registered vehicles. But they also are responsible for more than 90 percent of deaths from related accidents worldwide (WHO, 2018). According to Chen et al., in 2015-2030 these countries will suffer economic losses of approximately 834 billion due to fatal and non-fatal accidents (Chen et al., 2019). The corresponding situation in Ukraine is no exception. For 10 months of 2021, more than 150 thousand motorized vehicle accidents (road accidents) were committed in Ukraine, with victims and mortalities in 20.3 thousand of those registered (Ministry of Internal Affairs, 2021).

In this light, there is a number of variables that affect a traffic accident. They can be combined into a complex network of interactions between the road track characteristics, vehicle characteristics, environmental conditions, as well as driver's conduct (Faílde-Garrido et al., 2021). Of all the above variables, it is the human factor that primarily accounts for the causal relationship of road accidents. Furthermore, the temporary suitability for operation and unsuitability for operating vehicles for road traffic is a significant factor that must be very carefully monitored (Hudec et. al., 2021).

Traditionally, strategies and related policies to combat road accident deaths and injuries around the world have focused on education, engineering, and enforcement (Sam, 2022). When it comes to law enforcement, it seeks to control the behavior of road users (predominantly referred to as the "human factor" of road accidents) largely through preventive, persuasive and punitive strategies to ensure safe and efficient traffic. Critical statistics of road accidents puts the above mentioned issue into the limelight, reinforcing the need for enhanced attention and the significance of measures to prevent these crimes (Mehdi & Nasrin, 2021).

In preventive criminology, the term 'preemptive' refers to the application of various methods of crime prevention (Nevisi, 2019). According to the nature of the social determination of crime, the mechanisms of preventive influence are divided into general social and special criminological ones. General social measures, they are aimed at the positive evolution of the socio-economic system as a whole, which contributes to the reduction of criminal acts. As for special criminological measures, they focus on the direct impact on the causes and conditions of a particular state of crime level, its separate components. The purpose of such efforts is to eliminate, neutralize or restrict offenses (Cherney & Dzhuzha,

2020). Relevant socially dangerous actions require the use of measures and means to prevent them – the development of modern special crime prevention strategies (Blaga & Korolenko, 2021).

In light of the above, the purpose of the article is to identify and reveal the major special criminological measures aimed at preventing criminal offenses in the realm of road transport sector. Taking into account the specified purpose, the following research objectives were set: 1) to summarize the key special measures for the prevention of criminal offenses in the domain of road transport operation; 2) to reveal the current state of applying special measures for the prevention of criminal offenses in the field of road transport operation as exemplified by Ukraine and the European Union.

1. Literature review

The choice of the present academic pursuit correlates with modern research vectors applied by representatives of the applicable doctrine in different states. The principal tool and basis for the article was Golina's (2020) monograph entitled "Reducing the possibility of committing crimes: a strategic approach". In the course of research, the author set out to summarize the grounds for defining the concept of crime prevention. Besides, the work of Sam (2022) "How effective is the presence of police on the roads and law enforcement in the context of a developing country?» had a considerable impact on shaping the author's position on the subject under study. Notably, it was the contribution of this researcher that enabled to outline the vector of research into special measures for the prevention of criminal offenses in the domain of road transport sector.

Furthermore, Mehdi and Nasrin (2021) explored the essence of preventive measures for road traffic offenses and their underlying pathologies, as well as the urgency to take into consideration the critical statistics of road accidents. During this study, the author heavily relied on the study carried out by Bates et al. (2020), regarding a qualitative analysis of young drivers and traffic police based on deterrence. Particular attention was paid to the scientific contributions of Boymuradov (2020), regarding certain aspects and ways to improve the activities of the patrol police in the field of transport and transport safety, as well as the work carried out by Akbari et al. (2021) concerning the impact of drivers' education on road safety.

In the scientific work of Yeprintsev and Zhuchenko (2021), which is used in the article, emphasizes the importance of basic social and special criminological measures to prevent criminal offenses in the domain of road safety. The work carried out fostered the priorities' identification as regards relevant activities and components of concern. Likewise, the study relied on the principles outlined by Zhou et al. (2022) and Torbaghan et al., (2022) such relevant aspects as innovation (novelty), objectivity, subjectivity, purposefulness, relevance, implementation in practice, effectiveness of new digital technologies to improve road safety. Special attention is paid to the scholars' works regarding the perspective of predicting pedestrian behavior at crossroads drawing on video surveillance data. Also, the research took into consideration the findings of Alonso et al. (2021) concerning compliance, practices and attitudes to VTI (vehicle technical inspections) in Spain.

Probing deeper into the relevant problem confirms the fact that the process of introducing special measures for the prevention of criminal offenses in the realm of road transport operation contributes to the reduction of road accidents. Therefore, it is urgent to conduct research pursuant to new criteria of scientific research.

2. Methods

A well-elaborated research structure in conjunction with the set of practical and theoretical tools contributed to obtaining balanced research findings (Figure 1).

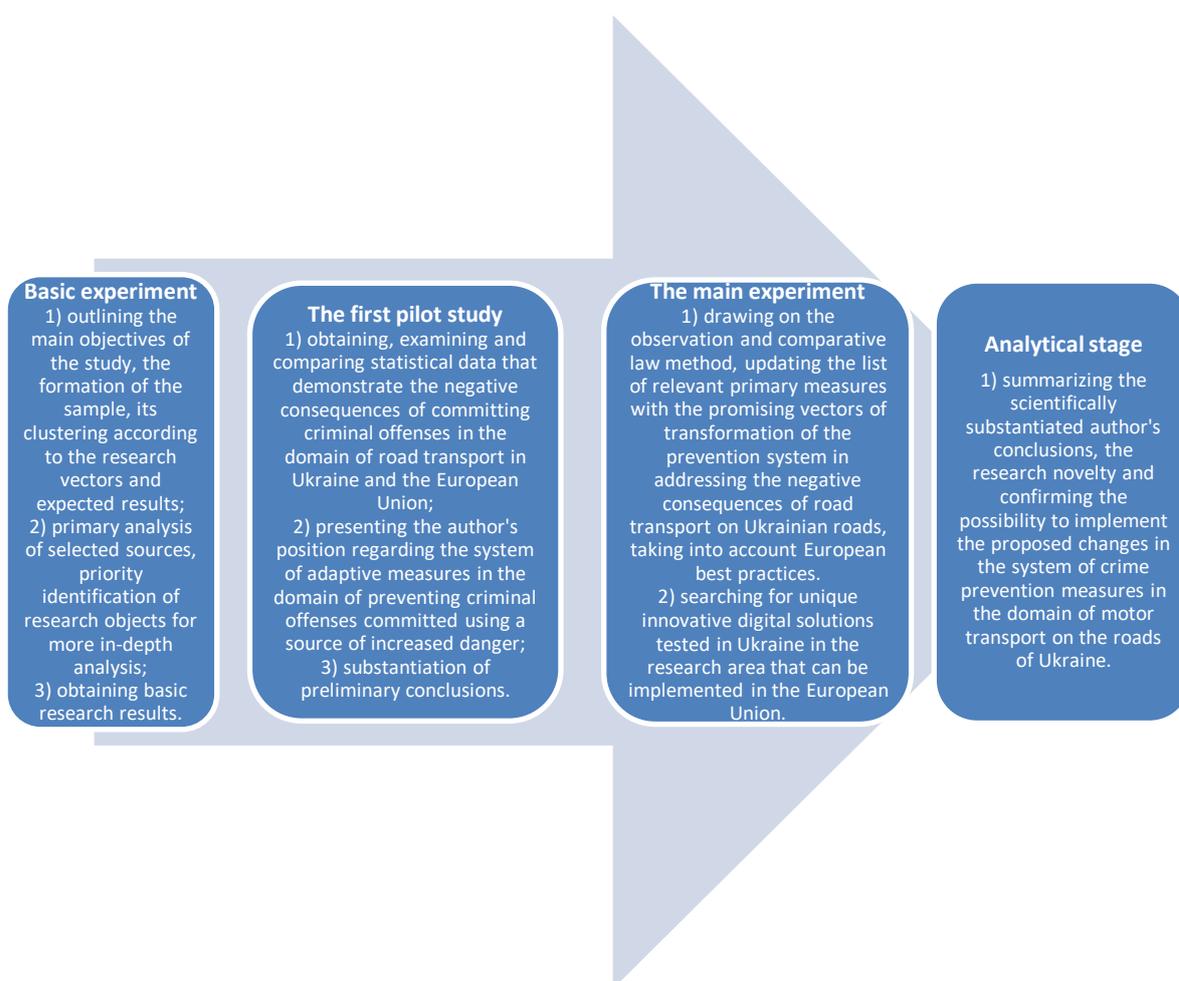
The conducted research was based on the above architectonics and the author's selection of a sample on the article subject. In particular, thirty-seven sources were processed and explored in the article.

Also, the findings of the search were obtained by the authors relying on methodological tools. The research methodology is based on a set of principles, among which the main one is the principle of unity of theory and practice. In the course of conducting the study, an integrated approach was used, which became the methodological basis of the research and allowed for a systematic consideration of the selected range of aspects.

The leading practical methods were the method of observation and comparative legal analysis. Due to the former method, a high level of digitization on the territory of Ukraine has been proved, which makes it possible to quickly implement preventive measures to control criminal offenses in the domain of road transport sector. What is more, precisely this method

made it possible to juxtapose the general and special preventive measures in the field under study, the discretion of state bodies in Ukraine and the European Union.

Figure 1. Structuring the conducted research according to the article subject.



The method of comparative legal analysis was aimed at finding common and distinctive features of special measures for the prevention of criminal offenses in the realm under discussion. Drawing on a legal basis, the comparative analysis made it possible to evaluate the level of effectiveness in terms of implementing the declared measures on the territory of Ukraine and the EU. Using the method of comparative legal analysis, it was also possible to focus on the prevention subjects, taking into account the economic and political factors inherent in Ukraine and the EU. A comparative study enabled us to observe properly speaking the overall picture of reforming the prevention system of criminal offenses in the

field of road transport. Due to the choice made in favour of the chosen method, there were relevant tools provided for predicting potential directions for the development of general theoretical and practical ways to most effectively ensure the implementation of declared prevention measures and adapt legal regulation to the contemporary realities.

Besides, the use of the historical and legal method contributed to a better insight into the process of building the system of measures for the prevention of criminal offenses in general, and in particular as regards the research of the article.

The method of non-empirical interdisciplinary analysis was also applied, which enables the researcher to analyze the phenomena of actual reality without conducting any factual practical research. Such a stance helped to properly study the socio-legal characteristics of international cooperation mechanisms in terms of enhancing the approaches to the implementation of preventive measures. Such an analysis is also indispensable as regards solving the problems of choosing relevant mechanisms for protecting the rights of victims in this category of criminal cases.

3. Results

The predictors of road accidents include the groups as follows: environmental factors (in particular, climate, weather, and road infrastructure); mechanical factors (in particular, make, age, and car breakdowns); and individual driver's factors (age, experience, driving style). The latter may also include seat belt use, alcohol consumption, fatigue, and chronic illnesses. We also distinguish other significant factors, such as irregular and long work shifts, stressful working conditions, and challenging interaction with other road users. Whether consciously or unconsciously, drivers are prone to violate traffic rules, eventually causing roadway accidents. Intentional violations include as follows: driving without seat belts, speeding on high streets, driving under the influence of alcohol, dangerous overtaking, driving when pedestrian light red, disobey parking signs, vehicle overloading, knocking down pedestrians without stopping, offering a bribe, and many others. Distractions are the second-largest driving error, which can lead to the highest number of road accidents. Most factors, such as low compliance with safety laws, ignorance, competition for passengers among drivers may affect drivers, which leads to certain misconduct while driving.

It can be noted that the system of special prevention of criminal offenses in the field of road transport operation includes the ongoing implementation of appropriate measures. It is carried out by internal affairs bodies, investigators, forensic experts, judges, officers of the penitentiary service, special units, NGOs, persons who assist law enforcement agencies in law enforcement (subjects of preemptive measures). With all the mentioned aspects, the crucial matter in this regard is the presence of common goals, tasks and rules, a high level of knowledge. Special prevention includes a set of measures and actions aimed at combating offenses by reducing or eliminating criminal causes. The objects of preventive influence are crime drivers and factors that affect or may influence the actions and behavior of individuals. The purpose of this prevention is to improve and educate people who have already committed offenses, or those who may commit them.

This appears to be the case with priority special prevention measure, which includes monitoring compliance with road safety and traffic rules on part of the drivers of vehicles and pedestrians. Thus, it can be said that the positive result of this law enforcement is based on its ability to use for road users a deterrent of considerable relevance. To address this goal, the main focus should be on increasing the surveillance level in order to ensure a high predictable risk of detention. There are two types of compliance monitoring with traffic rules: traditional and automated (e.g., surveillance cameras). The above mentioned types of control presuppose the obvious presence of police on the roads and the use of technologies to identify and detain violators of traffic rules to ensure compliance with the relevant ones. The introduction of other technologies for monitoring compliance with traffic rules (to complement the installed surveillance cameras), such as the use of "body cameras" by traffic police officers to record their actions with motorists, can also contribute to strengthening discipline and procedural justice. The police presence on the roads is aimed at regulating road users and ensuring compliance with traffic rules as far as speeding is concerned, using seat belts, driving under the influence of alcohol and driving without proper documents. The activities of law enforcement agencies provide a negative incentive designed to encourage drivers to avoid the unpleasant consequences of violating the law. Hence, the experience of a fine or suspension of a driver's license may cause enhanced caution when driving to avoid a repeat violation. Monitoring police patrols and knowing strict traffic regulations in the community can have an indirect impact on driving. This critical observation sheds light on

how by focusing on particularly dangerous driving modes, law enforcement agencies can change driving habits in society. The main reason for pedestrian violations of traffic rules is insufficient awareness of safety, so considerable attention should be paid to measures to train pedestrians in traffic rules and monitor their compliance. The education of pedestrians, their awareness and understanding of the importance of rules for interacting with other road users should also be reinforced. The said actions act as an important measure in the framework of special prevention, since non-compliance with pedestrian rules is often one of the main reasons for the drivers to violate the traffic rules.

With this in mind, it is necessary to monitor the technical condition of vehicles. Intermittent vehicle inspection includes checking its safety, serviceability, and controlling exhaust gas emissions. In fact, conducting regular and selective technical inspections of vehicles by the relevant authorities is a valid preventive measure. This activity leads to increased safety by reducing the number of road accidents.

It is also indispensable to raise awareness of road users about the "passive safety". It should be mentioned, that the role of passive systems is to ensure minimal damage to human life, even if this occurs at the point of partial or complete destruction of the vehicle. Passive security systems consist of a number of elements. Comprehensive crash tests and subsequent evaluations of each vehicle are essentially a test of the effectiveness of "passive safety" parameters. Passive safety systems consist of several structural elements. Proper design of the deformation zone of motor vehicles can absorb the impact of a collision as much as possible. Hence, a proper design might significantly reduce the number of bumps passed on to the passengers. Particular attention should be paid to the windshield design, which is made of multi-layer components. A reliable frame should include reinforced doors, roof, posts, and high window lines. The location of the fuel tank must be such that any leak is directed away from the accident scene. Airbags are required for impact protection. Likewise, modern seat belts should have certain mechanisms in place such as tensioners and force limiters. Also, if need be, there must be a child safety seat in the car.

Relevant special measures include activities to monitor the level of professional training of drivers and their health condition. A professional driver is a driver who participates in the processes of driving a vehicle by the nature of his occupation. He bears added responsibility for the safety of transportation of passengers or cargo by bus or truck. Professional drivers

must demonstrate their eligibility required to have a high degree of responsibility, maintain care, constant concentration and efficiency. When training professional drivers, special attention should be paid to technical skills, which include steering skills, reflexes, smooth braking and acceleration, the ability to estimate distance, and other indicators of the driver's abilities. Besides, security skills that measure situational and contextual awareness should also be monitored. These include the driver's awareness of the environment, careful use of turning signals, compliance with speed limits, and non-exposure to mobile phones and radios.

Special measures also include actions aimed at improving the quality of the road surface, monitoring the presence of road signs and lighting. Virtually all of the digital technologies (artificial intelligence (AI), machine learning, image processing, Internet of Things (IoT), smartphone applications, Geographic Information System (GIS), Global Positioning System (GPS), drones, social networks, and big data volumes) should gradually be involved in this domain. Relevant innovations are useful sources for providing information about road safety factors, including road users' behavior, lighting levels, road surface characteristics, and operating conditions.

A special measure for the prevention of criminal offenses in the realm of road transport operation is the activity of agencies of internal affairs during the investigation of accidents on road transport. A thorough analysis of all the circumstances at the scene of a motorized vehicle accident, especially in the absence of the vehicle involved and the person driving it, can help the investigator have an insight into the mechanism of the event. In addition, the relevant research in the process of conducting a forensic examination can help in the future to implement measures to prevent suchlike crimes. The collected and analyzed data will contribute to ensuring road safety in general. For committed road accidents, in order to conduct preemptive measures an accident rate analysis is carried out, according to which constant testing of emergency areas is carried out, taking into account the days of the week and time of day.

A significant lever for preventing motorized vehicles crimes is the activity of courts. Court rulings must contain comments for representatives of various state bodies, institutions, etc. regarding the reasons and conditions that contributed to the illegal action.

It is also very important to have a requirement for the above-mentioned bodies to take measures to eliminate the prerequisites that led to criminal offenses.

The activities of criminal correctional institutions are aimed at correcting the relevant convicts. Serving a sentence is a preventive measure to control the commitment of further offenses, including criminal offenses in the field of road transport operation. The prevention of repeat offenses in persons who have previously committed a crime is an important task of specific prevention, carried out in the form of measures for training activities and rehabilitation of criminals.

In particular, the recorded number of relevant criminal violations on the territory of Ukraine from 2017 to 2020 (prosecutor general's office of Ukraine, 2021) is reflected in Table 1. The above analysis indicates the presence of latency and prevalence of criminal offenses in the realm of road safety and transport operation. So, during January-October 2020, 14,140 criminal offenses against traffic safety and operation of transport were filed (Prosecutor general's Office of Ukraine, 2021). During this period in 2021 there were registered 11,951 relevant criminal offenses. There was a decrease in the number of road accidents involving victims by 6% compared to 2020, but there are already 2,592 deaths during this period in 2021. The reasons for committing an accident in Ukraine comprise but not are limited to the following: violation of maneuvering rules – 22%; exceeding the safe speed limit – 34%; non-compliance with the safety distance – 8%; violation of the rules for driving at the intersection – 8 %; driving under the influence of alcohol – 3.23%; entering the oncoming lane – 1.35%; violation of pedestrian crossings – 6% (resolution of the Cabinet of Ministers of Ukraine No. 1287, 2020).

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violation of the rules for driving at intersections – 8 %; driving under the influence of alcohol – 3.23 %; entering the oncoming lane – 1.35 %; violation of pedestrian crossings – 6 % (Cabinet of Ministers of Ukraine, 2020b).

Table 1. Number of criminal offenses in the field of road transport operation for 2017-2021 (grouped by the author based on the report of the Prosecutor General's Office of Ukraine)

Articles of the Criminal Code of Ukraine that denote the committed crime / Year of crime commission	2017	2018	2019	2020
Violation of traffic safety rules of transport operation by persons driving vehicles (Article 286 of the Criminal Code of Ukraine)	10148	8257	8739	8611
Violation of traffic safety rules or transport operation by the individuals driving vehicles, resulting in the death of the victim (Article 286 of the Criminal Code of Ukraine, Parts 2 and 3)	2039	1843	1919	1808
Putting technically defective vehicles into operation or otherwise disrupting their operation (Article 287 of the Criminal Code of Ukraine)	32	45	46	32
Violation of rules, norms and standards related to road safety (Article 287 of the Criminal Code of Ukraine)	28	26	17	20
Illegal possession of a vehicle (Article 289 of the Criminal Code of Ukraine)	9018	6642	5467	4496
Destruction, forgery or replacement of vehicle assembly numbers (Article 290 of the Criminal Code of Ukraine)	2303	1909	2345	1887
Violation of the applicable rules on transport (Article 291 of the Criminal Code of Ukraine)	50	50	74	70

The powers of the police of Ukraine include the implementation of preventive activities aimed at controlling the commitment of offenses (Law of Ukraine No. 580–VIII, 2015). Another category of no less importance relating to the preemptive activities of the National Police is the methodology of its implementation. Basically, there are two main methods, those of coercion and persuasion. To the main problems related to the implementation of preemptive measures can be referred the following. To detect vehicles in improper technical

condition that are operated on highways, it is necessary to get them to stop in accordance with Article 35 (Law of Ukraine No. 580-VIII, 2015). At the site of a road transport stop, it is often quite difficult to fully monitor the technical condition of the vehicle. Moreover, motor vehicles partially do not pass periodic technical inspection (Law of Ukraine No. 3353-XII, 1993). Besides, a matter of concern is the presence of corruption, the fight against which is an example of road accident prevention.

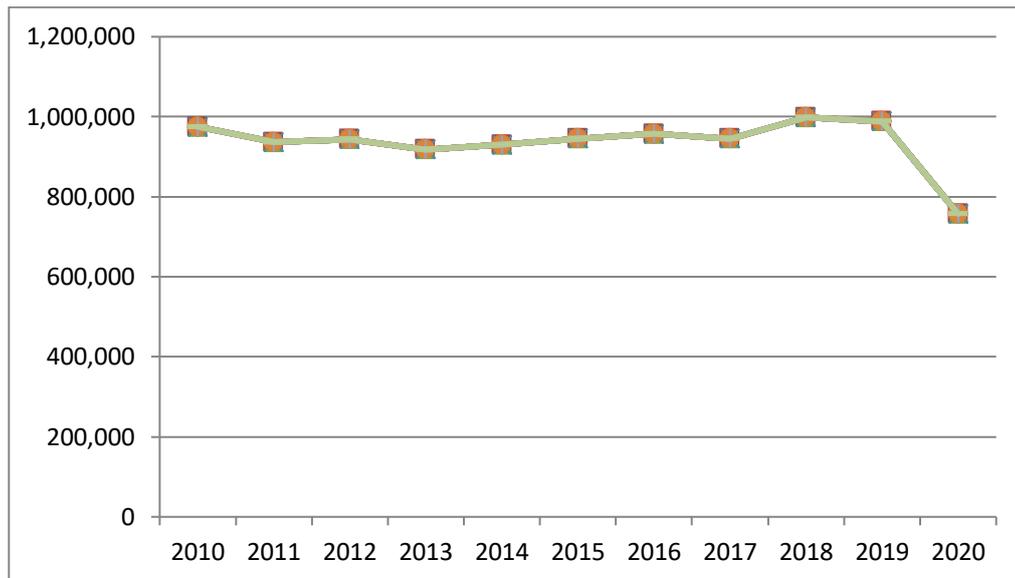
In 2020, Ukraine adopted a strategy for improving the level of road safety in Ukraine for the period up to 2024 (Cabinet of Ministers of Ukraine, 2020a) and the State program for improving road safety for the period up to 2023 (Cabinet of Ministers of Ukraine, 2020b). Accordingly, the number of deaths and seriously injured persons as a result of road accidents is projected to decrease by 50 percent by 2030 as compared to 2019 (Cabinet of Ministers of Ukraine, 2020b). It was equally critical to adopt amendments to certain legislative acts of Ukraine on strengthening responsibility for certain offenses in the field of road safety (Law of Ukraine No. 1231-IX, 2021). Of note is the systematic implementation of the automatic recording of traffic violations system on the roads of Ukraine, which includes 236 corresponding devices. It is also planned to launch the Phantom mechanism. These are vehicles that are technically equipped to record traffic violations immediately in motion. A bright example of applying special measures for the prevention of criminal offenses in the field of road transport operation is the elaboration by the regional councils of Ukraine of actual comprehensive programs for a certain period of time aimed at improving the road safety in communities.

That said, the practice of the European Union in the domain under study also calls for a comparative analysis. Thus, the EU's priority goals include ensuring the highest attainable level of road safety. Therefore, it is recommended to turn to the comparison of statistical data. Thus, the annual number of accidents resulting in injury or death in relation to EU member states for the period from 2010 to 2020 appears as follows (European Commission, 2022a):

Thus, no progress has been registered in reducing the death rate in the EU in recent years, and it has not been made possible to decrease twice the number of road deaths between 2010 and 2020. In addition, the external costs of road accidents in the EU account for about 2% of its annual GDP. The number of road accidents in 2020 has significantly decreased in

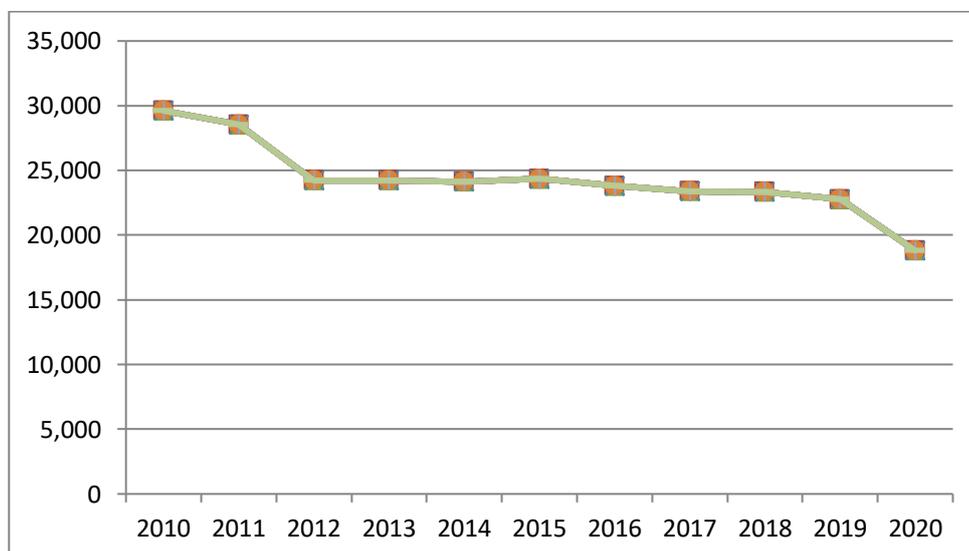
the EU countries due to the crisis caused by COVID-19. The pandemic has affected trips that have almost come to a stall during several weeks.

Figure 2. Statistical data on the commitment of criminal offenses in the domain of road transport sector in the territory of the European Union for 2010-2020 (grouped by the authors according to the European Commission data).



It is also relevant to mention in a comprehensive analysis the total number of deaths occurring as a result of road accidents in the territory of the European Union (Figure 3).

Figure 3. Statistics of deaths caused by road accidents in the European Union for 2010-2020 (summarized by the authors).



Within the framework of the EU road safety policy for 2021-2030, the EU has confirmed its long-term strategic goal of approaching zero deaths and serious injuries on EU roads by 2050 (Vision Zero). The EU also confirmed its medium-term goal to reduce deaths and serious injuries by 50% by 2030, according to the Valletta declaration. As of March 2022, the European Commission in March 2022 launched two public consultations on future rules for issuing driver's licenses and on cross-border compliance with traffic rules (European Commission, 2022b). The goal of future legislation in these two areas is to improve road safety in the EU, in line with the EU's commitment to reduce twice the number of road deaths by 2030. The law will also promote further free movement of people within the EU and activate digitalization in this sector. Amendments to the current legislation are among the actions set out in the Strategy for sustainable and intelligent mobility (European Commission, 2020).

In 2020, the EU adopted the Mobility Package, comprising a new set of EU rules for Road Transport (European Parliament & Council of the European Union, 2020). The mobility package was divided into three "sub-packages" and was already launched between 2017 and 2019. For instance, since 2020 and on, the employer covers, among other things, the costs of drivers' weekly night rest. The driver is allowed with two short weekly rest periods, which must be compensated during the 3rd week. Since February 2022, cabotage rules have been tightened, drivers' working hours have been changed, passes and tachographs for minibuses have been introduced, and obligations have been introduced to periodically return drivers to their country of origin and trucks to the company's headquarters. Starting from 2023, it is planned to introduce a digital tachograph with GPS on all vehicles.

In 2021, the EU adopted the EU Road Safety Framework Policy for 2021-2030. - recommendations on the further steps towards "Vision Zero" (European Parliament & Committee on Transport and Tourism, 2021). For the first time, the approach of the road safety system at the EU level began to be systematically applied. In fact, the data on the annual number of accidents that caused injuries or deaths in the EU countries became the basis for the adoption of this policy.

The legal regulation of vehicle technical inspection (VTI) in the European Union is regulated by Directive 2014/45/EC of the European Parliament and of the Council dated 3 April 2014 regarding periodic maintenance checks of automobiles and their trailers

(European Parliament & Council of the European Union, 2014). Vehicles used on public roads must be serviceable, and member states are required to carry out periodic inspections for the serviceability of vehicles. Thus, it can be stated that the authorities of the EU member states are responsible for compliance with European standards through national legislation.

In 2020, in collaboration with experts from member countries, the European Commission developed the first kit of key road safety indicators (KPIs). This kit includes as follows: infrastructure safety, vehicle safety, safe road use, including speeding, alcohol consumption, distraction and use of protective equipment, as well as emergency response. KPI acts as an essential component of the EU road safety policy for 2021-2030. The goal of the corresponding Baseline Project (Baseline, 2022) is to collect and coordinate reports on 8 KPI points. KPIs relate to the following areas: speeding, the use of seat belts and child restraint systems, the use of protective helmets by drivers of bicycles and two-wheeled vehicles, driving under the influence of alcohol, distraction to a mobile device, car safety, road infrastructure safety, care for the victim after an accident. Each participating country provides between one and eight national KPIs as a percentage data, which are comparable between countries and meet the minimum methodological requirements of the European Commission. Relevant data can help identify various factors that have a significant impact on overall road safety indicators and develop special criminological preventive measures.

An example of the introducing the special measures for the prevention of criminal offenses in the realm of road transport sector is the relevant activities in the institutions of the Spanish Penitentiary Service. As of today, more than 100,000 people are serving or awaiting sentences for crimes against road safety across the country. Since 2010, Spanish Penitentiary institutions have relied on the seminars of the AESLEME Association for the study of spinal cord injuries (AESLEME, 2022), which explain the risk factors for spinal cord injury during preemptive activities. Prisoners are told about the most serious types of consequences of neurological injuries in road accidents, such as physical, psychological, social, family, affective, economic, labor, etc. As of 2022, AESLEME has conducted 894 courses for 17,293 people who have committed criminal offenses against road safety. Punishment in the form of community work imposed for crimes against road safety in Spain can be carried out through the activities of TASEVAL road safety seminars. TASEVAL is configured as a set of measures aimed at developing the necessary skills in convicts to

overcome the circumstances that prompted them to commit a criminal offense (AESLEME, 2022). Its goal is to educate offenders about civil values when using public roads and raise awareness about the dangers of drinking alcohol and other toxic substances while driving.

4. Discussion

Deterrence can be achieved when there is a high probability of detention (i.e. certainty) and the impending punishment is both severe and rapid (Bates et al., 2020). Law enforcement agencies should focus on taking measures to increase confidence in the speed and severity of penalties, especially for juvenile drivers who commit offenses on the road (Bates et al., 2020).

Road safety training classes focus heavily on a small number of behavioral patterns, such as speed, and neglect other important behavioral aspects, such as smoking, alcohol, and drug use (Akbari et al., 2021). As a result, drivers may have an understanding of the risks and relevant knowledge, but still behave recklessly even after training.

Traditional technologies have now been replaced or supplemented with advanced digital technologies to analyze and develop innovative countermeasures to improve road safety (Torbagan et al., 2022). In this sense, is very important to take into consideration the prospect of predicting pedestrian behavior at crosswalks based on video surveillance, which is an important component of road accident prevention. The corresponding network can combine pedestrian posture, local context functions, and global context using a new multi-level closed unit (GRU) repeating structure to accurately predict pedestrian behavior at crosswalks (Zhou et al., 2022). Each government should elaborate the policy for pilot testing of the preventive role of drones in various services that can monitor crime, detect violations and control them (Nair, 2020).

Assessment of global personality traits and aggressive driving can be very useful for predicting risky driving style (Faílde-Garrido et al., 2021). The researchers suggest conducting primary prevention, where psychotechnical tests should be included in their assessment tools to identify driving styles and personal characteristics or personality traits that may pose a risk to driving. As for the secondary prevention, it should detect and treat traffic violators at an early stage using screening tools and evidence-based therapy (Holman & Popuşoy, 2020). With all the mentioned aspects, it cannot be denied that a proper prevention can help drivers tackle aggressive behavior (Miron-Juarez et al., 2020). Tertiary

preemption/rehabilitation should be aimed at criminals who have committed multiple offenses, or at the convicts who end up in prison. In addition, it is necessary to identify different profiles of road criminals, investigating which therapeutic strategies are best suited for each profile of criminals (Faílde-Garrido et al., 2021).

Due to the implementation of reforms in the system of the Ministry of Internal Affairs of Ukraine and the partial reduction of certain services, it is expedient to review the functional responsibilities of patrol service employees in order to improve the process of exercising their powers (Yeprintsev & Zhuchenko, 2021). Also, sufficient attention should be paid to strengthening the interaction of the police with forensic experts who carry out automotive expertise, as well as the qualification training of automotive experts. Finding out the objective causes of an accident, a thorough inspection of the car during registration/re-registration make it possible to timely prevent accidents related to vehicle shortcomings (Yeprintsev & Zhuchenko, 2021). While the most discussed causes in the scientific literature focus on human behavior, the technical condition of vehicles is also associated with mortality due to road accidents (Alonso et al., 2021).

According to Boymuradov (2020) it is necessary to add to Article 35 of the law of Ukraine on the National Police a clause on the possibility for police officers to stop vehicles if such a stop is carried out during preventive measures. The purpose is to conduct an inspection of drivers using special technical means to check for alcohol, drug or other intoxication or for the use of medications that reduce attention span and reaction speed.

In Ukraine, there is an urgent need to create a National Council for crime prevention (Golina, 2020), which will deal with issues of both general social as well as special criminological crime prevention.

Conclusions

The goal of crime prevention is to reduce crime and improve security, as well as prevent damage caused by crime. Deterrence will be minimal if motorists do not consider their illegal behavior to be detected and punished, regardless of how fast and severe the penalty for violating traffic rules will be. Special measures to ensure road safety have a positive deterrent effect on violators of traffic rules. The implementation of appropriate measures provides an opportunity to further improve the effectiveness and viability of road safety strategies.

Special measures for the prevention of criminal offenses in the domain of road transport operation include monitoring compliance with traffic safety rules and traffic rules by drivers of motor vehicles. It is also necessary to monitor the condition of roads, the presence of road signs, and the appropriate level of lighting. Particular attention should be paid to the service maintenance of the vehicles' technical condition. In this regard, it is very important to increase the level of "passive safety" by way of conducting relevant preemptive policing with pedestrians, as well as focusing on educational explanatory work with professional drivers. It is also of vital importance for investigative agencies, courts and penitentiary bodies to carry out proper prevention measures.

With all the mentioned aspects, it cannot be denied that it is urgent to use relevant digital technologies aimed at improving data collection in anticipation of new and advanced road safety analyses that will lead to the development of more successful preventive measures and technologies. In this light, it is safe to mention that the effectiveness of drones or unarmed surveillance vehicles can offset the lack of workforce and assist with various functions.

What should be stressed here, it is essential to carry out specific prevention of global personality traits and as well as in terms of aggressive driving to control risky driving style. In the process of instruction, drivers often do not have unambiguous understanding of their behavior as road users. Thuswise, some educational interventions realistically achieve a number of goals, but do not necessarily address all important reasons. As a consequence, the effectiveness of such interventions is likely to be compromised.

When it comes to Ukraine, one of the urgent problems was the reduction of police control over road safety. It is expedient to ensure that functional responsibilities of patrol service employees is upgraded and the interaction of the police with forensic experts who carry out automotive technical examinations is enhanced. Currently, in Ukraine there is an urgent need to create the National Council for crime prevention.

Developed by the European Commission in collaboration with experts from EU member states, the first kit of key performance indicators (KPIs) in road safety enables to identify diverse factors that significantly affect overall road safety indicators. The most important result of the current study is that the experience of this Baseline project can prove to be helpful in the development of special measures for the prevention of criminal offenses in

the field of road transport in Ukraine. The experience of conducting innovative seminars AESLEME and TASEVAL, which are held in the institutions of the Spanish Penitentiary Service, can be systemically integrated into the process of conducting special measures aimed at preventing criminal offenses in the domain of road transport operation in Ukraine.

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