Abstract. The aim of this article is to study the economic and legal means of preventing road accidents abroad, and to determine the possibility and feasibility of incorporating positive foreign experiences into national legislation and legal practice. The subject of research is the economic and legal means of preventing road accidents abroad. The methodology of the publication is based on an organic combination of philosophical, general scientific and specific legal research methods. Taking into account the subject matter, the methodology of comparative jurisprudence is used to a greater extent. Results. The study of foreign experience in the application of economic and legal means of traffic accident prevention gives an idea of the general trends in strengthening the role of economic means of encouraging drivers to observe traffic rules, namely: legal regulation of the dependence of the amount of the fine on the amount of the offender's wages and other income; increasing insurance payments for drivers who systematically violate traffic rules; economic incentives for drivers who observe certain rules during the year; systematic investments in the development of road infrastructure, innovative AI means of traffic regulation, development of public transport; expansion of the network of toll motorways to relieve public roads. It is emphasized that borrowing the experience of foreign countries in the specific field of public relations without scientific substantiation and without taking into account the peculiarities of national traditions, legal consciousness and legal culture cannot solve the key problems of ensuring road safety and preventing road accidents in Ukraine. Key words: economic means, road accident, prevention, cost of living, accident cost, road safety, foreign experience. JEL Classification: D73, K23

1. Introduction

Preventing road accidents is one of the priorities of law enforcement agencies and other public administrations in every civilised state, because it is better to prevent traffic violations that lead to accidents than to count losses and dead and injured citizens. The EU and the United States have stable legal systems developed over centuries, as well as well-established and proven mechanisms for preventing traffic accidents. Therefore, Ukraine needs to summarise the relevant positive experience and determine the possibility and feasibility of its implementation in national legislation and everyday legal practice of road safety.

The above highlights the relevance and theoretical and practical importance of studying economic and legal means of preventing traffic accidents in foreign countries.

Various aspects of road accidents and challenges to ensuring road safety have been elucidated by such prominent scientists in their works as Bytiak "Proceedings in Cases of Administrative Automatically Recorded Offenses on Road Safety: Individual Issues" (Bytiak, 2021); S. Butnyk "On Improving the Legislation on Ensuring Road Safety" (Butnyk, 2013); V. Vvedenska "Administrative Mechanism of Prosecution for Automatically Recorded Road Offenses" (Vvedenska, 2014); M. Veselova & A. Mammedova "Controversial Issues of Responsibility of Vehicle Owners for Automatically Recorded Administrative Offenses against Road Safety" (Veselova, Mammedova, 2018); S. S. Husarov "Administrative Principles of Public Administration of Road Safety in Ukraine" (Husarov, 2001); M. Dolhopolova "Administrative Principles of Public Administration of Road Safety in Ukraine"
2. Statistical Indicators of Deaths as a Result of Road Accidents in Ukraine and EU Countries

Ukraine is experiencing a catastrophic road safety situation. There is an undeclared war on the roads, with tens of thousands of victims.

Thus, Ukrainian scientists S. Koziakov and M. Berlin note that during the 30 years of Ukraine's independence, almost 180,000 people died in road accidents. According to official statistics, from 2011 to 2016, 26,700 people were killed and 210,400 injured. In addition, more than 42.6% of those killed in road accidents in 2016 were pedestrians and cyclists. Road traffic accidents in Ukraine are the first cause of death for young people aged 15-24 and the second cause of death for children aged 5-14 (Koziakov, Berlin, 2021).

At the same time, the number of road deaths in Europe has fallen steadily over the last 10, 20 and 10 years.

Thus, in 2020, 18,844 people died as a result of road traffic accidents in the EU, which is 10,847 fewer than in 2010 (-37%). During the reporting period, 56,305 fewer people died on EU roads than would have been the case if the number of deaths had remained at the level of 2010.

The monetary value of human losses saved by the economies of the EU Member States through the prevention of road traffic deaths is approximately 156 billion EUR (Koziakov, Berlin, 2021).

It should be noted that the monetary valuation of human losses is not a manifestation of cynicism. The pragmatic approach is due to the need for economic justification for increased investment in road infrastructure development, the introduction of innovative means of preventing road accidents, etc.

During the 2010–2020 reporting period, the highest annual reduction in road deaths in the EU was achieved in 2020: 3,919 deaths per year were prevented compared to 2019 – an unprecedented reduction of 17% in one year. However, when analysing the statistics for 2020, Europeans openly admit that these exceptional results were not the extraordinary result of major changes in road safety policy, but rather the effect of unprecedented restrictions related to the COVID-19 pandemic. For example, the number of road deaths in the EU fell by almost 40% in April 2020, when most European countries were in the first zone of restriction, compared with April in the previous three years (Koziakov, Berlin, 2021).

The effectiveness of any measures to improve the traffic situation is assessed not only by the number of deaths and injuries, but also by the amount of actual savings after the improvement of statistical indicators. Ukraine is 15 years behind in this respect (Koziakov, Berlin, 2021). However, taking into account Ukraine's European integration aspirations, national public administration bodies and civil society can overcome the aforementioned gap and carry out appropriate reforms by borrowing the best positive experiences of EU countries in the relevant field of public relations.

Most EU countries apply a system of reporting deaths when a citizen dies within 30 days of a road accident (and as a result of an accident). Only Slovakia uses the criterion of 24 hours instead of 30 days. In Ukraine, if a person dies on the way to hospital, he or she is not included in the statistics of road traffic deaths kept by the national police (Koziakov, Berlin, 2021).

A true picture of road deaths is therefore all the more shocking and requires an immediate response from public authorities.

3. The Cost of a Road Traffic Accident in the EU

Europeans look at the costs of an accident from a socio-economic perspective. The following components are included: human costs; medical costs (e.g., transport costs to hospital, costs associated with hospital treatment and subsequent rehabilitation); costs associated with loss of production; costs associated with damage to property (mainly vehicles); administrative costs (e.g., activities of police, fire brigade, insurance); other costs (funeral costs).

Within the EU, official expenditure from the budget or other sources related to a fatal accident ranges from 0.7 million EUR per fatal accident in Slovakia to 3.0 million EUR per fatal accident in Austria. The amount spent on the treatment of serious injuries varies from 2.5 to 34% of the cost of death (Koziakov, Berlin, 2021).

At first sight, such cosmic sums are calculated by economists and include an estimate of the human cost to the economy: in particular, the income that a deceased professional (skilled worker) could have
costs include "major", "minor" and "other" items.

The major costs include not only those that account for a larger share of total costs (economic, human and demographic costs due to deaths and injuries), but also much smaller costs that are also major (police costs).

Minor expenses are the costs associated with the loss of a broken down vehicle.

Other costs are the lost opportunity to work from home or in one's major (Koziakov, Berlin, 2021).

Such a systematic approach to assessing the cost of a road accident deserves attention and implementation in national legal practice. Given the terrible statistics of road accidents in Ukraine, economic calculations will be a strong incentive for legislators to regulate the drastic measures of road accident prevention and develop innovative measures to ensure road safety.

Human costs are the price of pain, suffering, grief and loss of quality of life. These are the components of "major human costs" as a whole. Although these intangible costs are not reflected in market transactions and prices, it is generally accepted international practice to include human costs in accident investigations because they represent a loss of public welfare. Three main types of expenditure can be distinguished: firstly, human costs caused by a fatal outcome (years of life lost); secondly, human costs associated with injuries (loss of quality of life); thirdly, costs to relatives (Koziakov, Berlin, 2021).

4. Main Approaches to the Methods of Calculating the Cost of Accidents in Foreign Countries

In order to determine the system of measures to ensure road safety and prevent accidents, including the number of budget allocations for their implementation, foreign countries use different methods of calculating accident costs.

S. Koziakov and M. Berlin state that three main approaches to accident cost calculation methods are currently available worldwide.

Cost-based approach to compensation (given compensation for material losses). This is the cost of the resources required for the treatment and recovery of the victim and the additional costs incurred by the victim's relatives and friends in coping with the consequences of the traffic accident (a rather narrow approach that only considers microeconomic indicators and ignores the impact of a traffic accident on macroeconomic processes).

Human capital approach. It treats a person as a productive unit. Its application to road safety involves estimating a person's income from the moment of their premature death to the end of their expected life. For example, Australian approaches to assessing the economic benefits of safety measures are traditionally based on the method of valuing human life on the basis of human capital (Koziakov, Berlin, 2021).

Willingness to pay. Estimates are based on the price people are willing to pay to reduce risk (or accept as compensation for risk). For a particular type of risk, the value to society is usually calculated by averaging the values derived from a representative sample. The societal willingness-to-pay approach looks at the price society is willing to pay to reduce risk. A sum can be obtained, for example, from (public) expenditure on accident prevention (the sociological method and its techniques are central in the present case: surveys, questionnaires to citizens, sociological observation, etc., including interactive surveys in social networks; sociological surveys give an idea of the attitudes of different social groups towards different means of accident prevention and their willingness to use them in practice, invest in their development, etc.).

The value of statistical life (VSL) is always considered in such calculations. This parameter assesses people's willingness to trade off wealth for reduced mortality risk, and is often an important component of the quantitative benefits calculated when assessing public health and safety policies (Koziakov, Berlin, 2021).

In the United States, for example, the estimated cost of living was strange for the reality of Ukraine: 9.1 million USD in 2012 and 11.6 million USD in 2020. It is known that such indicators will be much smaller for Ukraine, but the very fact of introducing such an approach into national legislation and legal practice is essential: it will allow to take into account the opinion of citizens in planning and regulatory consolidation of the system of measures and specific means of accident prevention.

According to Ukrainian scientists, another priority issue for Ukraine is the adaptation of the legislation on civil liability insurance for owners of land vehicles to the EU acquis with regard to the determination of the scientifically justified amount of the insurance premium and, consequently, the determination of an adequate basic premium amount under such contracts (Koziakov, Berlin, 2021).

The limit of liability of the Ukrainian insurer for the death of the victim is only 260,000 UAH in the case of vehicular homicide caused by the fault of the car owner. This amount is undoubtedly insufficient to restore the solvency of a family that has lost its breadwinner. In the 1960s, sociologists found that the average American and British driver valued his life about six times higher than the money he could earn in the rest of his life. Based on this data,
S. Economic and Other Means of Preventing Road Accidents in Foreign Countries

The prevention of road accidents and administrative and legal means of ensuring road safety are covered in the works of both domestic and foreign scholars.

For example, V. Sokurenko and A. Stryzhak devoted their work to the general characteristics of administrative-legal means of ensuring road safety in Ukraine (Sokurenko, Stryzhak, 2021). Some administrative-legal means of ensuring road safety were studied by O. Salmanova (Salmanova, 2002).

K. Nazarova, I. Mykytiuk and V. Hotsuliak note that the problem of road safety affects the vast majority of countries. Every year 1.35 million people die on the roads.

In the context of globalisation processes, indicators of asymmetry in the number of road accidents and the number of people involved (in different countries) have clearly manifested themselves. Solving the problem of ensuring road safety is currently one of the priority tasks of national development of countries and an imperative of globalisation and effective public management. In order to reduce the number of road accidents, the state should pursue a consistent and targeted road safety policy.

In this context, the use of a new traffic management system is planned, which will be an effective tool for preventing road accidents. For the effective implementation of the road safety management system, it is necessary to further analyse the factors and causes of road accidents, taking into account the interrelations between the main components of the impact on road safety. This condition requires a drastic change in the strategy and tactics of road safety audits. A key mechanism for the implementation of such a strategy should be a road safety audit, approved at the legislative level as a mandatory type of audit. In order to introduce the road safety audit, Ukraine should draw on the experience of other countries with more developed audit systems and methods and develop a national standard, principles, rules and procedures for road safety audits (Nazarova, Mykytiuk, Hotsuliak, 2020, pp. 242–243).

Interesting is the work of M. Kyselova, who studied the foreign experience of legal regulation of the creation of an emergency corridor in case of a traffic accident.

For example, according to the legislation of many countries, an emergency corridor is a free lane reserved for priority vehicles: emergency services, ambulances, fire brigades, police, evacuators, and so forth (Improving post-collision response and emergency care in Europe, 2018).

In Germany, for instance, the following services are authorised to use an emergency lane: police, ambulance, fire brigade and evacuation services. Other road users are not allowed to use the emergency lane. Germany is one of the first countries to codify the use of emergency lanes, and the concept and rules were introduced in 1971 with an amendment to the KRESZ (Kyselova, 2022).

In Austria, an emergency corridor can be used by emergency vehicles, emergency evacuation vehicles, hearses and road maintenance equipment. The requirement to create an emergency corridor on motorways and roads has been in force since 2012. The fine for violating the corridor requirement is 2180 EUR.

In Poland, the requirement to create an emergency corridor will apply from 6 December 2019. According to Polish law, an emergency corridor is a lane conditionally created by other drivers to allow ambulances to pass in case of traffic jams. According to Art. 86 of the Code of Administrative Offences, blocking or not creating an emergency corridor is punishable by a fine of 200 to 500 PLN and the withdrawal of 6 driving points. It should be noted that the Polish court may withdraw the offender's driving licence for a period ranging from 6 months to 3 years.

In the United States, it is strictly forbidden to use an emergency lane for non-priority vehicles. For such an offence, a driver is liable to a fine of $50-100, imprisonment for a certain period of time and the cancellation of points on the driver's licence, which are accumulated for traffic offences and can in turn lead to the suspension or cancellation of the driver's licence (Kyselova, 2022).

The experience of the United States is also positive with regard to the functioning of a specialised governmental public administration body dealing with road safety, namely the National Highway Traffic Safety Administration (National Highway Traffic Safety Administration, 2023). The agency manages a wide range of road safety issues and provides extensive information support to drivers, particularly on innovative ways to prevent road accidents.

In this publication, it is also important to study and take into account foreign experience in ensuring road safety by the police and legislation on accident prevention.

D. Kozar notes that in Norway, in addition to the Road Traffic Act, road safety issues are regulated by the Act "On Compulsory Prohibition for Persons of Certain Occupations", which stipulates that persons...
of certain occupations, including drivers of commercial vehicles, must be completely prohibited from using alcohol or drugs for at least 8 hours before driving. In Germany, in addition to the Law "On Road Safety", there are a number of legal acts providing legal support for the relevant industry, namely Law "On Violation of Road Traffic Rules", Regulation "On Driving Licences" (which regulates the procedure for issuing driving licences). The system of traffic fines is regulated by a sufficiently comprehensive catalogue of fines (Kozar, 2020, p. 55).

Moreover, in Germany, if a driver accumulates penalty points for traffic offences in a year, the amount of his insurance, which is up to 1,000 EUR, increases by an additional 500 EUR in the second year, by 1,000 EUR in the third year and by 2,000 EUR in the fourth year. With a salary of between 3,000 and 5,000 EUR, these are considerable costs that not everyone can afford. Given the number of penalty points, the cost of annual car insurance in the United States increases accordingly. Foreign legislation has also introduced a new approach to the calculation of traffic fines, the amount of which directly depends on the offender's monthly salary (excluding taxes) or the minimum wage established in the country; the minimum fines for particularly dangerous traffic offences are multiplied by 2-10; an offender who pays a fine on the spot to a police officer (if the law allows it) or within 3-7 banking days, the amount of the fine is reduced by 30 to 50%; the amount of the fine is increased by 2-3 times (at the expense of a penalty) if the offender has not paid it within 1 month or more (Kozar, 2020, p. 55).

Thus, in foreign countries, in addition to the standard fines for traffic violations, economic means are actively used to prevent traffic accidents; moreover, the amount paid by a person for car insurance is significantly increased; the amount of the fine is linked to the salary and other income of the offender, etc., which significantly influences the legal awareness of drivers and economically stimulates them to observe traffic rules.

Most attention is paid to the positive experience of foreign countries with the automation of traffic management and the automatic recording of traffic offences. The gradual digitalisation of the road safety system leads to a minimisation of the human factor and, accordingly, to a reduction in the risk of corruption in the relevant area of public relations. The offending driver does not communicate with the police because automatic digital cameras for photo and video recording of traffic violations have facial recognition functions and licence plate numbers linked to vehicle registration systems and demographic registers. The offender therefore receives an automatic notification in his mobile application or by post about the need to pay a fine and, if he disagrees, he can contest it administratively or in court. In this case, however, the offender loses the opportunity to pay the fine within the so-called "grace period", i.e., not in full. The economic incentive can significantly reduce the burden on administrative bodies and courts, discipline drivers and has no corruption risks.

As T. Shumeiko notes, automated technical systems for the correction of traffic violations and the registration of materials for the administrative responsibility of offenders work effectively in most foreign countries, which contributes to an actual reduction in the number of violations, a decrease in the number of accidents and, consequently, in the number of deaths, injuries and material damage to individuals and legal entities (Shumeiko, 2017, p. 181).

Another positive aspect is the adoption of pan-European standards for road safety management, as reflected in Directive 2008/96/EC of 19 November 2008 on the management of road infrastructure safety (Directive 2008/96/EC, 2008). In view of Ukraine's objective to become a full member of the EU, the implementation of the above-mentioned Directive into national legislation and legal practice is crucial.

Measures to educate the population about the law are equally important in order to clarify the current legal provisions for citizens and to disseminate information about the system of road safety measures, including the publication of statistics on road accidents and their consequences abroad, e.g., Road Safety Country Overview (Road Safety Country Overview – Switzerland, 2016).

The publication of such statistical compilations, which share data on the total number of road accidents, traffic-related deaths and hospitalised victims, has a positive effect on the legal awareness of citizens and provides an information base to justify the need for increased investment in the road safety system. Such successful practices deserve attention and implementation in Ukraine.

6. Conclusions

The analysis of economic and other means of preventing traffic accidents in foreign countries leads to the conclusion that the civilised states of Europe and North America use the following economic means of preventing traffic accidents: legal regulation of the dependence of the amount of the fine on the offender's salary and other income, increase in insurance payments for drivers who systematically violate traffic rules; economic incentives for drivers who do not violate traffic rules during the year; systematic investments in the development of road infrastructure, innovative means of traffic regulation...
using AI technology, development of public transport; development of toll motorway networks to relieve public roads; investments in legal and economic education of citizens (publication of statistical and analytical compilations on road safety and road accident prevention).

In addition, foreign countries emphasise the automation of traffic regulation and the detection of traffic offences, which significantly reduces the burden on law enforcement agencies, optimises the procedure for paying fines and has a positive effect on drivers’ legal awareness and legal culture, which in turn leads to a reduction in the overall number of traffic accidents.

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At the same time, it should be emphasized that borrowing the experience of foreign countries in the relevant field of public relations, without scientific justification and taking into account the peculiarities of national traditions, legal consciousness and legal culture, cannot solve the central problems of ensuring road safety and preventing road accidents in Ukraine.

The prospect of further specific research is driven by the need to study the experience of using economic and legal means of traffic prevention in the Middle East, Latin America and other countries, in order to identify positive practices and determine the possibility and feasibility of implementing them in national legislation and legal practice.


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