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COST COUNTING: A STUDY ON DETERMINATION AND PREVENTION OF TRAFFIC CRIMES

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Abstract. The *subject* of the research is the study of socio-economic losses from road traffic crimes on the basis of statistical data on mortality and injuries on the roads of the EU and Ukraine in order to assess the scale of negative consequences caused by road traffic accidents, identify their causes and outline the prospects for prevention. *Methodology.* The research methodology includes theoretical and empirical methods: dialectical, analytical, synthetic, statistical and sociological. The theoretical basis of the article is the specialised literature on law, economics and sociology. The empirical basis of the study was the materials of generalisation of the results of a survey of various categories of respondents in the total number of 8,305 people on the problem of road safety on Ukrainian roads. The *purpose* of the article is to determine the cost of road traffic crimes for the EU and Ukraine, and then to consider the determinants of this phenomenon and the possibilities of its prevention. *Results.* It is noted that the main causes of road accidents in Ukraine are still subjective determinants, namely the unsatisfactory level of legal culture and legal awareness of road users. A separate manifestation of this phenomenon is aggressive driving, which is expressed primarily in a more "material" way by driving faster than the legal speed limit, fast and frequent overtaking on the road, including without keeping a safe distance, driving in the opposite lane or running red lights, ignoring traffic signs – rather than obscene gestures, shouting, verbal abuse or honking at other road users or driving. *Conclusion.* The study of the socio-economic consequences of road accidents in the European Union and Ukraine has demonstrated that the lack of a universal methodology for assessing such consequences (based on the material category – the price of road accidents) results in significant discrepancies in the scope and "cost" of these accidents across different countries. International organisations have made efforts to "unify" such losses on the basis of specific criteria, with some positive outcomes. Therefore, despite the discrepancy in the internal evaluation of the consequences by states, their external assessment is reflected in the definition of such losses as a percentage of the gross domestic product, which underscores the direct correlation between the state's economic stability and road safety. The most commonly used criteria for road crash costs are the determination of material damage, which is manifested in damage to road infrastructure and personal property; the intangible value of the lost quality of life and lost years of life; costs of inpatient and outpatient treatment; costs of ambulance service and transportation of the injured; police and fire services; insurance company payments; legal costs; and so forth. The survey revealed that in order to prevent road accidents and traffic crimes, it is necessary to implement the following measures: increase liability for traffic offenders; criminalise more traffic offences; increase fines for traffic offenders; and adhere to the principle of inevitability of punishment.

Keywords: road traffic crimes, socio-economic costs, cost of crime, determination of crime, costs of road traffic crimes, road mortality, road traffic accidents, crime prevention.

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1. Introduction

The institute of economics constitutes one of the fundamental social institutions of the state. It is primarily understood as the production of material goods and the assurance of human livelihoods. The economic component of the state's existence is of paramount importance, as economic independence is a fundamental guarantee of state sovereignty, and economic balance is a crucial element in the establishment of a robust foundation for its development (and in the case of Ukraine, post-war reconstruction and development).

The relationship between the economy and crime is a multifaceted phenomenon. The first of these is the determining factor, namely the role of economic factors in the reproduction of crime as a social phenomenon. The second is the preventive factor, namely the economic basis of measures to counter it. A further type of relationship between social phenomena, including criminal manifestations, is their socio-economic impact. In the field of criminology, the financial implications of criminal activity are often quantified through the concept of the "cost of crime" or the "price of crime".

The cost of crime can be defined as a monetary assessment of the negative impact of criminal activity on society as a whole and on specific social relations over a specified period of time (Smetanina, 2016, p. 142). However, Medytskyi I. (2020, pp. 20–48) posits that a more encompassing concept for delineating the ramifications of criminal activity is the notion of "social consequences". This is because the "price of crime" predominantly pertains to material damage, which is quantified in monetary terms. Criminologists also use the following understanding of the "cost of crime" as a set of physical, property, economic, moral and other types of damage from crime (Criminology. Academic course, 2018, Lytvynov (Ed.), p. 40, 2018). In addition, the components of the cost of crime will differ depending on the type of crime being analysed: homicide, bodily injury, rape, theft, fraud, robbery, assault, road traffic offences, economic crime, environmental crime, etc. All of them have their own unique set of socio-economic consequences, the characteristics of which are the basis for studying their causes and finding ways to prevent them.

Traffic crimes represent one of the most pervasive categories of criminal activity, observed in nearly all regions of the globe. The analysis is based on the assessment of the state of traffic safety, with a particular focus on road user deaths and injuries. One distinctive feature of this study is the variety of approaches employed to categorise certain actions of road users as offences, the diverse methodologies used to quantify the harm caused by road traffic accidents, and the resulting range of strategies to prevent road traffic accidents (Batyrgareieva, 2022, p. 20).

The aim of the article is to determine the cost of road traffic crimes for the EU and Ukraine, and then to explore the determinants of this phenomenon and the possibilities of its prevention (based on a survey conducted by the Criminological Department of Academician Stashis SRISCP NALS of Ukraine).

The research methodology encompasses a range of theoretical and empirical methods, including dialectical, analytical, synthetic, statistical, and sociological approaches.

The theoretical framework of the article is based on an analysis of specialized literature on legal, economic, and sociological topics, as the study of the social and economic costs associated with traffic crimes is inherently multidisciplinary in nature. Such research has been conducted by scientists for decades. In particular, D. J. Reynolds conducted the estimates in 1956 in the paper "The Costs of Road Accidents". He defined these estimates as the minimum values that can be placed on the consequences of road accidents. Subsequently, these estimates were applied to two accident-reducing measures to demonstrate how they could be used as a guide to inform policy and action to prevent accidents (Reynolds, 1956, p. 393).

In recent studies on the subject, researchers have examined the costs of road traffic offences both in general, in the context of modern society, especially its digitalisation, and in relation to social events (COVID-19 pandemic, war in Ukraine, etc.) and regional specificities. The executive body of the European Union (the European Commission) and also some institutions of the European States (ministries, police forces, etc.), international and European organisations are also involved in road safety research and produce and publish reports on their findings (e.g., the World Health Organisation, the European Transport Safety Council, the SWOV Institute for Road Safety Research and others). Recent studies on the social and economic costs of road accidents include "The Economic Consequences of Car Accidents on Employment and Productivity" (Nalchadzian, 2024), "A Systematic Review of the Application of Road Safety Valuation Methods in Assessing the Economic Impact of Road Traffic Injuries" (Nankunda, Evdorides, 2023), "The Economic Burden of Road Traffic Accidents and Injuries: A Small Island Perspective" (Tandrayen-Ragoobur, 2023) and others.

There are also several comprehensive criminological studies on the current costs of traffic crimes in Ukraine. They are as follows: "Mortality and injury in Ukraine as a result of traffic accidents in meaning of public health: to the analysis of social-legal and criminological problem" (Batyrgareieva et al.,

2021), "Assessment of road traffic accidents and the severity of its consequences in Ukraine" (Holovkin, 2022), "Social Consequences of Road and Transport Adventures" (Novikov, 2023) etc. Special attention should be paid to assessing the losses to Ukraine's economy from road safety threats, given the current situation of war (Batyrgareieva et al., 2023). Some aspects of a legal analysis of the mutual influence of road accidents and the national economy, which is manifested at various levels of relevant public relations (Anokhin, Holovko, Mul, 2023), and the economic and legal means of preventing road accidents abroad are also studied by Ukrainian researchers (Anokhin, Vaida, Siur, 2023).

The empirical basis of the study was the materialisation of the results of a survey of various categories of respondents, totalling 8,305 individuals, on the issue of road safety on Ukrainian roads. The survey was conducted on a national scale, encompassing all regions of Ukraine, with the exception of territories currently occupied by the Russian Federation. The survey was conducted between December 2022 and November 2023 using the Google Forms software.

In order to examine the underlying causes of road accidents and to identify potential strategies for their prevention, a total of four groups of respondents were selected: the general public (comprising 5,163 individuals), all road users, officers of the Patrol Police of Ukraine (numbering 2,822), and public activists, leaders, and members of public organisations engaged in the promotion of road safety (numbering 320).

2. Social and Economic Costs of Traffic Crimes

The methodology employed for the calculation of costs associated with road accidents varies on a country-by-country basis. Nankunda & Evdorides note that 55% of the studies they reviewed used willingness-to-pay (WTP), 29% used human capital (HC), 11% used replacement cost and 5% used other methods. In high-income countries (HICs), WTP was the predominant method used, while HC was more common in middle-income countries. It was also found that 49% of studies in this area were conducted in HICs, while 4% focused on low-income countries (LICs) (Nankunda, Evdorides, 2023).

A common approach in the literature is to distinguish between the following three types of costs associated with road traffic accidents (and, in particular, road traffic crimes):

1) *Direct costs* measure the opportunity cost of the resources used by the victims of a road traffic accident. Direct costs can be either health-related (e.g., medicines, hospitalisation, outpatient consultations, ambulance, rehabilitation, funeral costs, etc.) or non-health-related (e.g., transport to medical appointments, cost of emergency services, cost of unavailability of a vehicle (rental costs), vehicle repairs, cost of repairing damaged property, etc.).

2) *Indirect costs* take into account the potential productivity losses resulting from road traffic crashes, including productivity losses due to morbidity, mortality and time spent providing informal care to patients.

3) *The costs associated with pain, grief and suffering* take into account the pain, grief and suffering, as well as the quality of life of road traffic victims and those close to them (relatives, friends, society) (Social Cost of Road Crashes, p. 23).

Road traffic accident costs can also be classified according to another approach (by the criterion of the type of costs depending on the subject area of the costs):
– Medical costs (expenses for inpatient and outpatient treatment, social insurance, disability payments, sanatorium and resort rehabilitation);
– human losses (the intangible value of lost quality of life and years of life);
– administrative costs (ambulance services and transportation of victims, police and fire services, insurance company payments, legal costs);
– property losses (damage to vehicles, road infrastructure, cargo, and personal property);
– other damages, such as loss of time due to disruptions in public transport as a result of the accident, inability to use transport and funeral expenses.

In Europe, the costs range from 0.4% to 4.1% of the gross domestic product (GDP). The discrepancies are primarily attributable to variations in cost valuation methodologies, as previously discussed. Information pertaining to the financial implications of road traffic accidents is employed in the formulation and assessment of road safety policies, as well as in cost-benefit analyses of road safety measures (Road crash costs). The estimated cost of road accidents in 31 European countries ranges from 0.7 to 3.0 million EUR per fatality (2015, adjusted for PPP). The cost per serious injury ranges from 2.5% to 34.0% of the costs per fatality, while the costs per slight injury range from 0.03% to 4.2% of the costs per fatality (Wijnen et al., 2019).

As estimated by the World Bank, Ukraine's socioeconomic losses resulting from road traffic injuries amount to approximately 70 billion UAH annually. This equates to roughly 2% of GDP (Strategy for improving road safety in Ukraine until 2024). The mortality rate resulting from road traffic accidents in Ukraine is a significant cause of material and human loss. In 2020, the number of years of potential life lost (YPLL) due to premature mortality in Ukraine alone was 98,039, representing a loss of 82,677 working years. In monetary terms, the value of the loss of life is estimated at approximately 308 million USD (Batyrgareieva et al., 2021).

The World Bank recommends using a methodology for estimating economic losses from road accidents, according to which a fatality is estimated at about 70 GDP per person, and a serious injury at 17 GDP. The Directorate for Transport Safety of the Ministry of Infrastructure of Ukraine has estimated that the socio-economic losses incurred by Ukraine in 2019, excluding the costs associated with property damage and reduced labour productivity, amounted to approximately 4.79 billion USD. This figure represents 3.18% of Ukraine's gross domestic product (The state of transport accidents in Ukraine in 2019, 2020, p. 9).

3. Road Mortality in the European Union and Ukraine

In 2023, there were 20,418 deaths on EU roads, representing a collective decrease of 1% compared to 2022. This figure falls significantly short of the 6.1% annual reduction that is required in order to achieve the EU target of a 50% reduction by 2030 (18th Annual Road Safety Performance Index (PIN Report), 2024).

A total of 18 of the 32 countries monitored by the European Transport Safety Council's Road Safety Performance Index (PIN) Programme experienced a decline in road deaths in 2023 compared to the previous year, 2022. Malta led the way with a 38% reduction, followed by Luxembourg (27%), Belgium (11%) and Hungary (10%). Conversely, road deaths remained unchanged in two countries and even increased in 12 countries, with a significant 33% increase in Lithuania and a 26% increase in Latvia (18th Annual Road Safety Performance Index (PIN Report), 2024).

Compared to 2019, the baseline year for achieving the EU's 2030 target, 19 countries have shown a reduction in road deaths by 2023. Poland and Cyprus top the ranking with a significant 35% reduction. They are followed by Belgium and Denmark with a reduction of 25% and 22% respectively. Malta's mortality rate remained stable, changing by 0%. Conversely, a rise in road fatalities was documented in 11 countries over the same period. It is noteworthy that Ireland experienced an increase of 32%, while Switzerland saw an increase of 26%. Collectively, the EU 27 achieved a decrease in road deaths of 10% in 2023 relative to 2019. However, in order to align with the EU's target for 2030, a reduction of at least 22% would have been necessary (18th Annual Road Safety Performance Index (PIN Report), 2024).

Between 2014 and 2023, the EU managed to prevent 20,981 road fatalities compared to the situation if each Member State had remained at the same level of deaths as in 2013. However, it is important to note that a further 52,754 lives could have been saved if the 6.7% annual reduction required to reach the 50% reduction target over the decade had been consistently achieved (18th Annual Road Safety Performance Index (PIN Report), 2024).

In Ukraine, between 2019 and 2023, 16,057 individuals lost their lives as a consequence of road traffic accidents, with a further 137,700 sustaining injuries of varying degrees of severity. The downward trend in the number of deaths and injuries resulting from road accidents between 2019 and 2021 was followed by a reversal of this trend in 2022 and 2023, which occurred in the context of Russia's full-scale armed aggression against Ukraine. In comparison to the data from 2020, the figures from 2023 indicate a reduction of only 9.5% in the number of road accidents resulting in fatalities and/or injuries (Statistics of road accidents in Ukraine for 2019–2023). In light of the paucity of statistical data and the decline in Ukraine's population by 10 million citizens, the trend of deaths and injuries on Ukrainian roads is cause for concern. It is therefore essential to gain an understanding of the underlying causes of the increase in motor vehicle crime in Ukraine.

4. Causes of Road Traffic Crimes in Ukraine

The European Automobile Manufacturers' Association (ACEA), which represents 15 European manufacturers of cars, vans, trucks and buses, has found that 90% of all road accidents today are caused by human error. In 30% of fatal accidents, speeding is the main factor, and distraction is responsible for 10-30% of road deaths. Of equal concern is the fact that 25% of all road deaths in Europe are alcohol-related. Education and training are key factors in instilling appropriate behaviours and attitudes in road users. It is of the utmost importance that drivers are fully aware of their own limitations, the inherent dangers of speeding or texting while operating a vehicle, and the impact of alcohol or drugs on their ability to safely operate a motor vehicle. It is also imperative that existing traffic laws are rigorously enforced, as approximately 65% of fatal accidents are caused by violations of traffic regulations (Road safety facts).

In Ukraine, in 2022, 7,561 road accidents with fatalities and injuries occurred as a result of exceeding the safe speed limit, 3,846 were caused by violations of manoeuvring rules, 1,467 by violations of intersection rules, and 1,443 by violations of pedestrian crossing rules. It is evident that excessive speeding remains a significant contributing factor to road accidents on an annual basis. Estimates indicate that at least 43% of accidents in 2022 were caused by speeding, with such accidents accounting for 62% of road fatalities in Ukraine (Statistics of road accidents in Ukraine for 2022).

The objective of the survey was to ascertain the perceptions of different groups of respondents

regarding the underlying causes of road accidents. It should be noted that the total sum of the results exceeds 100% in all groups of respondents, as an individual may have provided multiple responses to the questions posed.

The *public* identifies the following causes of road traffic accidents (in order of popularity):

1) Disregard for traffic rules by motor vehicle drivers – 67.2% of respondents;
2) indiscipline of pedestrians – 57.5%;
3) poor road infrastructure – 43.9%;
4) offenders avoiding punishment – 32.7 =%;
5) insufficient level of driver training – 26.2%;
6) low sanctions for offenders – 25.8%;
7) inadequate traffic management – 20.2 =%;
8) poor performance of the patrol police – 13.4% of respondents.

The respondents also identified the causes of traffic violations by pedestrians that can lead to road accidents:

1) Feeling of impunity – 51.5 % of respondents;
2) inattention – 50.9 %;
3) low legal culture of pedestrians – 49.5 %;
4) ignorance of traffic rules – 40.6 %;
5) inattention – 40.6 % of respondents.

Drivers named the following causes of accidents:

1) Insufficient awareness of traffic rules – 72.3% of respondents;
2) insufficient quality of roads – 68.5%;
3) low legal culture of drivers – 30.5 %;
4) insufficient discipline of all road users – 23.8%;
5) the level of organisation of transport interchanges needs to be improved – 23.1%;
6) non-compliance with the law by police officers – 22.2%;
7) insufficient number of patrol police officers on the roads – 12.9%;
8) the issue of the inevitability of punishment for traffic offences, as well as the proportionality of punishment and traffic offences – 4.0%;
9) other – 1.2%;
10) violation of traffic rules by users of electric scooters, monowheels, etc. – 0.7% of respondents.

Drivers named the following reasons for violating traffic rules by road users:

1) Disregard for traffic rules – 73.5 % of respondents;
2) low level of legal culture – 46.2%;
3) inattention – 38.1%;
4) carelessness – 32.4 %;
5) a sense of impunity for violating traffic rules – 44.1%;
6) poor road infrastructure – 1.2% of respondents.

It was not within the remit of this survey to enquire of police officers as to the causes of road accidents, given that the principal objective was to ascertain the system and structure of road accident prevention, and most crucially, traffic crimes. The survey did not enquire of members of the public organisations dealing with road safety issues as to the causes of road accidents. This was because the main purpose of the survey was to ascertain the specifics of their role in maintaining road safety and the specifics of their interaction with the National Police.

Accordingly, the general public, comprising pedestrians, drivers, cyclists, and other road users, and drivers alike, have identified the primary causes of road traffic accidents as non-compliance with traffic regulations by vehicle operators, indiscipline among road users, which can be seen as a manifestation of a low level of legal culture and legal awareness, and poor road infrastructure, including the quality of roads.

It can be posited that the level of legal culture and legal awareness is the primary factor in the violation of traffic regulations and the commission of traffic crimes. In order to gain further insight into this matter, it would be beneficial to consider the opinions of the general public, drivers and police officers on this issue (Table 1).

Table 1

The role and level of legal awareness and legal culture of citizens in ensuring road safety

No.	Answer option	Respondent group		
		Public	Drivers	Police officers
The role of legal awareness and legal culture in ensuring road safety				
1	Significant	73,8 %	67,1 %	60,1 %
2	Not significant	23,4 %	29,5 %	32,4 %
3	Not important	2,4 %	2,8 %	7,0 %
4	Other	0,4 %	0,6 %	0,5 %
Level of legal awareness and legal culture of citizens in the field of road safety				
1	High	6,8 %	6,6 %	4,7 %
2	Sufficient	1,2 %	25,4 %	21,0 %
3	Insufficient	44,1 %	45,4 %	50,1 %
4	Needs to be improved	24,8 %	21,8 %	24,2 %
5	Difficult to answer	-	0,6 %	-
6	Other	-	0,2 %	-

It is evident that the role of legal awareness and legal culture among citizens in road safety is of paramount importance. However, the current state of legal awareness and legal culture among citizens in Ukraine is inadequate.

One of the manifestations of the deficiency in legal awareness and legal culture among citizens is the phenomenon of aggressive driving behaviour. The views of the general public, drivers and police officers on the content of this concept will be considered (see Table 2).

It can be reasonably deduced that the term "aggressive driving" is understood by both road users and police officers to indicate active actions behind the wheel of a car. These actions may include driving above the maximum legal speed limit, rapid and frequent passing on the road, driving in the opposite lane or running red lights, and ignoring traffic signs. They do not necessarily entail obscene gestures, yelling, verbal abuse, or honking at other road users or driving.

What are the causes of aggressive driving behaviour (Table 3)?

Thus, the need for self-affirmation can be identified as the main reason why drivers engage in aggressive driving.

5. Possibilities of Road Traffic Crime Prevention in Ukraine

According to the Ukrainian public, the following will help reduce road accidents:

1) Criminalisation of more traffic offences – 33.3 % of respondents;

2) increasing the amount of fines for traffic offenders – 36.7%;

3) adherence to the principle of inevitability of punishment – 44.8 %;

4) quality training of drivers in driving schools – 35.8 %;

5) familiarisation with traffic rules from preschool age – 41.8 %;

6) implementation of preventive measures by patrol police officers against traffic offenders – 19.9 %;

7) increase in the presence of patrol police officers on the roads – 18.9%;

8) creation of safe road infrastructure (underpasses, fences, minimum number of intersections, no oncoming lanes) – 52.3 % of respondents.

Drivers emphasised that the following motivates them to comply with traffic rules:

1) Unwillingness to pay a fine – 5.9 % of respondents;

2) attempts to avoid other negative legal consequences for themselves – 5.8 %;

3) fear for the safety of their life, health and property – 39.0%;

4) Fear for the safety of people in the vicinity – 43.7 %;

5) other – 5.6 % of respondents.

According to this group of respondents, the following will help reduce road accidents:

1) Increased liability for traffic offenders – 47.0% of respondents;

2) stricter penalties for traffic offenders – 27.7 %;

3) adherence to the principle of inevitability of punishment – 44.4 %;

4) quality training of drivers in driving schools – 34.5 %;

Table 2

The definition of the term "aggressive driving"

No.	Answer option	Respondent group		
		Public	Drivers	Police officers
1	Exceeding the maximum permitted driving speed	67,0 %	57,2 %	70,0 %
2	Changing positions on the road quickly and frequently, including without maintaining a safe distance	71,9 %	80,5 %	84,4 %
3	Driving on the opposite lane	39,4 %	40,1 %	55,7 %
4	Indecent gestures, shouting, verbal abuse and signalling to other road users	29,5 %	29,5 %	33,5 %
5	Running red lights, ignoring road signs	58,2 %	55,8 %	76,0 %
6	Other (e.g., drifting)	-	0,9 %	1,8 %

Table 3

Causes of aggressive driving behaviour

No.	Answer option	Respondent group		
		Public	Drivers	Police officers
1	Aggressive behaviour of other drivers	18,3 %	14,6 %	13,4 %
2	Desire to take risks and get thrills from the driving process	24,6 %	21,7 %	29,2 %
3	Need for self-affirmation	48,7 %	54,0 %	48,7 %
4	Feeling of impunity for one's actions	8,4 %	20,3 %	2,6 %
5	Forced behaviour due to the need to hurry	-	15,6 %	-
6	Low level of legal culture	-	12,3 %	-

5) introduction of a separate educational component at all levels of education to teach traffic rules – 34.9%;

6) improving the efficiency of the patrol police in detecting traffic violators – 20.1%;

7) creation of safe road infrastructure (underpasses, fences, minimum number of intersections, no oncoming lanes, etc;

8) reduction of the permitted speed of vehicles in cities from 50 km/h to 30 km/h – 6.2%;

9) raising the level of legal culture – 5.6 %;

10) digitalisation of road safety (installation of cameras to record traffic violations, new generation traffic lights, etc.) – 3.2% of respondents.

In response to the question of how road accidents might be reduced, police officers offered a range of responses, as follows:

1) Creation of a safe road infrastructure (underpasses, fences, minimum intersections, no oncoming lanes, etc.) – 51.6 % of respondents;

2) Increased liability for traffic offenders – 47.0%;

3) adherence to the principle of inevitability of punishment – 44.4%;

4) quality training of drivers in driving schools – 34.5 %;

5) introduction of a separate educational component at all levels of education to teach traffic rules – 34.9%;

6) increase in fines for traffic offenders – 27.7 %;

7) more effective activity of the patrol police in detecting traffic violators – 20.1%;

8) reduction of the permitted speed of vehicles in cities from 50 km/h to 30 km/h – 6.2%;

9) raising the level of legal culture – 5.6%.

10) digitalisation of road safety (installation of cameras to record traffic violations, new generation traffic lights, etc.) – 3.2% of respondents.

Meanwhile, the most effective ways for the public to improve road safety in Ukraine are the following:

1) Broad public discussion of the problem of high mortality and road traffic injuries – 34.5 % of respondents;

2) intensification of the activities of public councils at state and local authorities – 27.6%;

3) lobbying for the interests of different categories of road users when adopting legal acts regulating legal relations in the field of road safety – 41.4 %;

4) intensification of the activities of public organisations that deal with the rights of motorists, motorcyclists, cyclists, disabled drivers, pedestrians, etc. – 27.6%;

5) legal promotion of road safety among the population – 37,9 %;

6) participation of civil society organisations in meetings of the Ministry of Internal Affairs of Ukraine and the Department of Patrol Police to discuss urgent transport safety issues – 41.4%;

7) development and implementation of specialised prevention programmes related to road safety – 20.7%;

8) financing of individual projects in the field of road safety – 48.3%;

9) public support for the detection and investigation of high-profile road safety offences, as well as public control over the actual prosecution of those responsible for them – 41.4%;

10) widespread use of safe engineering solutions in traffic management aimed at physical prevention of traffic violations and physical reduction of the risk of road accidents (3.2%):

– Active use of traffic calming devices;
– a clear functional approach to engineering and transport solutions for streets and roads;
– clarity and unambiguity of traffic signals for the user;
– arrangement of physically separated infrastructure for vulnerable road users (pedestrians, cyclists) from vehicles travelling at 50 km/h and above;
– reduction of the non-punitive speed limit to +5 km/h;
– reduction of the permitted speed limit to 30 km/h in residential areas of settlements (on non-main streets);
– construction of roads of the first category outside settlements and main thoroughfares in cities on the basis of motorways (without left turns and U-turns, without ground unregulated crossings, without access to the adjacent territory or parking directly from the carriageway of such roads, physical isolation from buildings and pedestrian/bicycle traffic).

The study of the socio-economic consequences and a truly accurate assessment of the socio-economic losses due to road accidents is an important prerequisite for the implementation of effective preventive measures. Given that even a rough estimate of the total socio-economic losses due to road accidents in Ukraine is enormous, significant benefits can be expected from investments in road safety (Golina and Shramko, 2023, p. 67). A cost-benefit analysis of road safety measures implemented by foreign researchers indicates that the benefits of investing in road safety outweigh the losses caused by road accidents (Daniels et al., 2019). Anokhin A., Vaida T., and Siur N. underscored that an examination of economic and other strategies for preventing traffic accidents in foreign countries reveals that civilised states in Europe and North America employ the following economic measures for this purpose: legislative regulation of the dependence of the fine on the salary and other income of the offender, increase in insurance payments for drivers who systematically violate traffic rules; economic incentives for drivers who do not violate traffic rules during the year; systemic investments in the development of road infrastructure, innovative means of traffic control using artificial intelligence technologies, development of public transport; development of a network of toll motorways to relieve public roads; investments in legal and economic education of citizens (publication

of statistical and analytical collections on road safety and road accident prevention) (Anokhin, Vaida, Siur, 2023).

6. Conclusions

The study of the problem of socio-economic consequences of road accidents in the European Union and Ukraine has confirmed that due to the lack of a universal methodology for assessing such consequences (based on the material category – the price of an accident), their scale and "cost" differ from country to country. Attempts by international organisations to "unify" such losses based on certain criteria have had some positive results. Therefore, despite the discrepancy in the internal assessment of the consequences by states, their external assessment is exemplified by the definition of such losses as a percentage of the gross domestic product, which underscores the direct correlation between the state's economy and road safety. The most commonly employed criteria for evaluating the economic consequences of road traffic accidents are the estimation of material damage, which encompasses damage to road infrastructure and personal property, the intangible value of the lost quality of life and lost years of life, costs associated with inpatient and outpatient treatment, costs of ambulance service and transportation of the injured, police and fire services, insurance company payments, legal costs, and so forth.

Public opinion surveys represent an invaluable tool for the study of road safety, including traffic crimes. By considering the views of diverse respondents, it is possible to discern common trends or issues, the individual impact of which can be used to counteract more general negative processes. A study of the perceptions of the Ukrainian population (including road users, civil society activists, and police officers) regarding the causes of road accidents and potential prevention strategies allows for the formation of a theoretical understanding of the economic costs associated with road safety in the country. It has been demonstrated that the principal causes of road accidents in Ukraine remain subjective determinants, namely the inadequate level of legal culture and legal awareness among road users. A distinct manifestation of this phenomenon is aggressive driving, which manifests primarily in a "material" manner, as evidenced by driving in excess of the maximum legal speed limit, rapid and frequent passing on the road, including without maintaining a safe distance, driving in the opposite lane or running red lights, and ignoring traffic signs. This is in contrast to other forms of aggressive driving, such as obscene gestures, yelling, verbal abuse, or honking at other road users.

The respondents identified the following measures as key to preventing road accidents and traffic crimes: enhancing the accountability of traffic offenders, criminalising a wider range of traffic violations, increasing the financial penalties for traffic offenders and upholding the principle of proportionality in punishment.

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