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## **ПРАВОВЕ РЕГУЛЮВАННЯ ДІЯЛЬНОСТІ ПІДРОЗДІЛІВ ПОЛІЦІЇ ЄВРОПЕЙСЬКИХ КРАЇН У СФЕРІ БЕЗПЕКИ ДОРОЖНЬОГО РУХУ**

**Анотація.** *Адміністративно-правові інструменти та інструменти у діяльності поліції у сфері безпеки дорожнього руху є малодослідженими питаннями у науковій літературі, а правоохоронна та міжнародно-правова організаційна практика не завжди відповідають закону. Нечітке правове регулювання безпеки дорожнього руху – одне з питань зменшення аварій та смертей. Метою цієї статті є виявлення ефективності правового регулювання діяльності поліцейських підрозділів у європейських країнах у сфері безпеки дорожнього руху. Методологія дослідження базується на «антропологічному підході, в якому загальний контекст дослідження підкреслюється у тексті». Дані вторинних інтерв'ю та аналіз змісту публікацій за 2008-2021 роки були використані для проведення якісного дослідження з метою вивчення політики та норм ЄС. Результати демонструють прогрес у сфері безпеки дорожнього руху завдяки комплексному системному підходу до впровадження політики в рамках Програми безпеки дорожнього руху на 2011-2020 роки. Покращення дотримання правил є одним з основних компонентів політики ЄС, що реалізується різними країнами на національному рівні за допомогою національних програм безпеки дорожнього руху. В результаті посилення контролю більшості країн ЄС вдалося зменшити кількість нещасних випадків та смертей, але в країнах із середнім рівнем доходу все ще існують проблеми з діяльністю поліції. Ці проблеми стосуються неадекватної застарілої правової бази, яка неефективна в умовах динамічної зміни дорожньої інфраструктури, інтеграції інтелектуальних систем на дорогах для посилення контролю та запобігання аваріям. Політика ЄС та національне законодавство часто залишаються досить розпливчастими, особливо в контексті безпеки мотоциклістів та пішоходів, особливо в міських районах. Відсутність точності та деталізації у законодавстві заходів безпеки загострює проблему аварій. Діяльність поліції часто не забезпечує достатнього рівня контролю, коли під тиском навколишнього середовища поліція не може забезпечити якісний трафік та управління даними*

**Ключові слова:** *культура безпеки дорожнього руху, заходи безпеки дорожнього руху, дорожньо-транспортні пригоди, водій автомобіля, стратегія безпеки дорожнього руху*

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## **LEGAL REGULATION OF THE POLICE UNITS' ACTIVITIES OF EUROPEAN COUNTRIES IN THE ROAD SAFETY FIELD**

**Abstract.** *Administrative and legal tools and instruments in the activities of the police in the field of road safety are little-studied issues in the scientific literature, and law enforcement and international legal, organizational practice do not always comply with the law. Blurred legal regulation of road safety is one of the problems of reducing accidents, accidents and deaths. The purpose of this article is to identify the effectiveness of legal regulation of police units in European countries in the field of road safety. The research methodology is based on the "anthropological approach in which the overall research context is emphasized in the text". Secondary interview data and content analysis of publications for 2008-2021 were used to conduct a qualitative research to study EU policy and norms. The results demonstrate progress in road safety through a comprehensive system approach of policy implementation under the Road Safety Program 2011-2020. Improving compliance with the rules is one of the main components of EU policy implemented by various countries at the national level through national road safety programs. As a result of increased controls, most EU countries have managed to reduce accidents and deaths, but in middle-income countries there are still problems with police operations. These problems concern the inadequate outdated legal framework, which is not effective in the conditions of dynamic change of road infrastructure, integration of intelligent systems on roads for the strengthened control and accident prevention. EU policy and national legislation often remain rather vague, particularly in the context of motorcyclist and pedestrian safety, especially in urban areas. The lack of accuracy and detail in the legislation of safety measures exacerbates the problem of accidents. Police activities often do not provide a sufficient level of control when, under environmental pressures, the police are unable to provide quality traffic and data management*

**Keywords:** *road safety culture, road safety measures, traffic accidents, car driver, road safety strategy*

### **INTRODUCTION**

Road safety is an important component of state and human security. Administrative and legal tools and instruments in policing in this area are little-studied issues in the scientific literature, and law enforcement and international legal, organizational practice do not always meet the rule of law [1]. In the EU, legislation is being reformed due to the need to increase road safety in the face of growing road traffic and vehicles [2]. Reform is taking place using deterrent road monitoring and tracking tools, the development of sophisticated preventive policies and safety strategies [2]. Police units ensure restraint and compliance with traffic rules. A systematic approach to road safety has been a priority in EU policy for the last ten years [3]. The part of a systemic approach is a law enforcement by the police within the EU. In the early 1990s, sustainable safety

vision began to be actively discussed as a concept of road safety in the EU, particularly in the Netherlands and Sweden [4]. Therefore, a systematic approach is integrated into the activities of police units. However, new challenges in this area are urbanization, population density, changing vehicle modes, and new automotive technologies [3]. These challenges increase the pressure on the police and ensure effective control over road safety.

*The purpose of this article* is to identify the effectiveness of legal regulation of police units in European countries in the field of road safety.

In the scientific literature, the main areas of research in the field of police units legal regulation in European countries in the road safety field are: 1) the provisions of EU legislation to ensure information exchange at the international level and the complexity of international cooperation [5]; 2) compliance with the law in the field of road safety [1; 5]; 3) administrative measures to ensure security in police activities, international organizational and legal practice to study the effectiveness of police activities [1; 6]; 4) changes in legislation, law enforcement practices and compliance with traffic rules to determine the impact on the level of road accidents [2]; 5) public policy, road safety tools [4; 7-9]; 6) safety performance indicators within the European project SafetyNet and the development of new approaches to their improvement [10; 11]; 7) models and strategies for road safety [12-14]; 8) automated road incident detection systems, mathematical models of traffic forecasting and modeling as tools in police practice [15; 16]. The activities of police units are based on the legal structure of road safety and concern the control, prevention, detection and imposition of sanctions on violators of the law. Legal regulation is conditionally divided into regulation of traffic behavior, detection of violations, judicial investigation of violations, punishment of violators within the developed administrative and civil, criminal law [6].

Recent studies have changed the level of government responsibility for road safety and new management practices. This means the division of responsibilities between public authorities and a wide range of road users through “soft management” measures [17]. However, there is a lack of understanding of those responsible for road safety within the EU, which may require new participants in safety control and management [18]. The analysis of scientific publications shows the lack of a comprehensive study of the legal regulations of the police of European countries in the field of road safety. The identified areas of research focus mainly on the causes and ways to overcome accidents. Instead, the legal basis for policing can significantly improve the level of control and prevention of incidents.

## 1. MATERIALS AND METHODS

In this article is used a qualitative research methodology based on the “anthropological approach in which the overall research context is emphasized in the text” [19]. This approach provides a research and understanding of a complex number of issues related to road safety policing [19].

A qualitative research used secondary interview data and content analysis of publications during 2008-2021 to examine the extent to which EU policy has reduced accident rates and incidents since the adoption of the Road Safety Program 2011-2020 [20]. Secondary interview data was studied using content analysis of scientific publications that studied police activities and conducted research on the causes of accidents, the culture of driver behavior, the relationship between the legal basis of police units and the culture of driver behavior.

Search for publications was carried out in databases of ScienceDirect, IEEE explore, Springer, Wiley Online Library. The search was carried out by keywords: 1) Police influence on Road Safety in EU; 2) Police Enforcement in the EU; 3) road safety measures; 4) road safety culture; 5) risk Factors of Road Work Zone Crashes; 6) road safety strategies; 7) road traffic injuries; 8) police perspectives on road safety. In total, an analysis of 253 scientific publications for the period 2008-2021 was conducted, from which 34 researches were selected, which are related to the objects of study of the legal regulation of police activities to ensure road safety in the EU. Eurostat 2020 data for the period of 2000-2018 on the number of people killed in road accidents in the EU were used to confirm the effectiveness of police activities.

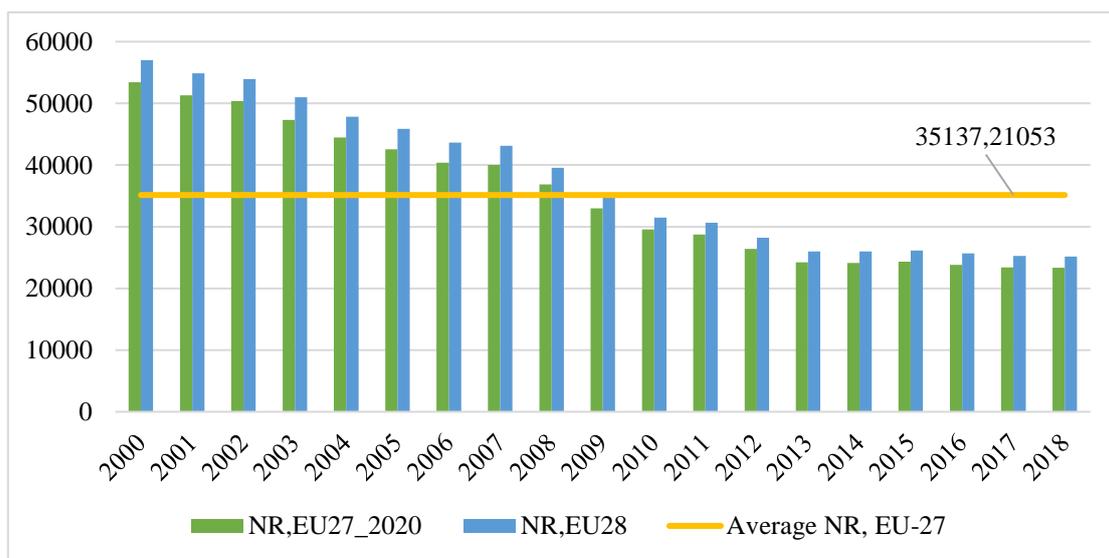
## 2. RESULTS AND DISCUSSION

Legal regulation of policing in the EU is an extremely important component of preventing and monitoring the behavior of road users in order to ensure safety and reduce mortality. Failure to comply with traffic rules and lack of control over the use of seat belts, drunk driving, speed limits, helmets and child restraints leads to a lack of progress in reducing mortality, especially among pedestrians, motorcyclists and their injuries. There is a lack of control and practice over compliance with traffic rules; the rules are unlikely to be enforced and are more likely to affect the behavior of road users and the level of safety. Effective law enforcement involves the adoption, regular updating and monitoring of compliance at national, municipal and local legislation, taking

into account the risk factors mentioned above. Legal regulations also provide the determination of appropriate sanctions for violations.

The European Union approved the Road Safety Program 2011-2020 [20] in 2011 to reduce road deaths in Europe by 50% during 2011-2020. This Program includes the following main components of reducing mortality and accidents: 1) taking measures to improve safety for vehicles; 2) development of safe road infrastructure; 3) use of intelligent technologies; 4) education and training of road users; 5) increasing the level of control over compliance with the rules; 6) approval of the purpose of injury indicators; 7) measures to reduce injuries associated with the movement of motorcycles [20]. The intensity of control and supervision in order to combat injuries forms the preconditions for reducing mortality. Law enforcement has remained a major problem within the EU for the last twenty years. The EU therefore affirms the need to develop national control plans. However, recent studies by police officers, particularly in Germany, show not significant changes in legislation, which are often ineffective, and the rules of law are questionable and do not provide support for traffic rules [21]. This situation is due to the complexity of traffic rules, sanctions and fines. Excessive regulation of traffic causes increased pressure on all participants, outdated legislation and lack of changes in the rules of conduct of vehicles causes non-compliance of 85% of roads with the law. Among the main problems are the following: the lack of a clear state policy to address issues in the field of traffic infrastructure, risks of traffic due to driving by the elderly, insufficient level of promotion of bicycle traffic, speed limits on highways, lack of automated regulation of certain sections of the highway with speed cameras, which puts pressure on police officers [21]. Police enforcement influences the cultural characteristics of driving and the behavior of road users. Traffic culture is formed in particular in the process of monitoring the behavior of participants [22].

Despite the overall reduction in mortality within the EU (Fig. 1), in some countries (Poland, Romania, Luxembourg, Greece, Bulgaria, Finland) the mortality rate decreased by an average of 2-4% between 2000 and 2018. This is particularly due to the road safety culture, which differs from country to country. For example, the use of seat belts differs from one EU country to another. Greek drivers are more aggressive and violent than Norwegian drivers, who are more accommodating and polite [23], and in Poland, cultural driving habits are risky driving and carelessness [24]. Poland has an average of 23 deaths per million inhabitants, which is twice the EU figure, and speeding is one of the leading causes of death. Other causes of accidents in Poland are poor assessment of the road situation, poor quality of road infrastructure and the condition of cars. Multilateral action by the Polish government is not sufficient to reduce accidents [24]. Legislative changes do not affect the reduction of accidents and deaths on the roads. The lack of accuracy and detail in the legislation of safety measures exacerbates the problem of accidents. At the same time, safety applies not only to drivers and pedestrians, but also to police officers. For example, the complexity of the equipment of police cars causes threats to the work of staff [25]. This means the need to improve the policy of technical passive safety of personnel. Legal norms should ensure effective control over the method of forming police cars.



**Figure 1.** People killed in road accidents in EU, 2000-2018, persons (According to SDG 11.40)

Source: [26]

Among the main gaps in the legal protection of road users is the limited protection. For example, the legal protection of pedestrians in Poland begins after entering the roadway. In other EU countries, legal protection begins before departure [24]. To increase the level of traffic safety in Poland, various participants and safety actors are involved on the basis of the National Road Safety Program 2013-2020 [27].

Police Enforcement is costly, but not always effective in improving of the road safety (Table 1). For example, the cost-benefit ratio of seat-belt wearing for light-vehicle occupants is 28.7, which is an effective safety measure. Alcohol Interlock Program (10.9) and Random breath tests (7.7), Section control (19.5) are also cost-effective. For comparison, Red light enforcement cameras or Police enforcement of speeding measures are practically ineffective (B/C ratio is 3.7 and 1.1), while the cost per 1 unit of measures is 282 thousand euros and 84 thousand euros.

**Table 1.** Police Enforcement Measure Influence on Road Safety

Enforcement measure	Description	B / C ratio Best estimate	NPV * per unit implemented
Enforcement of seat-belt wearing for light-vehicle occupants	Increased police checks on seat-belt wearing	28.7	€ 143,348,096
Alcohol Interlock Program	Compulsory alcohol interlock program for serious offenders. Alcohol interlocks are automatic control systems, which are designed to prevent driving with excess alcohol by requiring the driver to blow into an in-car Breathalyzer before starting the ignition.	10.9	€ 29,174
Red light cameras	Red light enforcement cameras	3.7	€ 282,577
Random breath tests	Random breath tests to detect drunk driving	7.7	€ 219
Section control	Speed enforcement scheme in which cameras measure average speeds over a longer road section	19.5	€ 2,834,895
Police enforcement of speeding	Checking and penalizing drivers who exceed speed limits by means of police enforcement	1.1	€ 84,271

*Note:* \* NPV are calculated per unit of analysis

*Source:* [28].

The scientific literature also examines the reasons for the ineffectiveness of security measures, including inaccuracy of police data on accidents: inaccuracies of location and date, traffic data, inconsistencies in databases, incorrect classification of accidents, inaccuracy of identification of causes of accidents [29]. This means the need for further integration of intelligent systems of supervision and control of road traffic and road users. In general, there are similar problems and causes of accidents within the EU. In Portugal, accidents are higher in pedestrian areas, mainly in cities, which requires increased monitoring and signaling of the likelihood of an accident [30-32].

The analysis demonstrates the need for further EU policies aimed at reducing accidents, especially in middle-income countries, with a focus on key components of international security policy. The key safety issues identified in the Road Safety Program 2011-2020 remains a challenge. For example, driver training and education in all countries remains a problem due to the level of violations and incidents [33]. Therefore, road safety components must include:

- 1) taking measures to improve safety for vehicles;
- 2) development of safe road infrastructure, in particular lighting of working areas in urban areas, signaling and control with the use of equipment;
- 3) use of intelligent technologies;
- 4) raising the level of consciousness, education and training of road users;
- 5) increasing the level of control over compliance with the rules;
- 6) approval of the purpose of injury indicators;
- 7) measures to reduce injuries associated with motorcycle traffic [20].

For some time, road safety strategies around the world have been based on the common notion that road traffic injuries in any single road transport system are the shared responsibility of all participants and organizations in that system. Nevertheless, discussions about who is actually responsible for road injuries were rare and usually concerned only a subgroup of the most prominent participants and organizations. Police units monitor compliance with traffic rules by monitoring and measuring the behavior of road users (e.g. speeding),

testing for alcohol and drugs, checking the condition of vehicles and issuing warnings and fines. However, security issues remain a problem in the EU, despite the developed legal framework for policing. Incident prevention controls are increasingly integrated into EU safety policy: monitoring driver behavior, providing feedback on performance and educational activities carried out by parents, friends and family, workplace leaders and schools. Finally, mechanics and vehicle inspectors monitor the condition of road vehicles to ensure compliance with the standards, required rules and regulations of road licensing [18].

In an article describing the STAMP model, Leveson [34; 35] describes various forms of control, including managerial, organizational, physical, operational and production. It is interesting to note that all forms of control described by Leveson have been preserved in the EU road transport system. For example, management and organizational control is exercised through government at higher levels of the system, as well as through organizations that hire professional drivers. While higher levels are characterized by managerial and organizational control, lower levels require more physical control in the sense that attempts are made to actively control road users when interacting on the road. For example, vehicles and road infrastructure provide physical control over road users in terms of where they can go, with whom they can interact and how fast they can move. In turn, road users provide physical control over vehicles and other road users. Police officers and traffic rules provide operational control. Production control measures are also obvious, for example, in international car production standards [36].

As for the control measures used to prevent five fatal behaviors, the study proves the management of a culture of behavior based on government strategies and road safety policies at higher levels, in particular, by organizations such as the police and the highway, and applied on the road or directly by the police, or indirectly by other persons, such as parents, peers and other road users. The main form of control is compliance with traffic rules (for example, selective breath testing and speed cameras). An interesting finding is that the police rely heavily on control (for example, through law enforcement). It may be worthwhile to identify other participants who can also exercise control. Examples of existing practices for the use of other control methods include seat belt warnings in vehicles and roadside speed cameras. With the ever-expanding use of advanced technologies, future research should examine how technology and other controls can be used to implement both existing and new road safety measures. Examples include automotive fatigue detection systems, alcohol locks, and cell phones that become unusable in road vehicles. With increasing environmental pressures, new forms of control may be needed, and the introduction of controls should apply not only to the police but also to other actors. The relative strength of control is also interesting, especially compared to other more strictly regulated transport systems, such as aviation and rail transport. Although similar forms of control are used in other transport systems, it is clear that some forms of control are weaker in road transport. As a result, there is more freedom of action and, in turn, more opportunities for management. For example, control of driver violations is perhaps stricter in areas such as civil aviation, where pilots must adhere to strict alcohol regulations and are frequently tested for alcohol before flying an aircraft (large airlines are required to conduct spot checks on alcohol each year, at least 10% of their staff and drug testing of at least 25% of their staff [37]). Despite the fact that road users rules and can be checked by selective breath testing, the nature of the road transport system is such that alcohol control is less comprehensive and therefore road users have more freedom to drive while intoxicated. The impact of this is manifested in a significant accident when driving while intoxicated and the occurrence of road accidents [38].

The same can be said for other key behaviors related to road injuries (fatigue, speeding, distraction, not wearing seat belts), while other transport systems obviously have more stringent and effective means of controlling similar problems with through rules and regulations, performance monitoring and procedures. The task of the road safety community is to strengthen the control and influence of road users, while ensuring that they are practical in application and do not become overly intrusive. It is likely that this requires new forms of control, rather than simply trying to increase the frequency of police inspections, within which existing means of control are introduced, through means such as shallower breathing and more careful monitoring of road users' behavior and speed. Rather, new approaches to preventing driver behavior that underlie road accidents may be needed. For example, in the case of drunk driving, alcohol blocking is one of the obvious means of strengthening control. However, although their effectiveness in preventing drunk driving has been proven in scientific studies [39], the practical aspects of embedding locking devices in all cars are questionable. The systems approach will allow the development of a set of controls aimed at participants and organizations throughout the road transport system, by identifying non-traditional methods of intervention, especially at higher levels of the system. For example, given the increase in work-related drivers, government or insurer subsidies to fleet safety companies and driver training initiatives may cross-influence drivers' behavior and employee expectations when driving for personal use.

## CONCLUSIONS

This study identified progress in road safety through a comprehensive systems approach to policy implementation under the Road Safety Program 2011-2020 (European Commission 2010). Improving compliance with the rules is one of the main components of EU policy implemented by various countries at the national level through national road safety programs. As a result of increased controls, most EU countries have managed to reduce accidents and deaths, but in middle-income countries there are still problems with police operations. These problems concern the inadequate outdated legal framework, which is not effective in the conditions of dynamic change of road infrastructure, integration of intelligent systems on roads for the strengthened control and accident prevention. The uniformity of the causes of accidents within the EU was the basis for the introduction of uniform rules of law in order to reduce congestion, incidents, control of pedestrian mortality. At the same time, EU policies and national regulations often remain rather vague, particularly in the context of ensuring the safety of motorcyclists and pedestrians, especially in urban areas. The lack of accuracy and detail in the legislation of safety measures exacerbates the problem of accidents. The activities of the police in this case often do not provide a sufficient level of control, when under environmental pressure the police are not able to provide quality management of traffic and data. This is confirmed by the problems of inaccuracy of identification of the causes of accidents, traffic, databases, incorrect classification of accidents by police officers. Therefore, the issue of ensuring effective control remains relevant within the EU. This is determined in particular by the significant influence of control and Police enforcement on the cultural characteristics of driving and behavior of road users. The culture of traffic is formed in particular in the process of monitoring the behavior of participants.

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