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Legal Renewal on Addressing Risky Road User Behavior to Reduce Traffic Accident Fatalities Based on a Traffic Criminology Approach in Indonesia

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Abstract: *This study aims to analyze the weaknesses of the traffic law system in handling risky behavior of road users, examine risky behavior as a form of modern crime from a traffic criminology perspective, and formulate legal reconstruction and reform to reduce traffic accident fatalities in Indonesia. The study employs a normative juridical method with a statutory and conceptual approach through an analysis of Law Number 22 of 2009 concerning Traffic and Road Transportation, Law Number 2 of 2002 concerning the Indonesian National Police, as well as various criminological theories and behavioral regulation concepts. The results of the study indicate that the high fatality rate of traffic accidents is predominantly caused by risky behavior of road users, such as speeding, reckless driving, use of mobile phones while driving, illegal racing, underage drivers, and aggressive driving behavior, which is reinforced by the influence of social media and the development of digital technology. The traffic law system in Indonesia is still repressive and administrative in nature, so it has not been able to control dangerous behavior in a preventive and predictive manner. Therefore, legal reform is needed through strengthening the traffic criminology approach, reformulating legal norms based on risk levels, integrating digital surveillance and artificial intelligence, strengthening predictive policing, developing behavioral traffic regulations, and fostering a traffic safety culture based on protecting the right to life and public safety. These legal reforms are expected to create a more adaptive, effective road safety system oriented toward preventing traffic accident fatalities in Indonesia.*

Keywords: *legal reform, risky behavior, traffic accidents, traffic criminology*

Introduction

Traffic accidents in Indonesia have become a national emergency that can no longer be viewed solely as a technical transportation issue or ordinary individual negligence (Buntara, 2019). The high number of traffic accidents from year to year indicates that traffic has become an arena of social risk that threatens public safety systematically. The majority of fatalities from traffic accidents are from the productive age group, thus directly impacting national productivity, family resilience, and human development. (Supriadi, 2021) From a modern legal perspective, traffic accidents have become a "silent killer" that slowly causes large-scale social, economic, and public health losses. Law Number 22 of 2009 concerning Traffic and Road Transportation actually states in Article 3 letters c and d that traffic and road transportation are organized to realize traffic ethics and improve safety quality and

reduce the fatality rate of accident victims (Dewi, 2022). However, in practice, these normative objectives have not been optimally achieved due to the numerous violations and weak legal control over road user behavior. Even Article 106 paragraph (1) of the Traffic and Road Traffic Law explicitly requires everyone to drive a vehicle sensibly and with full concentration, yet this norm remains formalistic and unsupported by an effective behavioral monitoring mechanism (Harahap, 2024). It reveals that accident fatalities are no longer simply a matter of infrastructure and vehicles, but rather a manifestation of the legal system's failure to control risky behavior among road users. Therefore, traffic accidents must be understood as a multidimensional issue involving legal, social, economic, cultural, public health, and state governance dimensions in ensuring the safety of citizens in public spaces.

The phenomenon of risky behavior among road users constitutes one of the legally and criminologically significant factors associated with traffic accidents and fatalities in Indonesia. Various forms of behavior such as speeding, reckless driving, going against the flow of traffic, using cell phones while driving, driving under the influence of alcohol or drugs, not wearing helmets and seat belts, illegal racing, underage driving, fatigue driving, and aggressive behavior on the road may increase the probability and severity of traffic accidents. However, this normative juridical study does not claim to establish, through independent empirical measurement, that behavioral factors statistically outweigh infrastructure, vehicle conditions, environmental factors, or institutional failures. Rather, the focus of this study is on the normative inadequacy of the existing legal framework in identifying, classifying, and responding to behavior that creates an objectively heightened risk to the life and safety of other road users.

From this perspective, risky driving behavior may develop into patterns of social deviation that are internalized within traffic culture, particularly where legal awareness is weak and dangerous conduct is socially tolerated (Sahti, 2019). Therefore, behavioral factors should be understood as part of a multidimensional traffic safety problem involving human behavior, infrastructure, vehicles, environmental conditions, legal culture, institutional supervision, and the effectiveness of law enforcement. The legal reconstruction proposed in this study is consequently directed not at attributing all accident fatalities to individual behavior, but at strengthening preventive legal mechanisms for controlling identifiable patterns of dangerous conduct before such conduct results in serious harm or loss of life.

Although Indonesia has various legal instruments in the field of traffic, the existing legal system still shows fundamental weaknesses in controlling risky behavior of road users. The LLAJ Law is still dominated by a repressive and administrative paradigm that is more oriented towards taking action against violations after they occur, rather than on forming safe behavior preventively. The provisions of sanctions in the LLAJ Law also do not fully reflect the principle of deterrence effect because many dangerous violations are still treated as minor violations with a low level of deterrent effect (Sianturi, 2025). Law enforcement through conventional ticketing and Electronic Traffic Law Enforcement (ETLE) still faces limitations in the scope of supervision, national data integration, and identification of repeat offenders. Even the practice of peace on the spot, the culture of transactional ticketing, and inconsistencies in law enforcement have reduced the legitimacy of traffic law in the eyes of the public. Despite Article 5 paragraph (3) letter e of Law Number 2 of 2002 concerning the

Republic of Indonesia National Police affirming that the Polri functions to maintain public security and order, including in the traffic space (Putri, 2023). Similarly, Article 13 of the Police Law places public protection as the primary duty of the police. However, in practice, traffic law enforcement approaches have not yet been integrated with behavioral regulation and predictive policing approaches that can detect dangerous behavior patterns before they lead to fatal accidents. Consequently, Indonesia's traffic law system could not effectively build a culture of safety and safe behavior among road users.

The limitations of conventional approaches to traffic accident management are also a significant factor contributing to the high number of fatalities on the roads. Accident management has traditionally relied on technical approaches to transportation, road engineering, administrative enforcement, and post-incident management. This paradigm views traffic accidents solely as a result of individual negligence, rather than as a failure of the social risk management system. This approach has proven ineffective in reducing fatalities because it ignores the behavioral dimensions, legal culture, and criminogenic factors within the traffic space (Swartini, 2024). In a modern state governed by the rule of law, protecting the right to life and safety of citizens is a constitutional obligation of the state, as guaranteed by Article 28A of the 1945 Constitution of the Republic of Indonesia, which states that everyone has the right to life and to defend their lives (Hariyanto, 2020). Therefore, the state cannot simply act after an accident occurs but must develop a behavioral and risk-based prevention system. Socio-legal and criminological traffic control approaches are crucial because they enable traffic to be viewed as a social interaction space rife with deviant behavior, aggression, and the potential for street violence. Thus, accident management requires a paradigm shift from mere traffic management to traffic criminology, which focuses on preventing dangerous behavior before it results in loss of life.

From a traffic criminology perspective, serious traffic violations and dangerous driving behavior may be understood as forms of social harm with criminogenic characteristics when they involve conduct that creates a substantial and foreseeable risk to the life, bodily integrity, or safety of other persons. The use of the term *modern crime* in this context should therefore not mean that every traffic violation automatically constitutes a criminal offense. The distinction must be based on doctrinal criteria, including the degree of danger created, the awareness or recklessness of the road user, the repetition of the conduct, the violation of a specific legal duty, and the potential or actual occurrence of serious harm.

Traffic criminology views the road as an arena for deviant behavior influenced by weak social control, perpetrator rationality, a permissive culture, and the development of a modern risk society (Pranoto, 2024). Social control theory explains that weak social oversight and low adherence to norms may facilitate dangerous violations. Routine activity theory demonstrates how serious harm may emerge from the interaction between motivated actors, vulnerable targets, and inadequate supervision. Rational choice theory further explains that some road users may consciously engage in dangerous conduct when they perceive the probability of detection or meaningful sanction to be low. Deterrence theory emphasizes the importance of certainty, speed, and proportionality of sanctions,

while risk society theory explains how modernization and technology create new forms of social risk requiring adaptive regulatory responses.

Accordingly, the proposed traffic criminology approach distinguishes between ordinary traffic violations, high-risk administrative violations, and dangerous traffic conduct with criminogenic characteristics. A behavior should enter the latter category only where objective circumstances demonstrate a substantial danger to public safety, particularly when the conduct is intentional, grossly reckless, repeated, or carried out in circumstances creating a foreseeable risk of serious injury or death. Thus, traffic criminology provides a conceptual basis for preventive legal intervention without automatically criminalizing every act of negligence or ordinary regulatory non-compliance (Napitupulu, 2022).

The development of digital technology and social media is further complicating the issue of risky road user behavior in Indonesia. The phenomena of live streaming while driving, illegal racing challenges, freestyle motorcycle racing, the glorification of speeding, and sensational content on social media have led to the emergence of cyber-induced traffic crime that has not been fully addressed by national law. Social media algorithms that prioritize virality and sensation indirectly shape imitative behavior among the younger generation, thus making the digital space a new criminogenic factor in modern traffic. Unfortunately, national regulations have not yet provided specific provisions for monitoring digital behaviors that may lead to hazardous traffic violations. This gap calls for legal reform that goes beyond strengthening repressive measures, and instead develops a technology-driven road safety system through national data integration, the use of artificial intelligence, adaptive Electronic Traffic Law Enforcement (ETLE), and predictive policing to identify and anticipate high-risk behavioral patterns. Legal reforms must also be directed at strengthening risk-based sanctions, behavioral change-based traffic law education, restorative-preventive traffic law, and integrating criminal policy with national road safety policies. Therefore, legal reforms to address risky road user behavior are urgently needed to create a traffic law system that not only punishes after an accident occurs but also prevents dangerous behavior before it results in fatalities and ensures the ongoing protection of the public's right to life and safety.

Methodology

The research employs a normative juridical analysis method oriented towards the study of norms, principles, theories, and legal systems related to the management of risky road user behavior in reducing traffic accident fatalities in Indonesia. The approaches used include a statute approach and a conceptual approach. The statutory approach is carried out by examining various relevant regulations, including the 1945 Constitution of the Republic of Indonesia, Law Number 22 of 2009 concerning Road Traffic and Transportation, Law Number 2 of 2002 concerning the Indonesian National Police, the Criminal Code, as well as various implementing regulations and policies related to traffic safety and digital technology-based law enforcement. Meanwhile, the conceptual approach is used to examine various legal doctrines, theories, and concepts that have developed in the study of traffic criminology, social control theory, deterrence theory, routine activity theory, risk society theory, and the concept of behavioral regulation in modern law to build legal arguments

regarding the need for legal reforms to address risky road user behavior. The legal materials used consist of primary, secondary, and tertiary legal materials obtained through literature studies, then analyzed prescriptively using qualitative analysis techniques to find weaknesses in applicable legal norms while simultaneously formulating a reconstruction of legal policies that are more preventive, adaptive, and based on public safety in reducing traffic accident fatalities in Indonesia.

Result and Discussion

Analysis of Weaknesses in the Traffic Law System in Addressing Risky Road User Behavior and Accident Fatalities in Indonesia

The traffic law system in Indonesia essentially has a sufficient normative foundation through Law Number 22 of 2009 concerning Road Traffic and Transportation. However, in practice, it still exhibits various fundamental weaknesses in addressing risky road user behavior, which is the primary cause of traffic accident fatalities. Philosophically, Article 3 of Law Number 22 of 2009 emphasizes that traffic management aims to ensure security, safety, order, and smooth traffic flow, as well as to foster traffic ethics and public protection. Furthermore, Article 105 letters a and b of the Road Traffic and Transportation Law stipulate that everyone using the road is required to behave in an orderly manner and to prevent anything that could hinder or endanger traffic security and safety. However, these norms remain declarative in nature and have not yet been fully supported by effective behavioral monitoring mechanisms. The high number of accidents caused by speeding, reckless driving, cell phone use while driving, going against the flow of traffic, and underage driving demonstrates that traffic laws have not yet succeeded in fostering a strong culture of legal compliance. This demonstrates the gap between "das sollen" (the law of the law) and "das sein" (the law of the law) in the implementation of traffic laws, where existing legal norms are unable to effectively control the social behavior of road users (Wicaksono, 2020).

Another weakness lies in the orientation of traffic laws, which are still predominantly repressive and administrative rather than preventive and behavioral. Criminal provisions in the Traffic and Road Traffic Law are largely applied after a violation or accident occurs, rather than to detect and prevent risky behavior from the outset. For example, Article 283 of the Traffic and Road Traffic Law only stipulates criminal penalties for drivers engaging in other activities that distract them while driving, while Article 287 regulates violations of traffic signs and speed limits. Furthermore, Article 311 of the Traffic and Road Traffic Law does stipulate criminal penalties for anyone who intentionally drives a motorized vehicle in a manner or under conditions that endanger life or property, but this regulation is still limited to actions that are clearly dangerous and is not based on a predictive risk behavior approach. Yet, in modern society, risky behavior on the road often emerges as a recurring habitual pattern and requires legal intervention based on behavioral change (Fitriansyah, 2025). Thus, the main weakness of Indonesian traffic law lies in the underdevelopment of the concept of behavioral traffic regulation, which positions the law as a social engineering instrument to foster a culture of traffic safety.

In addition to the weak preventive approach, the effectiveness of traffic law sanctions in creating a deterrent effect against perpetrators of dangerous violations remains low. The threat of criminal penalties and fines in various provisions of the Traffic and Road Traffic Law is often disproportionate to the level of social risk posed by road user behavior. For example, Article 291 of the Traffic and Road Traffic Law stipulates sanctions for motorcyclists who fail to wear helmets that meet Indonesian national standards, while Article 289 stipulates sanctions for drivers who fail to wear seat belts. However, these violations remain a common phenomenon in society due to weak oversight and low certainty of law enforcement. From a deterrence theory perspective, legal effectiveness is largely determined by the certainty, speed, and consistency of sanctions imposed. However, in practice in Indonesia, traffic law enforcement still faces issues such as a culture of peace, transactional ticketing practices, and low integrity in law enforcement. This condition contradicts the principle of the rule of law as stipulated in Article 1, paragraph (3) of the 1945 Constitution of the Republic of Indonesia, which affirms that Indonesia is a state of law. When the law is not consistently enforced, the public will lose their fear of legal sanctions and tend to view traffic violations as ordinary, tolerable actions (Putra, 2025).

The weakness of the traffic law system is also evident in the suboptimal use of digital technology in monitoring road user behavior. Although the government has implemented an Electronic Traffic Law Enforcement (ETLE) system, its implementation is still limited to certain regions and has not been integrated nationally. This is despite Article 272 of the LLAJ Law providing the legal basis for the use of electronic devices in enforcing traffic violations. Furthermore, Indonesian National Police Regulation Number 5 of 2021 concerning the Issuance and Marking of Driving Licenses and the motor vehicle registration system could serve as instruments for integrating road user violation data. However, these systems are unable to effectively identify repeat offenders. As a result, many road users continue to commit dangerous violations without adequate behavioral monitoring. In the context of developments in digital technology and artificial intelligence, this weakness demonstrates that the Indonesian traffic law system is still lagging in developing predictive policing based on road user behavior data. In a modern nation, technology should be used not only for administrative action but also to detect risky behavior patterns and prevent potential fatal accidents before they occur. (Nastiti, 2024)

Another fundamental problem is the low social legitimacy of traffic laws in society. Many road users view traffic regulations merely as negotiable administrative obligations, rather than as public safety norms that must be complied with to protect the right to life of others. Yet, Article 28A of the 1945 Constitution of the Republic of Indonesia guarantees that everyone has the right to life and to defend their lives. In this context, traffic violations that endanger public safety are a violation to human rights because they have the possibility to deprive other road users of their right to life. However, traffic laws in Indonesia have not yet been fully developed from the perspective of protecting human rights and public safety. Law enforcement still emphasizes an administrative approach rather than protecting the public from the risk of death on the road. As a result, a culture of permissiveness has emerged towards traffic violations such as driving against traffic flow, running red lights,

illegal racing, and aggressive vehicle use, which have gradually become considered normal phenomena in society(Rembet, 2023). This situation indicates that the traffic law system has not been able to foster legal awareness and a culture of safety as part of public morality.

The weaknesses of the traffic law system in Indonesia demonstrate that existing regulations and law enforcement have not been able to effectively construct safe behavior among road users. Traffic law remains trapped in a conventional paradigm that views accidents as purely technical and individual issues, whereas fatal accidents are the result of a complex interaction between human behavior, social culture, weak oversight, and an ineffective legal system. Therefore, legal reform is needed that focuses not only on enforcement after a violation occurs but also on developing a preventative approach based on traffic criminology, behavioral regulation, and predictive traffic policing. This reform should include reformulating legal norms, strengthening digital monitoring systems, integrating national violation data, strengthening the deterrent effect through risk-based sanctions, and developing a traffic safety culture based on public legal education. In this way, the traffic law system in Indonesia can develop into a more adaptive and preventative instrument for protecting public safety, capable of sustainably reducing accident fatalities.

Reconstruction and Reform of the Law on Addressing Risky Road User Behavior Based on a Traffic Criminology Approach to Reduce Accident Fatalities in Indonesia

Reconstruction and reform of the law on addressing risky road user behavior in Indonesia must begin with a paradigm shift in traffic law from a predominantly administrative and post-violation approach toward a legal system based on public safety, proportionality, and traffic criminology. The current legal approach still tends to treat many violations as isolated offenses resolved through tickets or administrative fines. However, certain patterns of conduct, such as extreme speeding, reckless driving, illegal racing, repeated dangerous violations, or the use of a vehicle in a manner creating a substantial and foreseeable risk of death, may require a differentiated legal response because of their objectively higher potential for serious harm. Such conduct is also relevant to the protection of the right to life guaranteed by Article 28A of the 1945 Constitution of the Republic of Indonesia.

Therefore, a reformulation of Law Number 22 of 2009 concerning Road Traffic and Transportation is needed to introduce the concept of a dangerous traffic offender as a special legal category. A road user should not be classified as a dangerous traffic offender merely because of a single ordinary violation. The classification should be based on objective criteria, including: (a) the severity of the dangerous conduct; (b) the degree of foreseeable risk to other persons; (c)repetition of serious violations within a legally determined period; (d) escalation from ordinary violations to increasingly dangerous conduct; (e) intentional or grossly reckless disregard for traffic safety; and (f) involvement in conduct such as illegal racing or other organized dangerous driving activities.

This legal reconstruction may be implemented through amendments to Article 311 of the Traffic and Road Transportation Law so that the provision not only addresses an individual act of clearly dangerous driving but also permits the legal assessment of repeated behavioral patterns that demonstrate an objectively high potential for serious injury or

fatality. A graduated risk-based sanction system should therefore distinguish between low-risk, moderate-risk, high-risk, and critical-risk violations. Low-risk violations may primarily receive warnings, education, or ordinary administrative sanctions; repeated moderate-risk violations may result in increased fines and mandatory safety education; high-risk violations may result in progressive fines, temporary license suspension, and behavioral assessment; while critical-risk or repeatedly dangerous conduct may justify criminal proceedings, longer suspension, or revocation subject to due process. In this way, proportionality is maintained because the severity of the sanction corresponds not merely to the number of violations but to the seriousness, frequency, and foreseeable potential for fatal harm.

Legal reconstruction must also be directed at strengthening digital monitoring systems and technology-based predictive traffic management. Article 272 of the Traffic and Road Transportation Law provides a legal basis for the use of electronic devices in enforcing traffic violations, but the existing legal framework has not yet comprehensively regulated the integration of violation histories, driver information, accident data, and risk-based traffic safety analysis. Therefore, the government may develop an Integrated National Traffic Safety System that connects Electronic Traffic Law Enforcement (ETLE) data, driver's-license records, motor vehicle registrations, legally recorded violation histories, and accident data through a unified and interoperable national platform.

Governance of this system should be based on a clear division of institutional authority. The Indonesian National Police, particularly the traffic function, should remain responsible for traffic law enforcement and operational use of violation data; the relevant ministry responsible for road transportation should coordinate national traffic safety policy and interoperability; while access to personal data and cybersecurity compliance should be subject to independent regulatory and supervisory mechanisms in accordance with applicable personal-data protection law. No institution should be permitted to use the integrated system for purposes unrelated to traffic safety, law enforcement, accident prevention, or legally authorized research.

Access should therefore be based on role-based authorization, purpose limitation, data minimization, encrypted transmission, access logging, defined retention periods, periodic security audits, and sanctions for unauthorized access or disclosure. Data should not be retained indefinitely merely because it has been collected. Retention periods should be differentiated according to whether the information concerns an ordinary administrative violation, an ongoing investigation, a repeat-offender assessment, or evidence in criminal proceedings.

Predictive analysis should also be directed primarily toward identifying risk patterns and locations, rather than automatically labeling an individual as a future offender. Variables may include verified histories of serious violations, repetition within a specified period, legally recorded dangerous driving patterns, time and location of recurring violations, involvement in illegal racing, and objective indicators of high-risk driving. Variables such as ethnicity, religion, political opinion, socioeconomic status, or other irrelevant personal characteristics must never be used. AI outputs should function only as

decision-support tools and must remain subject to human review, documented accuracy testing, bias assessment, periodic auditing, and procedures for correcting false positives. Therefore, predictive traffic policing should not become automated punishment or disproportionate surveillance of particular individuals.

The subsequent legal reform must address the development of a legal culture and change public behavior through a behavioral traffic regulation approach. Traffic law enforcement has relied heavily on formal sanctions without being adequately balanced by efforts to develop legal awareness and a sustained safety culture among road users. Therefore, a revision of national traffic education policy is necessary to incorporate traffic safety and public-space ethics from elementary education through higher education. Furthermore, the driver's-license issuance process, as stipulated in Article 77 of the Traffic and Road Transportation Law, may be strengthened through appropriate assessments of driving competence, safety awareness, and the ability to exercise responsible judgment in traffic situations.

The government may also establish a behavioral rehabilitation program for repeat traffic offenders. Eligibility should be determined through legally defined criteria, particularly repeated moderate- or high-risk violations within a specified period, participation in dangerous driving activities, or demonstrated patterns of conduct indicating persistent disregard for traffic safety. The program may include traffic safety education, psychological or behavioral counseling where professionally justified, supervised community service related to traffic safety, and reflection on the consequences of traffic accidents for victims and society.

Completion should not be determined solely by attendance. Measurable indicators may include successful completion of educational modules, demonstrated understanding of traffic safety rules, professional assessment of behavioral risk where counseling is required, compliance with program obligations, and the absence of comparable violations during a defined monitoring period. The effectiveness of the program should be periodically evaluated through repeat-offense rates, compliance data, participant assessments, and, where available, broader indicators of behavioral improvement. In this way, rehabilitation is not treated as a symbolic alternative to punishment but as a measurable preventive intervention designed to reduce recurrence while maintaining accountability.

In the digital era, traffic law reform must also be able to respond to developments in social media and cyber-induced traffic crime, which are increasingly influencing road user behavior. The phenomenon of live streaming while driving, illegal racing challenges, freestyle motorcycle content, and the glorification of speeding on social media have become new criminogenic factors that encourage imitation of dangerous behavior, especially among the younger generation. Therefore, harmonization of the LLAJ Law and Law Number 1 of 2024 concerning the Second Amendment to the Electronic Information and Transactions Law is required to establish regulations for monitoring digital content that contains dangerous driving behavior. The government, together with social media platforms, must develop a digital traffic safety monitoring system to detect, limit, and remove content that

promotes extreme traffic violations. Furthermore, it is necessary to establish a cyber traffic patrol unit under the Indonesian National Police specifically tasked with conducting digital patrols against accounts and communities that promote illegal racing or dangerous driving content. Other concrete measures include imposing administrative sanctions in the form of revoking monetized accounts for content creators who promote traffic violations and imposing additional penalties for perpetrators who disseminate content about dangerous driving that results in fatal accidents. This step is crucial because the digital space has now become part of the social traffic space, directly influencing people's behavior.

Traffic law reconstruction must also strengthen victim protection and the social responsibility of road users through a restorative-preventive traffic law approach. To date, traffic accident resolution has focused primarily on formal criminal liability, without considering victim recovery and preventing recurrence. Therefore, a reformulation of legal policy is needed that integrates restorative justice with behavioral rehabilitation obligations for perpetrators of dangerous violations. Perpetrators of accidents resulting from reckless or dangerous driving should not only be subject to imprisonment or fines but also be required to participate in public safety education programs, community service in hospital trauma units, and behavioral driving rehabilitation. Furthermore, the state needs to establish a National Road Victim Protection System that provides legal protection, medical assistance, psychological rehabilitation, and prompt compensation for victims of fatal traffic accidents. The policy aligns with the principle of protecting the right to life and the right to a sense of security as guaranteed in Article 28G paragraph (1) of the 1945 Constitution of the Republic of Indonesia. With this approach, traffic law focuses not only on punishing perpetrators but also on building a social protection system and recurrence prevention for the safety of the community as a whole.

Reconstruction and legal reform to address risky road user behavior must be directed at establishing a national road safety system based on traffic criminology, digital technology, and social behavior control. Legal reform cannot be achieved solely through changes to criminal norms; it must also encompass institutional reform, strengthening digital oversight, national data integration, public legal education, and transforming the culture of traffic safety. The state must establish a new paradigm that serious traffic violations are a form of modern crime that threatens public safety and the community's right to life. Therefore, synergy is needed between the government, police, educational institutions, social media, and civil society in building a road safety ecosystem that is preventative and adaptive to technological developments and modern social dynamics. With comprehensive legal reforms based on traffic criminology, the legal system in Indonesia is expected to not only be able to reduce the number of accidents and fatalities, but also build a traffic culture that is civilized, responsible, and oriented towards protecting humanity.

To strengthen the legal reconstruction, amendments to Law Number 22 of 2009 concerning Road Traffic and Transportation may introduce a specific provision on dangerous traffic offenders. Such a provision should define a dangerous traffic offender as a person who, through one extremely dangerous act or a repeated pattern of serious

violations, creates a substantial and foreseeable risk of serious injury or death to other road users. The provision should require an objective assessment based on the nature of the conduct, repetition, degree of risk, circumstances of the violation, and verified violation history. A graduated sanction system should then distinguish between ordinary, moderate-risk, high-risk, and critical-risk conduct, combining proportionate administrative sanctions, mandatory education, behavioral rehabilitation, temporary suspension, and criminal liability where the statutory elements of a criminal offense are fulfilled.

The amended law should further regulate the use of AI-supported ETLE, predictive traffic analysis, biometric identification, repeat-offender management, and integrated traffic safety data. AI systems should be legally limited to assisting detection, risk analysis, and verification, while final determinations affecting legal rights must remain subject to human review. Regulations should establish data-access restrictions, purpose limitation, retention periods, cybersecurity requirements, audit trails, accuracy testing, bias evaluation, and procedures for correcting inaccurate information. No automatic suspension, revocation, or criminal consequence should be imposed solely on the basis of an algorithmic output without notification, evidentiary verification, and an accessible mechanism for objection or appeal.

The legal reconstruction should also establish provisions governing digital content that directly encourages or facilitates dangerous driving, while expressly protecting legitimate journalism, education, documentary work, research, and other lawful forms of expression. Finally, the law should authorize behavioral rehabilitation for legally defined categories of repeat or high-risk offenders and establish measurable standards for eligibility, completion, monitoring, and evaluation. Violations involving unlawful access to traffic data, manipulation of AI-supported evidence, misuse of biometric identification, or unauthorized disclosure of personal information should be subject to proportionate administrative, disciplinary, or criminal sanctions in accordance with applicable law.

Conclusion

The study shows that the high fatality rate of traffic accidents in Indonesia can no longer be understood solely as a technical transportation issue, but rather is a manifestation of the legal system's failure to control risky behavior among road users. Behaviors such as speeding, reckless driving, mobile phone use while driving, going against traffic, illegal racing, underage driving, and the influence of social media on extreme driving culture have developed into modern forms of crime from a traffic criminology perspective because they consciously create threats to public safety and people's right to life. Although Indonesia has Law Number 22 of 2009 concerning Traffic and Road Transportation along with various other supporting regulations, the traffic law system still shows fundamental weaknesses, both in terms of regulation, supervision, law enforcement, and the formation of a safety culture. Repressive and administrative law enforcement, weak deterrent effects, low legitimacy of traffic law, limited digital supervision, and the underdevelopment of a behavioral regulation approach mean that the law is unable to effectively shape safe behavior among road users. Therefore, a traffic criminology approach is crucial as a

theoretical and practical foundation for reconstructing traffic laws that are more preventative, predictive, digitally based, and oriented toward controlling social behavior to sustainably reduce traffic accident fatalities.

Based on the research findings, it is recommended that the government and lawmakers comprehensively reconstruct and update traffic laws through a reformulation of Law Number 22 of 2009 concerning Traffic and Road Transportation, incorporating the concept of dangerous traffic offenders, a risk-based sanction system, and strengthening preventive traffic law and behavioral traffic regulation approaches. Furthermore, it is necessary to develop a national traffic monitoring system based on artificial intelligence, integrate national violation data, strengthen Electronic Traffic Law Enforcement (ETLE), and implement predictive policing to detect risky behavior before it leads to fatal accidents. The government also needs to strengthen traffic safety education from an early age, tighten the driver's license issuance process through psychological testing of driving behavior, and establish a behavioral rehabilitation program for repeat traffic offenders. In the context of digital technology developments, harmonization of traffic law policies with social media and information technology regulations is necessary to monitor and take action against digital content that promotes dangerous driving behavior. With these steps, it is hoped that the reform of traffic law in Indonesia will be able to build a road safety system that is more modern, adaptive, humanistic, and oriented towards protecting the right to life and public safety as part of the responsibility of a modern state based on the rule of law.

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