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ROAD SAFETY COMPLIANCE AND ENFORCEMENT: INSIGHTS FROM USER PERCEPTIONS IN SPAIN AND THE DOMINICAN REPUBLIC

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Resumen: Las regulaciones, el sistema de sanciones y la supervisión policial son algunos de los componentes principales para aumentar la seguridad vial. De hecho, se sabe que una gran parte de los accidentes son causados por el incumplimiento de las normas, y es precisamente en la eliminación y disuasión de estos comportamientos infractores donde debe basarse un sistema de sanciones efectivo, respaldado por la correspondiente supervisión policial. Este artículo discute algunos de los principios que la aplicación de la ley debe cumplir para maximizar su utilidad. Para ello, presentamos una serie de datos empíricos de nuestra propia investigación, a través de encuestas a la población (en España y la República Dominicana), sobre el grado de conocimiento de las regulaciones de tráfico, las motivaciones que conducen al cumplimiento/no cumplimiento, así como las sanciones asociadas con el incumplimiento, la probabilidad atribuida y real de ser sancionado, y su evaluación del sistema en su conjunto, incluida la atribución de efectividad. Finalmente, la evidencia mencionada se compara con algunos principios de aprendizaje y comportamiento (especialmente el castigo), para determinar en qué medida corresponden, extrayendo así algunas conclusiones sobre los déficits comunes existentes en la realidad de los sistemas de aplicación en muchos países, lo que presenta una oportunidad de mejora.

Abstract: Regulations, the sanctioning system, and police supervision are among the main components for increasing road safety. In fact, most accidents are caused by non-compliance with the rules, and it is precisely the elimination and deterrence of these offending behaviors that must be based on an effective sanctioning system supported by the corresponding police supervision. This paper discusses some of the principles that enforcement must comply with in order to maximize its usefulness. To this end, this paper presents a series of empirical data from our own research, through surveys of the population (in Spain and the Dominican Republic), on the degree of knowledge of traffic regulations, the motivations that lead to compliance/non-compliance, as well as the penalties associated with non-compliance, the attributed and real probability of being sanctioned, and their assessment of the whole system, including the attribution of effectiveness. Finally, the aforementioned evidence is compared with key principles of learning and behavior (especially punishment), to see to what extent they correspond, thus

drawing some conclusions about the common existing deficits in the reality of enforcement systems in many countries, which present an opportunity for improvement.

Palabras clave: Seguridad vial, regulaciones, efectividad, 'enforcement', percepción.

Keywords: Traffic safety, regulations, effectiveness, law enforcement, perception.

1. INTRODUCTION

Decades of accumulated evidence support the idea that the basic function of rules and laws is to enable drivers, cyclists, and pedestrians to anticipate or foresee the behavior of other road users. At a practical level, these regulations serve as a guide for making decisions in real-time traffic scenarios, fostering a predictable and harmonious flow of movement. Additionally, while current urban design guidelines increasingly consider the needs of vulnerable road users (Vecchio & Castillo, 2020), normative developments are still regarded as a fundamental mechanism for influencing and regulating potentially risky behaviors among road users, encouraging safer practices through both legal obligations and deterrents such as fines and penalties (Shinar, 2007).

Nonetheless, both current crash-related data and global road safety reports suggest that compliance with these regulations is assured in only a limited range of contexts or situations. According to the specialized literature, factors such as ignorance, distractions, or intentional non-compliance can undermine the effectiveness of these rules, potentially leading to traffic accidents (Alonso et al., 2005a). From a crash research perspective, non-compliance not only increases the likelihood of collisions but also heightens the severity of injuries when such events occur, reinforcing the role of road regulations as one of the most essential elements for promoting safety on city streets and highways (Hakkert & Gitelman, 2014).

In addition, several recent studies have systematically stressed the need for developing new normative improvements, along with enhancing a more consistent and rigorous application of traffic norms (Sheng et al., 2018; Castillo-Manzano et al., 2019). Thus, Bates et al. (2012) point out that traffic law enforcement should comprise a detention and dissuasion function, which are mainly achieved through the establishment of traffic laws, enforcement of their compliance, and the application of sanctions to offending drivers. Said otherwise, the so-called “law enforcement” has shown a non-despicable potential in reducing accidents and promoting a safer road environment for all users. Taxonomically, two functions of traffic laws and regulations can be established:

From its declarative effect: establishing socially acceptable norms

The declarative function of traffic laws plays a relevant role in shaping societal norms and user-related road safety behaviors by explicitly defining what is acceptable and expected on the road. It is also noteworthy that traffic regulations are not merely legal provisions; they represent a social contract among road users, promoting behaviors that are deemed responsible and safe (Elvik, 2010). This way, laws are claimed to help cultivating a shared understanding of how to navigate the road safely and cooperatively. Over time, adherence to such regulations contributes to the development of a safety culture, wherein compliance with the rules becomes an ingrained habit rather than a forced obligation. According to other studies, traffic safety can be improved when road users internalize these norms, leading to voluntary compliance even in the absence of immediate enforcement (Nævestad & Elvebakk, 2017).

From its dissuasive or repressive effect: imposing sanctions on offenders

Given that countries such as Spain report a significant rate of recidivism in traffic offenses, it is important to analyze how dissuasive traffic regulations can be in managing

user behavior (Lijarcio et al., 2022). Repeat offenders, which can be understood as drivers who systematically commit serious or very serious infractions, remain a serious problem for road safety, and the current figures support it. For instance, only in the last few years, the Spanish General-Directorate of Traffic (DGT) has identified and sanctioned more than 570,600 repeat offenders. Moreover, a survey conducted by Fundación Línea Directa and FESVIAL (2020) found that about 55% of Spanish drivers tend to self-report committing a serious or very serious repeat offense every year, also suggesting that these figures do not encompass the full extent of the issue, as the trend remains consistent over time.

At a practical level, there is a significant gap in assessing the actual deterrent value of traffic laws. Studies suggest that while legal frameworks are crucial for managing road user behavior, systematic evaluations of their deterrent effects remain scarce (Elvik, 2010; Bates et al., 2012). In other words, only a few evaluation processes exist to determine the extent to which normative advancements of a deterrent nature effectively inhibit such behaviors, thereby potentially affirming the value and necessity of enforcement actions aligned with situational strategies for reducing offenses (Arias Sobalvarro & Luneke, 2022). This dimension of law enforcement plays, however, a key role in reducing risky behavior through the application of fines, penalties, and legal consequences (Zaal, 1994). Furthermore, it is worth stressing the idea that the threat of sanctions has been systematically addressed in literature as a preventive measure by increasing the perceived risk of non-compliance (Elvik, 2010).

While the research addressing these assumptions remain considerably scarce (and this motivates the present paper), it is known that effective police control and supervision enhance the visibility of law enforcement, thereby amplifying the dissuasive effect. Studies indicate that when drivers believe they are likely to be caught, they are more likely to comply with traffic norms, leading to a reduction in traffic violations and accidents (Makowsky & Stratmann, 2011). Furthermore, research has demonstrated that consistent and fair enforcement, combined with public awareness campaigns, can have long-lasting effects on improving road safety (OECD/ITF, 2010).

1.1 Research aim and setting

Bearing in mind the aforementioned considerations, the aim of this paper is to present the key behavior-related outcomes of two empirical studies examining user-centered road risks from the perspective of law enforcement. Specifically, these studies focus on road users' attitudes and perceptions regarding traffic regulations, enforcement measures, and punishment. The analysis was conducted both at a general level, assessing overall compliance with traffic laws, and in relation to specific high-risk behaviors, such as speeding, distracted driving, and mobile phone use while driving, and their respective punishment-related issues.

As for the potential contribution of this paper, these findings may provide further insights on understanding how perceptions of law enforcement influence behavioral compliance and risk mitigation on the roads.

2. Study 1 - A survey of the Spanish population on the legislative-judicial system, regulations, police supervision, and sanctions

2.1. Methodology

This survey was administered in Spain on a sample of $n= 1,113$ active drivers distributed across all regions of the country. The sample, which was probabilistic and stratified, was obtained from a simple random sampling proportional to the census of drivers according to sex, age, habitat and Autonomous Community. The full set of basic demographics is presented in Table 1.

Table 1.
Sociodemographic data of the study sample

Factor		N	%
Sex	Men	684	61.6%
	Women	430	38.4%
Age range	14 to 17 years old	13	1.2%
	18 to 24 years old	106	9.7%
	25 to 29 years old	141	12.8%
	30 to 44 years old	418	38.1%
	45 to 65 years old	331	29.9%
	More than 65 years old	94	8.3%
Habitat (City/town size)	Less than inhabitants	256	23.0%
	10,001 to 20,000	128	11.5%
	20,001 to 100,000	276	24.8%
	100,001 to 500,000	267	24.0%
	More than 500,000	186	16.7%
Driving frequency	Every day	668	60.0%
	Almost every days	161	14.5%
	A few days per week	208	18.7%
	A few days per month	76	18.7%

The questionnaire is administered through personal interviews and contains items on drivers' knowledge of traffic regulations, perception of traffic regulations and sanctions, and the prevalence and perceptions of specific risk behaviors.

2.2. Results

As regards knowledge of traffic and road safety regulations, 70.4% of those surveyed indicated that they knew them fairly well. In comparison, around 11% indicated that they know it very well. However, a small but worrying 1.1% say they do not know the

regulations at all. Regarding the effectiveness of traffic regulations, the majority of respondents had scores above 7, while only 5.5% give scores between 0 and 4.

Once analyzed the responses provided by the study 1's participants, it was found that 87.9% of drivers consider traffic regulations fair, compared to 12.1% who think they are unfair. On the other hand, 68.6% say they are adequate, while 31.4% consider them to be excessive or insufficient. Curiously, as the number of kilometers travelled increases, the evaluation of the effectiveness of traffic and road safety regulations decreases.

Regarding the purpose of the sanctions, a considerable percentage of people (almost 60%) consider that collection is the basic objective of the sanctions. On the other hand, 63.3% consider road user education as one of the objectives of sanctions. Meanwhile, 73% point out the punitive function of sanctions.

18.7% of Spaniards consider that the functioning of justice is good or very good. However, for 59.8% of the drivers surveyed, the functioning of justice in our country is fair, and 21.5% consider it to be very bad.

Focusing on the specific area of the functioning of traffic justice and road safety, in this case, 30.1% of those surveyed consider that the functioning of justice in this area is good or very good. On the other hand, while 57.5% of drivers believe the functioning is regular, 12.4% consider that the functioning of justice in our country in traffic and road safety matters is very bad.

Once the knowledge and attitudes of users towards traffic and road safety regulations had been identified, an assessment was made of how all these aspects are evidenced in their driving behavior, through some specific conducts, of which we have selected a few as follows.

2.2.1. Risky behaviors, their knowledge and perceptions among users

2.2.1.1. Driving at excessive speed

The descriptive analysis of the data allowed to establish that about 7.7% of drivers recognize that they almost always or often exceed the established speed limits, while one in three say they speed on some occasions. On the other hand, more than 60% state that they never or almost never commit this type of infraction.

The reasons cited by those surveyed for speeding were haste or urgency (27.1% and 35.7%) and, to a lesser extent, absent-mindedness ("I don't notice") (19.5% and 26.6%). Interestingly, 14.3% of drivers say that they exceeded the speed limit completely intentionally.

On the other hand, 36.8% of drivers who do not speed do so because of the possibility of being involved in a traffic accident, while 15.9% and 14% do so because they do not like to speed or out of prudence and safety, respectively.

Respondents would punish speeding while driving with a degree of severity of 8.2 points out of 10, being the third most highly valued behavior among all those surveyed (only surpassed by drinking and driving without valid insurance). In this case, one-third

of drivers would punish speeding with the highest level of severity (giving it a score of 10 out of 10), and 36.5% indicate levels 8 or 9 of severity for this offence.

2.2.1.2. Driving under the influence of alcohol

Some 9.1% of drivers say they sometimes drive after consuming an alcoholic beverage. If we add to this percentage the 15.5% of drivers who say that they almost never drive after having had an alcoholic drink, we obtained an even more worrying 24.6% of those interviewed labeled in intermediate degrees, i.e., sometimes, more or less frequently, drive under the influence of alcohol. On the other hand, 74.7% say they never drive after drinking alcohol, while the remaining 25.3% drive after sporadic or frequent ingestion of some alcoholic beverage.

The 24.5% of drivers who have driven after drinking alcohol state that “I needed to get home and could not do anything else”. It seems that it is necessary to emphasize the responsibility of each of us and the alternatives to driving one’s own vehicle when one has been drinking alcohol. It is worrying that 17.3% point to meals as a reason for driving after drinking alcohol, that 16.4% say they do it intentionally and that 12.7% think that it does not affect them and they feel safe.

Half of the people do not drive after drinking alcoholic beverages because they do not drink alcohol, while nearly 30% avoid driving under the influence of alcohol because of the possibility of being involved in a traffic accident. Some 8.4% say that they do not drive after drinking alcohol because of the possibility of a financial penalty.

The degree of severity with which the behavior would be sanctioned is closely related to the perceived risk of an accident. Driving after having consumed an alcoholic beverage is the behavior that respondents would sanction most severely (9.1 points out of 10). Thus, a large proportion of drivers (around 63%) would punish driving after having consumed alcohol with the highest degree of severity (giving it a score of 10 out of 10).

2.2.1.3. Failure to respect the safety distance

Although it has been stressed in literature as a major contributor to vehicle-to-vehicle crashes (Alonso et al., 2020), 18.4% of drivers were found to drive without keeping a safe distance. 5.6% recognize that they almost always or often commit this infraction, while 76% state that they always or almost always keep a safe distance.

Moreover, and regarding the specific causes attributed to not keeping safety distances, it was established that 31.4% of drivers say that they do not keep a safe distance when driving because they just “do not realize” that are disregarding it, while 16.7% say that traffic conditions and traffic jams are the cause of this behavior. In this case, haste is again mentioned as another reason by 11.4% of drivers, while 6.4% say that they do this behavior completely intentionally.

Nearly 70% of those who drive while keeping a safe distance perform this safety behavior because of the possibility of suffering a traffic accident, while 19.2% do so to prevent possible brakes.

Driving without keeping a safe distance should be penalized with a degree of severity of 7 points out of 10, according to the opinion of those surveyed. Thus, 65% of drivers said that they would penalize this behavior with a level of severity between 5 and 8 points out of 10.

3. Study 2 - Road safety survey of the Dominican population

3.1. Methodology

This survey was conducted in the Dominican Republic on a sample of 1,260 participants. The sample distribution is proportional to the population according to the ONE census, with quotas by sex, age (18 and over), province, and habitat. The mean age was $M= 39.4$ ($SD= 15.4$) years. 49.9% of them were women and 50.1% were men. The full set of basic demographics is presented in Table 2.

Table 2.
Sociodemographic data of the study sample

Factor	N	%
Sex	Men	631 50.1%
	Women	629 49.9%
Age range	18 to 24 years old	261 20.7%
	25 to 34 years old	318 25.2%
	35 to 49 years old	367 29.1%
	50 to 64 years old	211 16.7%
	More than 65 years old	103 8.2%
Habitat	Urban	996 79%
	Rural	264 21%
Licensed driver?	Yes	289 22.9%
	No	971 77.1%
Frequent driver? (More than once a week)	Yes	441 35%
	No	819 65%

At a structural level, the survey was composed of 26 items to assess Dominican citizens' perceptions of the characteristics and prevalence of road accidents in the country. The questionnaire specifically consisted of the following sections: Sociodemographic variables and driving data, questions on the most relevant problems presented in the country, items on the perceptions of the factors causing road accidents and questions on the perception of traffic sanctions.

3.2. Results

Regarding the participants' perception of the most important problems in the Dominican Republic, it was found that citizen insecurity/crime is the issue that worries most participants (30.79%), followed by the economy, which represents 9.84%. Traffic accidents are not a frequent concern for this sample (2.46%), although traffic related to this category is mentioned more frequently (6.9%) but still low.

However, the prevalence of road accidents is high. Thus, 38.97% (491 persons), have suffered at least one traffic accident in their lifetime. 20.16% have been involved in traffic accidents as a driver. 20.47% of those who have experienced accidents as a driver acknowledge having had at least one accident in the last year.

Regarding sanctions, 19.84% recognize having received at least one traffic sanction in their life. These people report having received between one fine (46.4%) and two fines (26%) (out of 250 people). Most of these fines were imposed for failure to use the case (27.2%), and driving without the required documentation (insurance, license, tag) (16%).

Also interestingly, sixty-four percent (out of 250 participants) report that they have always paid the fine corresponding to the sanction, but a worrying 27.6% never pay it. On the other hand, 54.6% of the participants consider that they know the average cost of a traffic fine ($M=1952.71$, $SD=2461.81$). At the same time, 16.11% say that a fine starting at \$500RD is costly, and 22.78% say that a fine starting at \$1000RD is costly.

The measure of increasing fines to improve road safety is not appreciated with a medium value ($M=5.77$, $SD=3.86$). Still, automatic surveillance systems are trendy better valued by the interviewed road users, who also tend to consider that promoting technology-based enforcement measures could help improve both user behavior and traffic safety in both urban and rural roads ($M=8.57$, $SD=2.5$).

3.2.1. Self-reported road safety behavior, knowledge, and perceptions risk factors.

3.2.1.1. *Driving at excessive speed*

Speeding is the risk factor par-excellence associated with both the occurrence and the severity of traffic crashes. The risk of speeding is rated as high ($M=8.75$, $SD=2.39$). Participants also consider that the severity with which speeding should be punished is high ($M=8.49$, $SD=2.57$). A total of 60.79% consider that speeding is punishable in the Dominican Republic and that on average, 6 out of 10 times, the speed limit is exceeded ($M=5.88$, $SD=3.06$).

It is found that they consider that this conduct can be sanctioned with the total or temporary withdrawal of the license (40.6%) and financially (39.69%). Of the 41.83% who admit to driving, 46.3% say they never speed, and the remaining 53.7% admit doing so on occasion. However, only 4.84% of these participants, all of them licensed drivers, have received a fine (17 people), 4 of them consider that the fine was excessive, but 70.59% consider that the fine was adequate, in addition to recognizing that they have modified their behavior after the fine (88.24%).

3.2.1.2. *Driving under the influence of alcohol*

Regarding driving after having had an alcoholic beverage, the risk is evaluated as high ($M=8.94$, $SD=2.53$), and the same tendency is presented for the degree of severity with which this behavior should be sanctioned ($M=8.78$, $SD=2.54$). A total of 60.48% consider that driving over the BAC limits is punishable and that, on average, this behavior is sanctioned 7 out of 10 times ($M=6.55$, $SD=2.82$).

Furthermore, and as for the perceived sanctioning measures (that are indeed frequently unknown even among licensed drivers having benefited from road training), it was found that they consider that this conduct can be sanctioned with the total or temporary withdrawal of the license (39.24%) and financially (30.45%). Of the 41.83% who admit driving, 63.76% say that they never engage in this behavior while driving, and the remaining 36.24% admitted to doing so on occasion. Only two people have received a fine and disclosed having modified their behavior after the fine (100%).

3.2.1.3. *Failure to respect the safety distance*

The risk of not respecting the safety distance is rated as high ($M=8.13$, $SD=2.65$). Additionally, the participants also consider that the degree of severity with which this behavior should be sanctioned is medium-high ($M=7.90$, $SD=2.68$). A total of 40.63% consider that driving without keeping a safe distance is punishable in the Dominican Republic, and that, on average, 7 out of 10 times, the limits are exceeded ($M=6.49$, $SD=2.54$).

They consider that this conduct can be sanctioned with the total or temporary withdrawal of the license (43.36%) and financially (43.36%). Of the 41.83% who admit to driving, 42.5% say they never engage in such conduct while driving, and the remaining 57.5% admitted to doing so on occasion. Only 3.1% have received a fine (7 people), 4 consider the fine excessive, and 6 admit having modified their behavior after the fine.

4. DISCUSSION

The aim of this paper was to present the key behavior-related outcomes of two empirical studies examining user-centered road risks from the perspective of law enforcement. Specifically, these studies focus on road users' attitudes and perceptions regarding traffic regulations, enforcement measures, and punishment, reason for which may provide valuable insights into the role of law enforcement in shaping road user behavior and perceptions regarding traffic regulations and sanctions. Below, some of the key takeaways of these two applied studies are discussed in the light of previous studies and documented empirical experiences.

4.1 How important is rule knowledge for law compliance?

In both of the presented studies, the knowledge of traffic laws emerged as a critical factor, with a clear link between a higher degree of law awareness and greater compliance. In other words, this contributes to highlight the importance of enhancing public understanding of traffic regulations, as ignorance remains a notable barrier to compliance, despite the legal principle that ignorance does not exempt individuals from adhering to the law (Alonso et al., 2017). Such gaps in knowledge suggest that authorities must

intensify efforts to disseminate traffic regulations more effectively, using public campaigns and educational programs tailored to different demographic groups (Cordellieri et al., 2016).

Moreover, the existing literature also supports that having a perception of *fairness* in traffic enforcement seems to play a central role in compliance, i.e., achieving an adequate fit between the seriousness of the offense versus the severity of the punishment may favor better mid- and long-term outcomes. Particularly, as shown in prior research, it has been observed in countries such as the United States of America that if individuals view laws and their enforcement as fair and just, they are more likely to comply voluntarily, even without constant supervision (Bradford et al., 2015). Conversely, sanctions perceived as unjust or overly harsh can foster resentment, potentially exacerbating non-compliance. The results of this study support these observations, indicating that road users who perceive sanctions as excessive are less likely to change their behavior. To address this issue, it is essential to improve the transparency of law enforcement and ensure that penalties are proportional to the violations committed (Wachinger et al., 2013).

4.2 Do individual factors ‘count a lot’ for compliance?

Another significant finding from this research is the influence of personal and demographic factors on compliance and risk perception. Age, driving experience, and gender were found to modulate knowledge, attitudes, and behaviors, aligning with studies that emphasize the need for targeted interventions (Cordellieri et al., 2016). All in sum, the existing scientific literature indicates that younger and less experienced drivers tend to underestimate the risks, but gender differences may explain significant differences among drivers, as female drivers tend to show higher risk perception and less risk assumption behaviors if compared to males (Rhodes & Pivik, 2011). This is particularly relevant for groups reporting higher rates of traffic violations, such as younger drivers or recidivist offenders. Indeed, studies such as Okafor et al. (2014) and Yu et al. (2004) suggest that focusing on these high-risk groups through personalized strategies and technological developments may help authorities to both improve compliance and reduce the incidence of dangerous behaviors.

Another relevant issue highlighted by the results of the two studies addressed in this paper is the perception that traffic fines serve primarily as a revenue collection tool. This is, many road users keep considering non-compliance punishments from a merely economical approach, and do not actually attribute a formative value to the punished users (Alonso et al., 2017 & 2023). Linking it to the aforementioned, this belief undermines the legitimacy of sanctions and may hinder compliance. To counteract this troublesome ‘side effect’ of traffic ticketing, some previous papers claim that there must be clear communication that revenue from fines is reinvested in road safety initiatives and community-related actions, such as infrastructure improvements or public education campaigns (Truelove et al., 2021). Such measures, combined with a well-structured points-based license system, could enhance the perceived fairness and purpose of penalties, thus reinforcing the deterrent effect of fines.

Finally, this study confirms the importance of addressing the gap between subjective risk perception and objective risk. Many road users tend to underestimate the dangers associated with risky behaviors, such as speeding or driving under the influence

of alcohol (Rosenbloom et al., 2014; Useche et al., 2019), suggesting individual gaps in the valuation of such behaviors. In practical settings, studies conducted with drivers, cyclists, and other types of road users have suggested that improving compliance requires bridging this gap, as drivers who perceive the true risks associated with their behavior are more likely to follow regulations and view penalties as justifiable (Alonso et al., 2023; Tang et al., 2021; Useche et al., 2022). In other words, improving public awareness of behavioral risks and acceptance of the regulations aimed at diminishing them through both education and visible law enforcement, could significantly reduce road accidents and improve overall safety (Curry et al., 2017; Rosenbloom et al., 2014).

5. CONCLUSIONS

With all of the above, this paper highlights the critical role of law enforcement in influencing road user behavior and ensuring compliance with traffic regulations. The findings suggest that enhancing both public awareness of traffic laws and the perception of their fairness is vital for improving road safety. While ignorance of the law is not a legal excuse, it remains a significant barrier to compliance, indicating the need for more comprehensive educational strategies. Public campaigns, particularly those tailored to demographic groups with lower awareness, can help bridge this knowledge gap.

Additionally, the perceived fairness of enforcement plays a central role in shaping compliance behavior. Sanctions that are viewed as unjust or disproportionate may have counterproductive effects, discouraging adherence to traffic norms. To address this, it is essential to ensure that penalties are transparent, proportional, and clearly linked to safety objectives. Reinforcing the legitimacy of enforcement efforts, through both educational measures and reinvestment of fine revenues into road safety improvements, can significantly bolster compliance.

In intervention-related settings, our outcomes imply the importance of targeted interventions for high-risk groups, such as younger drivers and recidivists, who display higher rates of non-compliance.

Finally, it is worth proposing that research and policy-related efforts might focus on closing the gap between subjective risk perceptions and objective risk, particularly for behaviors like speeding and driving under the influence of alcohol. Public awareness campaigns that highlight the real risks associated with these behaviors, combined with visible law enforcement, can contribute to more significant behavior change and improved road safety outcomes.

At a practical level, these efforts should be complemented by a continuous evaluation of enforcement practices and the use of data-driven approaches to adapt policies over time, ensuring the long-term effectiveness of road safety interventions.

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