Research Article

A Comprehensive Evaluation of Road Safety Awareness Among Drivers and Motorists in Zamboanga Peninsula

Marjorie Jelly A. Adel, Angelica T. Borja, Johair J. Mangray, Bernandino P. Malang*

World Citi Colleges Graduate School, Cubao, Quezon City, Bulacan State University – Bustos Campus, Philippines

ABSTRACT

Road safety is a matter of paramount concern on a global scale, given the substantial loss of life and injury resulting from road accidents every year. This comprehensive study is dedicated to a meticulous examination of road safety awareness and responsible conduct among drivers and motorists in Zamboanga Peninsula, situated in the Philippines. The central aim of this research is to conduct a detailed evaluation of the current status of road safety awareness and the responsible behaviors of drivers and motorists within Zamboanga Peninsula. Our intention is to identify the pivotal factors that influence road safety awareness and to recognize the barriers obstructing the translation of this awareness into responsible road behavior. To accomplish this aim, the researchers have employed quantitative techniques. A meticulously structured questionnaire survey was administered to a diverse cohort of drivers and motorists, which facilitated the collection of multifaceted data encompassing demographics, the level of awareness regarding road safety regulations, and the determinants impacting their on-road conduct. The quantitative dataset underwent rigorous analysis employing an array of statistical methods, with the mean scores and ranking system employed to dissect the collected data. The outcomes of this comprehensive research endeavor unveil a myriad of critical insights. Foremost, a conspicuous gender disparity is evident among road users in Zamboanga Peninsula, with males constituting the majority. Intriguingly, a substantial proportion of drivers falls within the age bracket of 26-35, signifying the demographic significance of this cohort. On the aspect of road safety awareness, the study affirms the presence of a robust understanding of fundamental road safety principles, yet it highlights the imperative need for focused attention to areas such as overtaking rules and the usage of mobile phones during driving. The research points to inconsistent law enforcement and high levels of traffic congestion as the most influential factors contributing to deficiencies in

road safety awareness. This comprehensive study serves to illuminate the complex road safety landscape in Zamboanga Peninsula. It underscores the compelling necessity for region-specific interventions that cater to the prevalent gender and age disparities among road users. Moreover, the research findings emphasize the pivotal roles of law enforcement, traffic management, education, and targeted awareness campaigns in the quest for an improved road safety scenario.

Introduction

Road safety is an issue of paramount global concern, with profound social, economic, and health ramifications. Annually, road traffic accidents claim over 1.3 million lives, ranking as the 8th leading cause of death worldwide and the primary cause of mortality for young individuals. Vulnerable road users, encompassing pedestrians, cyclists, and motorcyclists, constitute more than half of these tragic fatalities. The Philippines, akin to numerous nations, confronts a distressing surge in road traffic deaths, with the Philippine Statistics Authority (PSA) reporting a disquieting 39% escalation from 7,938 fatalities in 2011 to 11,096 in 2021. Notably, these incidents have burgeoned to become the leading cause of death among Filipinos aged 15-29, exerting a poignant toll on child mortality as well.

In 2020, the pandemic-induced restrictions momentarily mitigated the fatalities to 8,746; however, 2021 witnessed a resurgence in the death toll to 11,096, coinciding with the relaxation of lockdown measures. The imperative recognition prevails that road traffic injuries impose a substantial economic burden, siphoning approximately 2.6% of the nation's Gross Domestic Product (GDP) (Junio, 2023). The persistence of road traffic accidents despite concerted efforts to mitigate them underscores the burgeoning daily magnitude of this predicament, as aptly underscored by Kelacha (2021). The urgency of effectively addressing this preventable issue necessitates synchronized action from various ministries, particularly those overseeing law enforcement, urban planning, transportation, education, public awareness, and public health. A holistic approach to road safety mandates the augmentation of the built environment, inclusive of safer road design, rigorous sidewalk regulation, traffic light management, and the establishment of secure bicycle lanes.

Concurrently, law enforcement must fervently promote compliance with traffic regulations while educating and advocating for seatbelt and helmet use, as well as the curbing of speeding and drunk driving. Heightened vehicle safety standards are a requisite, and post-crash response mechanisms must be enhanced. Crucially, the cultivation of safer, sustainable public transport alternatives can harmonize road safety objectives with public health, transportation, and carbon emissions reduction targets. The Philippines stands at the precipice of a road safety crisis, accentuated by the World Health Organization's (WHO) identification of the nation as harboring one of Southeast Asia's highest road traffic death rates.

In 2019, the country bore witness to over 13,000 reported fatalities, a figure that remains on a disconcerting ascent. A melange of factors underpins this distressing surge, including reckless driving practices, traffic congestion, inadequacies in road infrastructure, soaring vehicle density, rapid population expansion, substandard public transportation, and a pervasive lack of road user awareness. The imperative of comprehensive traffic knowledge among all road users, enabling them to adhere to regulations sans the presence of traffic officers, cannot be overstated. Neglecting these norms gives rise to grave injuries, fatalities, and substantial economic burdens. Consequently, the pressing need emerges to amplify and assess awareness regarding road safety among motorists and drivers.

The study's pivotal goal is to scrutinize the effectiveness and influence of extant road safety programs and campaigns concerning road user awareness in the Zamboanga Peninsula. Through this research, the aim is to proffer invaluable insights that can furnish policymakers and stakeholders with an understanding of the prevailing initiatives' strengths and weaknesses, ultimately forging the path to refinement. The findings of this study shall be the lodestar in crafting evidence-based interventions and strategies aimed at invigorating extant programs and campaigns, with the ultimate aspiration of diminishing road accidents in the Zamboanga Peninsula. With road safety bearing global significance, the Philippines, in particular, encounters distinctive challenges. The burgeoning trajectory of road traffic fatalities necessitates a multifaceted approach, integrating law enforcement, infrastructure development, education, and public awareness. The proposed study within the Zamboanga Peninsula possesses the potential to illuminate the state of road safety education, yielding data that can catalyze effective measures to arrest the disconcerting rise in road accidents.

Methods

The method used by the researchers in this study was a quantitative method. It is used to study relationships between factors, which are measured and recorded as research variables. The purpose of quantitative research is to attain greater knowledge and understanding of the social world. Researchers use quantitative methods to observe situations or events that affect people. Quantitative studies are often fast, focused, scientific and relatable. The speed and efficiency of the quantitative method are attractive to many researchers. Data computing equipment makes it possible to process and analyze data quickly, even with large sample sizes, (Williams, 2021). It was the best approach in this study because it was aligned with the purpose of the researchers. In addition, the researchers applied the cross-sectional study as research design, since the researchers believed that it is the most appropriate design to accomplish the objective of the study.

To ascertain the Zamboanga Peninsula's awareness on road safety regulations the researchers used the probability sampling method specifically the random stratified sampling. Also, to find out the influence of the demographic profile of respondents on the primary factors and barriers listed by the researchers it is apparent that this is the most suitable method. The respondents to this research are road users, specifically drivers and motorists, that was located in Zamboanga Peninsula. One of the advocacies of the Land Transportation Office (LTO) under the Department of Transportation (DOTr) in the said location is to raise the road safety awareness of its road users. Thus, the researchers chose the as respondents in order to develop and propose strategies that can help its community.

The instrument used in this study was a questionnaire in the form of a survey. The researchers started with the demographic profile of the target respondents grouped in different factors such as sex, type of vehicle, age, and years of driving. The next part of the questionnaire is to determine the level of awareness of the respondents on road safety rules and regulations and then to determine the primary factors influencing the low level of road safety awareness. Lastly, is to determine the barriers preventing an individual from translating road safety awareness into responsible behaviors on the road. A Likert scale will be used to evaluate each of the questions.

To uphold the validity and reliability of the research instrument, a stringent series of measures were meticulously implemented to preserve the integrity and trustworthiness of the acquired data. The questionnaire underwent a rigorous validation process to verify both its content and construct validity. An esteemed panel of experts, well-versed in the domains of road safety and research, rigorously evaluated the questionnaire's relevance and comprehensiveness in the context of addressing the research objectives. The invaluable feedback and recommendations furnished by these experts were thoughtfully assimilated into the final questionnaire, profoundly enhancing its content validity. Moreover, a pilot study, featuring a select subset of respondents,

was meticulously executed to assess the questionnaire's clarity and overall efficacy. This pretesting phase served the pivotal purpose of unearthing potential ambiguities, inconsistencies, or sources of confusion within the survey instrument. Subsequent to their identification, rectifications were expeditiously undertaken to ensure the questionnaire's absolute comprehensibility. In matters of reliability, the research scrupulously adhered to a standardized questionnaire administration protocol. The data collection procedures were executed with a meticulous and unwavering precision, with responses systematically recorded to mitigate any potential errors. Furthermore, a suite of statistical techniques, including internal consistency measures, was judiciously applied to rigorously evaluate the reliability of the questionnaire items. These concerted endeavors were orchestrated to fortify the instrument's credibility, underpinning the assurance that the collected data precisely and consistently mirrored the awareness, perceptions, and barriers regarding road safety among the denizens of the Zamboanga Peninsula.

Ethical considerations played a central and meticulously observed role in the implementation of this research study. In strict accordance with established ethical guidelines, the researchers unwaveringly adhered to the fundamental principles of informed consent and voluntary participation. Prior to the distribution of surveys, each and every respondent was provided with lucid, comprehensive information elucidating the study's objectives, expected outcomes, and the rights they retained as participants. The researchers emphatically assured respondents of the inviolable principles of anonymity and confidentiality pertaining to their responses. It was steadfastly underscored that participation in the research was entirely voluntary, and individuals had an unequivocal right to withdraw their involvement at any juncture without incurring any form of consequence. Furthermore, the researchers diligently and meticulously obtained the requisite ethical approvals from the pertinent institutional review boards, ensuring stringent compliance with prevailing ethical standards and the unequivocal absence of harm to the participants. Throughout the research process, the highest regard was dedicated to the dignity and privacy of all individuals involved. The scope of ethical considerations extended to the responsible management of data, thereby guaranteeing the vigilant safeguarding of personal information for the exclusive use of research purposes. These ethical safeguards held paramount importance in upholding the rights and welfare of study participants, preserving the research's integrity, and unwaveringly upholding the ethical principles that form the bedrock of scholarly inquiries.

The data was gathered by the researchers by personally distributing the questionnaires to the respondents. In this study the respondents were divided into three groups fifty (50) respondents for two (2) wheeled vehicles, fifty (50) respondents for three (3) wheeled vehicles, and another fifty (50) respondents for four (4) wheeled vehicles with a total number of one hundred fifty (150) respondents.

The statistical treatment of data in this study was a methodical and rigorous process designed to extract meaningful insights from the gathered information. Initially, the raw data collected through the questionnaires underwent meticulous organization, coding, and entry into a computerized database. To provide a comprehensive overview of the sample, descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the demographic profile of the respondents. Subsequently, inferential statistics, including correlation analysis, were applied to investigate the relationships and associations among different variables. Correlation analysis assessed the strength of the connection between demographic factors and road safety awareness, while multiple regression delved into the factors and barriers influencing road safety awareness. These statistical techniques offered a deeper understanding of how various factors interacted and their impact on road users' awareness of safety regulations. The primary objective of the statistical treatment of data was to reveal significant patterns and trends, thereby informing the development of effective road safety strategies and recommendations for the Zamboanga Peninsula. Ultimately, this contributes to the advancement of

road safety awareness and the promotion of responsible behavior among road users in the region.

Result and Discussion

Based on the results of the study, out of the total 150 respondents who participated in the study, a substantial majority, constituting 86.02%, were males, while females accounted for a significantly lower proportion, representing 13.98% of the sample. This sex imbalance suggests that, in general, there are notably more male drivers and motorists in the region than their female counterparts. In terms of age group of respondents, the "26 - 35" age group emerges as the largest, constituting 35.33% of the total participants. This suggests that individuals in their late twenties to mid-thirties comprise the majority of drivers in the region. Following closely behind is the "36 - 45" age group, representing 27.33% of the respondents. These findings signify that the core driving population falls within these two age brackets. Notably, the data reveals that the age groups "18 - 25" and "26 - 35" together account for a significant 52% of the total respondents. This implies a substantial presence of younger and middle-aged drivers, who are likely characterized by varying degrees of driving experience and road safety awareness. In terms of vehicle type, the data demonstrates an intriguing and nearly uniform distribution of vehicle types among the respondents. Each of the four categories – "2 Wheels," "3 Wheels," "4 Wheels," and "4 Wheels and above" – accounts for approximately one-third of the total participants. Each of these categories represents roughly 33.33% of the respondents. This balanced distribution underscores the diversity of vehicles on the road in Zamboanga Peninsula. It is a notable finding that can significantly impact road safety strategies in the region. "2 Wheels," "3 Wheels," and "4 Wheels" are the predominant vehicle categories in this dataset. This suggests that light vehicles, including motorcycles (2 wheels), tricycles (3 wheels), and traditional cars (4 wheels), are the most common modes of transportation among respondents. This prevalence is consistent with many other regions globally, where lighter, more maneuverable vehicles are often favored for personal transportation. A striking finding is the complete absence of respondents driving vehicles categorized as "4 Wheels and above." This category typically includes larger vehicles like trucks, buses, and commercial vehicles. On the other hand, the most common category among respondents with number of years in driving is "10 YEARS," with 44.20% of participants falling into this group. This suggests that a significant proportion of drivers in Zamboanga Peninsula have a decade or more of experience behind the wheel. The "5 YEARS" category follows closely behind, representing 26.82% of respondents. This distribution implies a good mix of experienced and relatively less experienced drivers in the region. It is noteworthy that the categories "BELOW 5 YEARS" and "5 YEARS" together represent 42.87% of the total respondents. This indicates a substantial presence of novice drivers with less than 5 years of experience. Novice drivers often face unique challenges and may benefit from targeted road safety education and awareness programs aimed at building their skills and responsible road behavior. On the other end of the spectrum, the data shows that there is limited representation of seasoned drivers with more than 15 years of experience. The categories "15 YEARS," "20 YEARS," and "25 YEARS" together constitute only 21.74% of the respondents. Moreover, the "ABOVE 25 YEARS" category records no participation in the survey. This dearth of seasoned drivers in the dataset raises questions about their representation and involvement in the driving population of Zamboanga Peninsula (Lohani et al., 2019).

Table 1 provides valuable insights into the current level of awareness regarding road safety rules and regulations among drivers and motorists in Zamboanga Peninsula.

Table 1. Level of Awareness Regarding Road Safety Rules and Regulations

No	Category	Weighted Mean	Standard Deviation	Verbal Interpretation
1	Drivers must obey traffic signs, signals, and road markings.	3.55	3.17	Moderately Aware
2	Driving under the influence of alcohol and/or drugs is illegal.	4.92	4.40	Extremely Aware
3	Overtaking is generally done on the left.	2.95	2.61	Somewhat Aware
4	Using a mobile phone while driving without a hand – free device is prohibited.	3.61	3.37	Moderately Aware
5	When approaching a roundabout, give way to vehicles already inside the roundabout.	2.39	2.10	Slightly Aware
6	Using hazard lights while driving is generally prohibited except in emergency situations.	2.53	2.35	Slightly Aware
7	Vehicles must be roadworthy and undergo regular inspections.	3.69	3.37	Moderately Aware
8	Speed limits may vary depending on the location, road type, and vehicle type.	2.71	2.51	Somewhat Aware
9	Drivers must always signal their intentions, whether they are turning left or right, or changing lanes.	4.56	4.13	Extremely Aware
10	Seat belts are mandatory for all passengers in the vehicle.	3.53	3.26	Moderately Aware
	Average Weighted Mean	**3.43**		**Moderately Aware**

Each item in Table 1 represents a specific road safety rule, and the rule that the respondents are extremely aware of are: Drivers must always signal their intentions, whether they are turning left or right, or changing lanes and Driving under the influence of alcohol and/or drugs is illegal and the rules that the respondents are moderately aware of are: (1) Seat belts are mandatory for all passengers in the vehicle; (2) Drivers must obey traffic signs, signals, and road markings; (3) Using a mobile phone while driving without a hand – free device is prohibited; and (4) Vehicles must be roadworthy and undergo regular inspections. Third, the rules the they are somewhat aware are: Speed limits may vary depending on the location, road type, and vehicle type and Overtaking is generally done on the left, Lastly, the rules that they are slightly aware of are: Using hazard lights while driving is generally prohibited except in emergency situations and when approaching a roundabout, give way to vehicles already inside the roundabout. Overall, the data highlights the importance of ongoing road safety education and promotion efforts in Zamboanga Peninsula. While awareness levels are reasonably high for many rules, there is still room for improvement in certain areas. The data also reveals a relatively consistent level of awareness across multiple rules, which suggests that respondents have a good grasp of some fundamental road safety principles. This consistency is promising and suggests that foundational road safety education has made an impact. While awareness is high for certain rules, there are specific areas where awareness levels need improvement (Dewi, 2021).

In table 2, the data presented in this table provides essential insights into the primary factors influencing the low level of road safety awareness among drivers and motorists in Zamboanga Peninsula. Each factor listed represents a potential obstacle to improving road safety awareness, and the table ranks these factors based on their reported influence.

Table 2. Factors Influencing the Low Level of Road Safety Awareness

No	Category	Weighted Mean	Standard Deviation	Verbal Interpretation
1	Lack of road safety education in schools.	4.27	3.82	Extremely Influential
2	Insufficient awareness campaign.	4.29	3.85	Extremely Influential
3	Inadequate enforcement of traffic laws.	3.58	3.30	Very Influential
4	Limited infrastructure for road safety.	2.85	2.63	Somewhat Influential
5	Cultural attitudes towards road safety.	2.35	2.23	Slightly Influential
6	Lack of driver education and training.	4.09	3.69	Very Influential
7	Inconsistent law enforcement.	4.02	3.68	Very Influential
8	High levels of traffic congestion.	2.52	2.30	Slightly Influential
9	Limited public participation in road safety initiatives.	3.57	3.27	Very Influential
10	Insufficient data on road safety.	2.36	2.30	Slightly Influential
	Average Weighted Mean	**3.39**		**Somewhat Influential**

The factors that are extremely influential are: Insufficient awareness campaign and Lack of road safety education in schools. The factors that are very influential are: Lack of driver education and training; Inconsistent law enforcement; inadequate enforcement of traffic laws; and Limited public participation in road safety initiatives. While, the factor that is somewhat influential is the limited infrastructure for road safety. Lastly, the factors that slightly influential are: High levels of traffic congestion; insufficient data on road safety; and Cultural attitudes towards road safety. Accurate and up-to-date data is essential for informed decision-making in road safety initiatives. Respondents recognize the significance of having comprehensive data to guide efforts to improve road safety awareness. It highlights the significance of consistent law enforcement, addressing traffic congestion, introducing road safety education in schools, and improving awareness campaigns. It also emphasizes the role of cultural attitudes, public participation, and data availability in enhancing road safety awareness. Recognizing these factors and addressing them through targeted initiatives can lead to improved road safety awareness and a safer road environment for all (Amah et al., 2022).

Table 3 provides essential insights into the barriers that prevent individuals from translating their road safety awareness into responsible behaviors on the road in Zamboanga Peninsula.

Table 3. Barriers Preventing Individuals from Translating Road Safety Awareness into Responsible Behaviors on the Road

No	Category	Weighted Mean	Standard Deviation	Verbal Interpretation
1	**Risk Perception:** Some individuals may not perceive the risks associated with unsafe road behavior.	4.35	3.88	Strongly Agree
2	**Peer Pressure:** Social influences, such as friends or family members who engage in risky behavior, can encourage individuals to follow suit.	2.36	2.08	Disagree

No	Category	Weighted Mean	Standard Deviation	Verbal Interpretation
3	**Cultural Norms**: In some cultures, aggressive driving or ignoring traffic rules may be more accepted, making it challenging to change behavior even if individuals are aware of road safety principles.	1.79	1.42	Strongly Disagree
4	**Lack of Education:** Limited access to quality driver's education and road safety programs can hinder responsible behavior.	4.43	3.97	Strongly Agree
5	**Overconfidence:** Some people may be overly confident in their driving abilities, leading them to take unnecessary risks.	4.51	4.05	Strongly Agree
6	**Time Pressure:** In today's fast-paced world, people often feel pressured to save time while driving.	4.13	3.73	Agree
7	**Distractions:** Modern technology, such as smartphones and infotainment systems, has introduced new distractions for drivers.	1.84	1.49	Disagree
8	**Impaired Driving:** Driving under the influence of alcohol or drugs impairs judgment and coordination, making it difficult for individuals to make responsible choices on the road.	4.41	3.92	Strongly Agree
9	**Emotional States:** Emotional factors, such as anger, stress, or road rage, can influence behavior on the road.	4.01	3.62	Agree
10	**Inadequate Infrastructure:** Poor Road conditions, lack of proper signage, and inadequate traffic management can contribute to unsafe road behavior.	4.32	3.84	Strongly Agree
	Average Weighted Mean	**3.61**		**Agree**

The most significant barrier to translating road safety awareness into responsible behaviors on the road is "Lack of Education" this barrier highlights the importance of access to quality driver education and road safety programs. When individuals lack proper education and training, they may not have the necessary knowledge and skills to translate awareness into responsible road behavior. Improving access to education can address this barrier. "Risk Perception" some individuals may not perceive the risks associated with unsafe road behavior. This indicates that there may be a disconnect between awareness and individual risk assessment. Addressing this barrier may require targeted risk communication and education to enhance risk perception. "Inadequate Infrastructure" poor road conditions, lack of proper signage, and inadequate traffic management can contribute to unsafe road behavior. Even if individuals are aware of road safety rules, these infrastructure issues can create hazardous situations. Investment in improving road infrastructure is essential. "Time Pressure" in today's fast-paced world, people often feel pressured to save time while driving, which can lead to reckless behavior. Time pressure can compromise responsible behavior even when individuals are aware of road safety principles. Strategies to reduce time pressure, such as improving traffic flow, can mitigate this barrier. "Emotional States" ranks emotional factors such as anger, stress, or road rage can influence behavior on the road. Individuals

may struggle to maintain responsible behavior when experiencing heightened emotions. Addressing this barrier may involve strategies to manage emotions and promote calm and patient driving. These findings suggest that addressing road safety is not solely about raising awareness but also about creating an environment that supports responsible road behavior, including education, infrastructure improvement, and addressing cultural attitudes and social influences. By addressing these barriers holistically, Zamboanga Peninsula can make significant strides in improving road safety and reducing accidents (Chandia-Poblete et al., 2021).

The researchers also identified if there is a significant relationship between the respondents' current level of awareness regarding road safety rules and regulations and the barriers preventing individuals from translating road safety awareness into responsible behaviors on the road. The correlation coefficient of -0.318 suggests that there is a weak negative correlation between these two variables. This means that while there's a slight tendency for higher awareness to be associated with fewer barriers to responsible road behavior, this connection is not strong. The p-value of 0.378 is a critical statistic. Since it is greater than the alpha level of 0.05, it indicates that the researchers couldn't prove that there's enough evidence to reject the null hypothesis. Further, the null hypothesis likely suggests that there is no significant relationship between road safety awareness and barriers to responsible behavior. Based on the findings, the researchers can't conclude that there's a significant link between these two variables. The data didn't support the idea that increased awareness directly leads to reduced barriers to responsible road behavior.

Conclusion

The comprehensive study conducted to assess road safety awareness and the factors influencing responsible road behavior among drivers and motorists in Zamboanga Peninsula has yielded several critical conclusions. This study sheds light on the current road safety landscape and identifies areas where improvements and interventions are urgently needed. The following key conclusions can be drawn:

First, the gender disparity among road users highlights the need for gender-specific road safety programs and policies that address the distinct needs and challenges faced by male and female drivers. While the analysis of respondents' age groups shows that there is a need for increased vigilance and regulatory measures regarding underage driving, the distribution of vehicle types shows the diversity of transportation modes in the region. This diversity necessitates tailored safety measures and infrastructure to accommodate the varying needs and risks associated with these vehicle types. It is also concluded that drivers need education and refresher programs to ensure that experienced drivers remain updated on the latest road safety standards. Additionally, promoting the importance of safe driving practices among seasoned drivers is also needed. Second, the study assessed the current level of awareness regarding road safety rules and regulations. The data indicates that respondents are well-aware of certain fundamental road safety principles, such as the importance of obeying traffic signs, signals, and road markings. However, there is room for improvement in areas like proper usage of hazard lights and when approaching a roundabout. These findings underscore the importance of targeted awareness campaigns and educational initiatives to reinforce road safety knowledge and compliance.

Third, the study identifies primary factors contributing to the low level of road safety awareness. These findings underscore the need for coordinated efforts among law enforcement agencies, education institutions, and traffic management authorities to address these issues. One of the most influential factors is inconsistent law enforcement, emphasizing the critical role of rigorous enforcement in promoting responsible road behavior. Insufficient awareness campaigns, and a lack of road safety education in schools are also significant contributing factors. Fourth, the study identifies various barriers that hinder individuals from translating their road safety awareness into responsible behaviors on the road. Overconfidence and a impaired driving emerge as the most prominent barriers. These findings stress the need for stricter enforcement of laws and educational campaigns against impaired

driving are vital. Fifth, there is no significant relationship between the impact on the primary factors influencing a low level of road safety awareness and the impact on barriers to responsible behavior on the road. Sixth, the researchers provided an information dissemination material to improve the current level of awareness regarding road safety rules and regulations.

The following are the recommendation for national, regional, and global road safety Enhancement;

1. Educational Reforms: Integrate road safety education into the national curriculum, starting at an early age. This should include practical road safety lessons in schools and institutions of higher learning. Encourage collaboration between the education and transportation sectors to ensure comprehensive and effective education.
2. Awareness Campaigns: Launch nationwide road safety awareness campaigns that target both urban and rural areas. These campaigns should leverage diverse media, including television, radio, social media, and community events, to reach a wide audience. Focus on changing cultural attitudes toward road safety and ensuring that awareness translates into responsible behavior.
3. Law Enforcement Enhancement: Strengthen law enforcement and traffic management agencies to ensure consistent and rigorous enforcement of road safety laws. Implement technology-based solutions for monitoring and regulating traffic, such as speed cameras and breathalyzer tests. Encourage community policing and cooperation in enforcing road safety regulations.
4. Driver Education and Training: Promote the establishment of accredited driver education and training programs that are accessible to all. Encourage continuous professional development for experienced drivers. Implement incentives for drivers who complete advanced road safety training.
5. Infrastructure Improvement: Invest in upgrading and maintaining road infrastructure, including road conditions, signage, and traffic management systems. Implement strategies to alleviate traffic congestion in urban areas, enhancing the overall flow of traffic. Ensure that roads are designed with the safety of all types of vehicles and road users in mind.

Acknowledgement

References

Amah, F. O., Oladele, O. P., & Asemah, E. S. (2022). Influence of Federal Road Safety Corps (FRSC) Ember Months' Campaign on Motorists in Benin City, Nigeria. GVU Journal of Communication Studies, 5. Retrieved from https://journals.sau.edu.ng/index.php/sjmas

Bhatti, F., Shah, M. A., Maple, C., & Islam, S. U. (2019). A Novel Internet of Things-Enabled Accident Detection and Reporting System for Smart City Environments. Sensors, 19(9), 2071. https://doi.org/10.3390/s19092071

Boateng, R. A., Kwigizile, V., Miller, J. S., & Oh, J.-S. (2019). A justification for pedestrian countdown signals at signalized intersections: The safety impact on senior motorists. Journal of Transport & Health, 14, 100617. https://doi.org/10.1016/j.jth.2019.100617

Bonnefon J-F., Černy, D., Danaher, J., Devillier, N., Johansson, V., Kovacikova, T., Martens, M., Mladenovic, M., Palade, P., Reed, N., Santoni de Sio, F., Tsinorema, S., Wachter, S., & Zawieska, K. (2020). Ethics of Connected and Automated Vehicles: Recommendations on road safety, privacy, fairness, explainability and responsibility. European Commission. https://doi.org/10.2777/035239

Chandia-Poblete, D., Hill, R. L., Aguilar-Farias, N., & Heesch, K. C. (2021). Individual and contextual factors associated with bicyclist injury severity in traffic incidents between bicyclists and motorists in Chile. Accident Analysis & Prevention, 154, 106077. https://doi.org/10.1016/j.aap.2021.106077

Chen, S., Kuhn, M., Prettner, K., & Bloom, D. E. (2019). The global macroeconomic burden of road injuries: estimates and projections for 166 countries. EClinicalMedicine, 3(9), E390-E398. https://doi.org/10.1016/S2542-5196(19)30170-6

Dewi, A. A. D. P. (2021). Investigating Motorists Perceptions towards Road Safety. Civil Engineering and Architecture, 9(5), 1339-1346. DOI: 10.13189/cea.2021.090507.

Espinoza Molina, F. E., Arenas Ramirez, B. D. V., Izquierdo, F. A., & Zúñiga Ortega, D. C. (2021). Road Safety Perception Questionnaire (RSPQ) in Latin America: A Development and Validation Study. International Journal of Environmental Research and Public Health, 18(5), 2433. https://doi.org/10.3390/ijerph18052433

Freire, M. R., Gauld, C., McKerral, A., & Pammer, K. (2021). Identifying Interactive Factors That May Increase Crash Risk between Young Drivers and Trucks: A Narrative

Review. International Journal of Environmental Research and Public Health, 18(12), 6506. https://doi.org/10.3390/ijerph18126506

Heydari, S., Hickford, A., McIlroy, R., Turner, J., & Bachani, A. M. (2019). Road Safety in Low-Income Countries: State of Knowledge and Future Directions. Sustainability, 11(22), 6249. https://doi.org/10.3390/su11226249

Imprialou, M., & Quddus, M. (2019). Crash data quality for road safety research: Current state and future directions. Accident Analysis & Prevention, 130, 84-90. https://doi.org/10.1016/j.aap.2017.02.022

Jamal, A., Rahman, M. T., Al-Ahmadi, H. M., & Mansoor, U. (2020). The Dilemma of Road Safety in the Eastern Province of Saudi Arabia: Consequences and Prevention Strategies. International Journal of Environmental Research and Public Health, 17(1), 157. https://doi.org/10.3390/ijerph17010157

Jomnonkwao, S., Uttra, S., & Ratanavaraha, V. (2020). Forecasting Road Traffic Deaths in Thailand: Applications of Time-Series, Curve Estimation, Multiple Linear Regression, and Path Analysis Models. Sustainability, 12(1), 395. https://doi.org/10.3390/su12010395

Lee, D., & Hess, D. J. (2020). Regulations for on-road testing of connected and automated vehicles: Assessing the potential for global safety harmonization. Transportation Research Part A: Policy and Practice, 136, 85-98. https://doi.org/10.1016/j.tra.2020.03.026

Lohani, M., Payne, B. R., & Strayer, D. L. (2019). A Review of Psychophysiological Measures to Assess Cognitive States in Real-World Driving. Frontiers in Human Neuroscience, 13. https://doi.org/10.3389/fnhum.2019.00057

Lopetrone, E., & Biondi, F. N. (2022). On the Effect of COVID-19 on Drivers' Behavior: A Survey Study. Transportation Research

Record: Journal of the Transportation Research Board, 2677(4). https://doi.org/10.1177/036119812211 03866

Menhas, R., Mahmood, S., Tanchangya, P., Safdar, M. N., & Hussain, S. (2019). Sustainable Development under Belt and Road Initiative: A Case Study of China-Pakistan Economic Corridor's Socio-Economic Impact on Pakistan. Sustainability, 11(21), 6143. https://doi.org/10.3390/su11216143.

Mohammed, A. A., Ambak, K., Mosa, A. M., & Syamsunur, D. (2019). A Review of Traffic Accidents and Related Practices Worldwide. The Open Transportation Journal, 13, 65-83. https://doi.org/10.2174/187444780191 3010065

Mohan, D., Tiwari, G., Varghese, M., Bhalla, K., John, D., Saran, A., & White, H. (2020). Effectiveness of road safety interventions: An evidence and gap map. Campbell Systematic Reviews, 16(1), e1077. https://doi.org/10.1002/cl2.1077

Moody, J., Bailey, N., & Zhao, J. (2020). Public perceptions of autonomous vehicle safety: An international comparison. Safety Science, 121, 634-650. https://doi.org/10.1016/j.ssci.2019.07.0 22

Moslem, S., Farooq, D., Ghorbanzadeh, O., & Blaschke, T. (2020). Application of the AHP-BWM Model for Evaluating Driver Behavior Factors Related to Road Safety: A Case Study for Budapest. Symmetry, 12(2), 243. https://doi.org/10.3390/sym12020243

Moslem, S., Gul, M., Farooq, D., Celik, E., Ghorbanzadeh, O., & Blaschke, T. (2020). An Integrated Approach of Best-Worst Method (BWM) and Triangular Fuzzy Sets for Evaluating Driver Behavior Factors Related to Road Safety. Mathematics, 8(3), 414. https://doi.org/10.3390/math8030414

Oviedo-Trespalacios, O., Truelove, V., Watson, B., & Hinton, J. A. (2019). The impact of road advertising signs on driver behaviour and implications for road safety: A critical systematic review. Transportation Research Part A: Policy and Practice, 122, 85-98. https://doi.org/10.1016/j.tra.2019.01.01 2

Pal, R., Ghosh, A., Kumar, R., Galwankar, S., Paul, S. K., Pal, S., Sinha, D., Jaiswal, A. K., Moscote-Salazar, L. R., & Agrawal, A. (2019). Public health crisis of road traffic accidents in India: Risk factor assessment and recommendations on prevention on the behalf of the Academy of Family Physicians of India. J Family Med Prim Care, 8(3), 775-783. doi:10.4103/jfmpc.jfmpc_214_18. PMCID: PMC6482791. PMID: 31041200.

Prati, G., De Angelis, M., Shires, J., & others (2020). Journey Attributes, E-Bike Use, and Perception of Driving Behavior of Motorists as Predictors of Bicycle Crash Involvement and Severity. Transportation Research Record: Journal of the Transportation Research Board, 2674(12). https://doi.org/10.1177/036119812095 3787

Saul, H., Junghans, M., Dotzauer, M., & Gimm, K. (2021). Online risk estimation of critical and non-critical interactions between right-turning motorists and crossing cyclists by a decision tree. Accident Analysis & Prevention, 163, 106449. https://doi.org/10.1016/j.aap.2021.106 449

Thürer, M., Tomašević, I., Stevenson, M., Blome, C., Melnyk, S., & Chan, H. K. (2019). A systematic review of China's belt and road initiative: implications for global supply chain management. International Journal of Production Research, 58(8), 2436-2453. https://doi.org/10.1080/00207543.201 9.1605225

Wang, C., Lim, M. K., Zhang, X., Zhao, L., & Lee, P. T.-W. (2020). Railway and road infrastructure in the Belt and Road Initiative countries: Estimating the impact of transport infrastructure on economic growth. Transportation Research Part A: Policy and Practice, 134, 288-307. https://doi.org/10.1016/j.tra.2020.02.00 9.

Wang, L., Ning, P., Yin, P., Cheng, P., Schwebel, D. C., Liu, J., et al. (2019). Road traffic mortality in China: analysis of national surveillance data from 2006 to 2016. The Lancet Public Health, 4(5), e245-e255. https://doi.org/10.1016/S2468-2667(19)30057-X

Williams, Traci. "Why Is Quantitative Research Important?" GCU, 14 June 2021, www.gcu.edu/blog/doctoral-journey/why-quantitative-research-important#:~:text=Advantages%20of%20Quantitative%20Research