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ANALYSIS OF YOUNG DRIVERS' CONFIDENCE AND BEHAVIOUR: BINARY LOGISTIC REGRESSION APPROACH

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ABSTRACT

Road crashes are a global concern, and they disproportionately affect younger drivers due to their inexperience and risk-taking behaviour. In Sri Lanka, the higher risk of traffic crashes among younger drivers underscores the need for researchers to study their driving confidence and behaviour. Such research could help mitigate the risks of future crashes. This research surveyed 400 young adults using a paper-based questionnaire to assess their confidence in various driving conditions: daytime, peak hours, nighttime, rainy weather, and hilly roads. It also examined risky behaviour such as smoking while driving, driving under the influence of alcohol, using a phone, and making illegal U-turns. The analysis employed Cronbach's Alpha reliability statistics, inter-item correlation, and Binary Logistic Regression (BLR) modelling. Participants' opinions on the Sri Lankan driving license process revealed that 16% rated it as good, 25% as average, and 59% as bad. Findings highlighted that increasing young drivers' confidence during nighttime and high-traffic congestion conditions reduces the likelihood of crashes. Confidence during nighttime and rainy conditions, along with perceptions of the licensing process, significantly influence crash involvement. Furthermore, risky manoeuvres, like overtaking in restricted areas, increase crash risk. The study highlights the importance of improving driver education and fostering safer behaviour to enhance road safety among young drivers in Sri Lanka.

Keywords: *Young drivers, driving confidence, driving behaviour, crash risk, binary logistics regression analysis*

1. INTRODUCTION

Road traffic crashes are a pervasive global issue, with millions of incidents occurring daily; leading to significant economic, social, and health challenges worldwide. According to the World Health Organization (WHO), road traffic injuries rank as the leading cause of death among individuals aged 5–29 years [1]. Among these, young drivers, particularly those aged 18 to 24, are at disproportionately high risk due to factors such as inexperience, overconfidence, and risk-taking behaviour. Young drivers' vulnerability to road crashes is influenced by a combination of external factors, including the quality of driver education, the rigour of traffic regulation enforcement, and the accessibility of advanced safety technologies. Research indicates that comprehensive driver training programs, strict enforcement of road safety laws, and widespread adoption of vehicle safety features play critical roles in reducing crash risks among this demographic [1], [2]. Moreover, cultural and regional differences contribute to variations in crash rates and outcomes [3]. Globally, research on this demographic highlights the urgent need for targeted interventions to reduce crash occurrences and their consequences [2].

Young drivers in Sri Lanka face unique challenges that may not be fully addressed by existing driver education programs. While prior research has established the importance of structured training and strict enforcement of traffic laws, there is limited understanding of how young drivers in Sri Lanka perceive their driving skills and behaviour [4]. A significant gap exists in evaluating whether current driving education programs adequately prepare young drivers to handle real-world traffic conditions with confidence and responsibility. This study aims to bridge that gap by examining young drivers' perceptions, confidence levels, and driving behaviour. This may serve as a preliminary step toward enhancing driver education programs. The main objective of this study is to investigate perceptions of young drivers in Sri Lanka, focusing on their confidence and behaviour, to improve driving education. The goal is to ensure that young drivers can operate vehicles safely, efficiently, and reliably under all circumstances after obtaining their licenses.

2. LITERATURE REVIEW

In developing countries, young drivers initially tend to be cautious, but they often overestimate their driving skills and begin to multitask while driving, such as using mobile phones, eating, chatting with passengers, and listening to loud music. For instance, a 2023 study in India emphasized that mobile phone use while driving, particularly among young male drivers, was a significant contributor to accidents, with overconfidence further exacerbating risky driving behaviour [5]. In Sri Lanka, a study by Amarasingha and Firdhaws explored the self-reported habitual practices and

perceptions of young drivers, revealing that distractions such as texting, phone conversations, and engaging in social media were common [3]. The study also highlighted that young drivers often misperceive their driving capabilities, underestimating risks while engaging in risky behaviour like speeding and improper overtaking.

In Kenya, a 2022 study found that 18 to 24-year-old drivers frequently engaged in speeding and overtaking in risky situations, driven by peer influence and a lack of enforcement of traffic laws [6]. Research in Bangladesh highlighted in 2023 that novice drivers in urban areas often underestimated road risks, leading to a higher incidence of intersection-related crashes [7]. Similarly, a 2024 study in Nigeria found that young drivers commonly disregarded traffic regulations, with mobile phone use and overconfidence cited as leading causes of accidents [8]. In Pakistan, a recent analysis showed that young drivers with less than three years of driving experience were more likely to be involved in crashes due to distractions such as loud music and conversations with passengers [9].

A 2024 study in Vietnam revealed that young motorcyclists, especially those aged 18-25, frequently used phones for navigation while riding, significantly increasing their risk of crashes [10]. In Ghana, researchers found that young drivers were more likely to be involved in crashes due to peer pressure and the need to impress friends, which led to speeding and unsafe overtaking [11]. In the Philippines, a 2023 study highlighted that novice drivers often lacked adequate defensive driving training, resulting in risky behaviour like tailgating and lane weaving [12]. Furthermore, a study in Nepal indicated that distractions such as listening to loud music and adjusting in-car entertainment systems were common among young drivers, contributing to poor situational awareness [13]. Research in Ethiopia revealed that socioeconomic factors like access to vehicles and limited enforcement of traffic laws influenced young drivers' risky behaviour, including speeding and red-light violations [14]. These findings, along with those from Malaysia, where texting while driving and other distractions are prevalent among young drivers [15], and Indonesia, where a 2023 study emphasized the role of social media use as a significant distraction among young drivers [16], point to a consistent global issue in managing youthful driving behaviour.

In Sri Lanka, the younger generation, due to their lack of driving experience, is at a higher risk of crashes and traffic offenses [5]. Studies on the driving experiences of young adults suggest developing and disseminating a driving log for the early stages of driving [17]. This log would record each driver's confidence level, the distance and time of each trip, and monthly statistics on collisions, near-collisions, and unpleasant emotional interactions with their supervising driver.

Education plays a critical role in fostering road safety by creating awareness and instilling safe driving behaviour, particularly among young and novice drivers. While some studies suggest that education alone has minimal effects on crash outcomes [18], counterarguments emphasize its preventive potential and synergy with other interventions. For instance, well-designed programs focusing on hazard perception, fatigue management, and risk assessment have shown measurable success in reducing crash risks [19]. Moreover, education complements enforcement and infrastructure changes by ensuring that road users understand and adhere to new regulations or design features, as seen in Sweden's Vision Zero initiative, which integrates education as a cornerstone of its strategy to achieve safer roads [20]. Modern tools, such as virtual reality simulations and interactive learning apps, further enhance the effectiveness of educational programs by making them engaging and impactful. These innovations demonstrate that when implemented strategically, education can significantly contribute to reducing road crashes and fostering long-term behavioural change.

According to the driving license process in Sri Lanka, the first step is to obtain the application form of the Motor Traffic Act (M.T.A.) 30 [21]. The completed form must then be submitted to the Assistant Commissioner of the Department of Motor Traffic. Next, the applicant is required to appear for a written examination on the assigned date. This assesses knowledge of road signs, traffic regulations, and fundamental traffic laws. Following the written test, the applicant undergoes a practical examination. During Sri Lankan driving practical exams, the testing process primarily focuses on evaluating a candidate's basic driving skills and ability to handle a vehicle safely under controlled conditions. Upon successful completion of practical exams, the department issues the driving license to the applicant. To qualify for a driving licence, an applicant must meet the following prerequisites: be a citizen of Sri Lanka, be at least 18 years of age, take a written exam and a practical test, submit work with identity confirmation for both exams, pass both tests, provide all necessary documentation, and ensuring less than six months have passed between application submission and the practical exam [21].

Several studies have evaluated various aspects of Sri Lanka's driving licensing process, focusing on its effectiveness, impact, and adequacy. For instance, research has highlighted the necessity of incorporating expressway driving training into the licensing procedure, suggesting that the current system may not sufficiently prepare drivers for expressway conditions [22]. Similarly, another study discussed the development of a web-based distance learning course on driver education, aiming to enhance accessibility and improve the quality of driver training in Sri Lanka [23]. Additionally, a report by the World Bank

emphasized the importance of standardized driver training and certification processes as part of a comprehensive strategy to reduce traffic accidents [24].

These studies collectively suggest that while the existing licensing process covers fundamental aspects, there is significant room for improvement, particularly in addressing specific driving conditions and modernizing training methodologies. However, research evaluating the effectiveness of the licensing process from the perspective of young drivers remains limited. Given that young drivers are among the most vulnerable road users, further investigation is necessary to assess whether current training methods adequately equip them with the skills and confidence required for safe driving.

3. DATA AND METHODOLOGY

Data were gathered using a questionnaire that included various questions about young drivers' confidence, driving habits, and opinions on the driving licencing process in Sri Lanka. The questionnaire covered demographic information such as gender and age and asked participants to rate their thoughts on the Sri Lankan driving licensing process. In aiming to assess driving confidence in different situations, such as daytime, nighttime, peak hours, rainy weather, and while backing on streets and hilly roads, related questions were included. This set of questions used a Likert scale, where 1 indicated "Very Good," 2 indicated "Good," 3 indicated "Average," 4 indicated "Bad," and 5 indicated "Very Bad." Respondents rated their confidence in driving across 12 different situations. The scenarios included driving during the daytime, daytime peak hours (high traffic congestion), nighttime, and nighttime peak hours (high traffic congestion). Additional factors evaluated included driving during the daytime and nighttime in rainy weather, daytime and nighttime on hilly roads, and backing a vehicle during the day and night on a street or hilly road. Finally, respondents rated their confidence in backing on a hilly road in rainy weather.

Additionally, the questionnaire included 11 questions on driving behaviour. The set of questions is designed to assess driving behaviour using a 5-point Likert scale, where 1 signifies "Never," 2 signifies "Rarely," 3 signifies "Sometimes," 4 signifies "Most of the time," and 5 signifies "Always." The questions aim to understand how often individuals engage in specific driving behaviours, such as smoking while driving, driving after consuming alcohol, or using a mobile phone while driving. They also explore the frequency of taking illegal U-turns in restricted areas, indicating signals when changing lanes, and wearing a seat belt while driving. Additional questions examine behaviour like trying to speed through a yellow light about to change to red, overtaking vehicles in restricted areas (e.g., double-lined areas or curvy roads), and overtaking a slow driver from the left side. Lastly, the questions assess

how often individuals overspeed in restricted areas, park in restricted areas, or drive without carrying their license.

For the convenience of participants, the questionnaire was translated into Sinhala and Tamil. The content validity of responses was established by comparing the questionnaire with those used in similar previous studies. After designing the questionnaire, its consistency was validated through a pilot study. The same questionnaire was administered to the same group of people at two different times to check for consistency. Feedback was collected on clarity, question phrasing, and response options. Internal consistency was assessed using Cronbach's Alpha to determine how reliably the items measure the same construct. Based on the feedback, the questionnaire was refined and revised before the full-scale study.

The sample size calculation was estimated using Equation 1 [25] that considered a 95% confidence level (Z = 1.96) and a significance interval of 5% (e = 0.05) [25], [26].

$$n = \frac{(z_{\alpha/2} \times \sigma)}{e^2} \quad \text{----------(1)}$$

where,

- n: sample size
- $z_{\alpha/2}$: critical value of (α/2) % significance level
- σ: standard deviation
- e: significance interval

Printed surveys were distributed at Diyatha Uyana, the Malabe SLIIT campus, and Nugegoda town; all located in the Colombo area. These locations were chosen because they are popular gathering spots for young people from different provinces, making it convenient to reach young drivers in these locations. However, some young drivers who have not travelled to these locations from other provinces may not be represented in this study. Yong drivers are more relaxed in these locations and have time to complete the questionnaire in these settings. The young adults, who all had full driving licenses, were willing to complete the questionnaires on their own while sitting in these places. The estimated sample size of 400 Sri Lankan young drivers was achieved by printing and delivering surveys to young adults aged 18 to 25, although some incomplete or ineligible responses were excluded from the final analysis. To achieve a fair sample, respondents were randomly selected rather than relying solely on volunteers, thereby reducing self-selection bias. Additionally, it was ensured that the population consisted of all subgroups (e.g., male vs. female drivers), and the sample size from each subgroup was proportional to its representation in the

overall population. Among the responses, 203 (50.7%) were from male participants and 198 (49.3%) from female participants. The age distribution of the participants was as follows: 14 (3.5%) were 18 years old, 24 (6.0%) were 19 years old, 69 (17.2%) were 20 years old, 55 (13.7%) were 21 years old, (13.5%) 54 were 22 years old, 65 (16.2%) were 23 years old, 66 (16.5%) were 24 years old, and 53 (13.2%) were 25 years old. All participants possessed full driving licenses.

3.1. Cronbach's Alpha Reliability Test

Cronbach's Alpha is a statistical measure used to assess the internal consistency or reliability of a set of items in a scale, indicating how closely related the items are as a group [27]. It evaluates whether multiple items in a test measure the same construct, providing an indicator of scale reliability. The Cronbach's Alpha is estimated using Equation 2 [28].

$$\propto = \frac{k}{k-1}\left(1 - \frac{\sum \sigma_i^2}{\sigma_t^2}\right) \quad \text{----------(2)}$$

where,

- k: the number of items in the scale
- σ_i^2: the variance of each individual item
- σ_t^2 : the variance of the total score (sum of all item scores)

A Cronbach's Alpha value ranges from 0 to 1, where a higher value typically suggests better internal consistency. A high Cronbach's Alpha (e.g., above 0.7) often implies that the test items are strongly interrelated, while a very low value suggests poor consistency among items. However, the alpha level can also be influenced by the number of test items: scales with a larger number of items generally produce higher alpha values, while those with fewer items may yield lower values. It is important to note that an excessively high alpha (e.g., above 0.95) might indicate redundancy, as some items may be repetitive rather than adding unique value to the construct being measured [29]. Driving behaviour questions and driving confidence questions were separately used to assess the internal consistency of the survey.

3.2. Binomial Logistic Regression Analysis

BLR predicts the likelihood of an observation falling into one of two categories for a dichotomous dependent variable, using one or more independent variables, which can be continuous or categorical [30], [31]. When deciding to use BLR, it's essential to ensure the data meets the four assumptions necessary for this analysis [32]. They are,

i. Dichotomous Dependent Variable: The dependent variable should be measured on a dichotomous scale.

ii. Independent Variables: There should be one or more independent variables, which can be either categorical or continuous.
iii. Independent Observations and Mutually Exclusive Categories: The dependent variable should have exhaustive and mutually exclusive categories, and the observations must be independent.
iv. Linearity in Logit Transformation: The logit transformation of the dependent variable and any continuous independent variables must be linearly related.

The independence of observations can be assessed using inter-item correlations, which are essential when analysing a group of test questions. A stronger association is indicated by values closer to 1. Inter-item correlation values between 0.15 and 0.50 are considered optimal, as they suggest a reasonable level of consistency among items. Values below 0.15 indicate a weak correlation, while values above 0.50 may suggest redundancy, meaning the items could be measuring the same concept multiple times.

The BLR model is based on the logistic function, which transforms a linear combination of independent variables (x) into probabilities (p) constrained between 0 and 1. The relationship is expressed as in Equation 3 [33].

$$P(Y = 1|X) = \frac{1}{1+e^{-(\beta_o+\beta_1X_1+\beta_2X_2+\cdots+\beta_kX_k)}} \text{ ----------(3)}$$

where,

- $P(Y = 1|X)$: the probability of the dependent variable being 1 given the predictors X
- β_o: intercept term
- $\beta_1, \beta_2, \ldots, \beta_k$: coefficients of the independent variables
- $X_1, X_2, \ldots, X_k$: independent variables

The model is interpreted through odds and the logit function. The odds of an event occurring are given by P/(1-P) [34]. Taking the natural logarithm of the odds results in the logit function, which establishes a linear relationship as in Equation 4 [35].

$$\text{Logit}(P) = \ln\left(\frac{P}{1-P}\right) = \beta_o + \beta_1X_1 + \beta_2X_2 + \cdots + \beta_kX_k \text{ ----------(4)}$$

The parameters (β/beta) in BLR are estimated using Maximum Likelihood Estimation (MLE), which identifies the values that maximize the likelihood of observing the given data.

4. RESULTS AND DISCUSSION

The survey revealed that 78.5% of respondents (314 young drivers) had been involved in an accident as a driver, while 21.5% (86 young drivers) had not. Out of 400 respondents, 60.3% normally drive manual vehicles, while 39.8% drive automatic vehicles; regarding the Sri Lankan driving license process, 16.0% rated it as good, 25.0% as average, and 59.0% as bad. Among the respondents, 25.3% drive under supervision during their restricted license period, while 74.8% do not.

Overall, about 24% of young drivers expressed that they have very good driving confidence during the daytime and 19% during the nighttime as shown in Table 1.

Table 1: Driving confidence levels among young drivers

Driving Confidence	Levels	Daytime		Nighttime	
		Responses	Percentage	Responses	Percentage
Overall	very good	97	24.3	76	19.0
	good	117	29.3	71	17.8
	average	163	40.8	164	41.0
	bad	21	5.3	86	21.5
	very bad	2	0.5	3	0.8
During peak hours	very good	73	18.3	70	17.5
	good	70	17.5	64	16.0
	average	166	41.5	134	33.5
	bad	88	22.0	104	26.0
	very bad	3	0.8	28	7.0
During rainy weather	very good	73	18.3	66	16.5
	good	59	14.8	46	11.5
	average	138	34.5	116	29.0
	bad	144	28.5	139	34.8
	very bad	16	4.0	33	8.3
On hilly roads	very good	68	17.0	60	15.0
	good	35	8.8	39	9.8
	average	122	30.5	10	25.0
	bad	150	37.5	172	43.0
	very bad	25	6.3	29	7.2
On backing into a street	very good	59	14.8	54	13.5
	good	38	9.5	37	9.3
	average	87	21.8	79	19.8
	bad	151	37.8	146	36.5
	very bad	65	16.3	84	21.0
Backing on a hilly road	very good	50	12.5	48	12.0
	good	32	8.0	33	8.3
	average	69	17.3	57	14.2
	bad	94	23.5	59	14.8
	very bad	155	38.8	203	50.7

Although only about 5% of respondents reported low confidence in overall daytime driving, over 20% rated their confidence as poor or very poor when driving under specific conditions. Notably, more than 40% expressed poor or very poor confidence when driving on hilly roads or backing into a street, regardless of whether it was daytime or nighttime. Furthermore, over 60% of respondents reported poor or very poor confidence when backing on a hilly road during both daytime and nighttime. These findings highlight that many young drivers in Sri Lanka lack confidence even after obtaining a driving license, likely due to inadequate driving education and training.

The most commonly reported negative behaviour among young drivers were "attempting to speed through a yellow light before it changes to red" and "failing to use signals when changing lanes," as shown in Table 2. Among the respondents, 1.8% admitted to always engaging in these two behaviours, while only 13.5% always used signal lights when changing lanes.

Table 2: Young drivers' responses to driving behaviour variables

Behaviour	Ratings				
	Never	Rarely	Sometimes	Most of the time	Always
Smoking while driving	88.5	9.8	1.8	0.0	0.0
Driving after alcohol consumption	59.3	32.8	8.0	0.0	0.0
Mobile phone use while driving	41.8	20.0	35.5	2.8	0.0
Taken an illegal U-turn in restricted areas	15.8	34.0	40.3	9.5	0.5
Indicate signals when you are changing lanes	1.8	12.0	18.0	54.8	13.5
Wearing a seat belt while driving	0.5	2.0	5.5	20.5	71.5
Try to speed up and run a yellow light when it is about to change to red	19.3	32.5	32.3	14.2	1.8
Overtake vehicles in restricted areas	11.0	23.8	45.3	19.5	0.5
Over speeding in restricted areas	15.3	39.0	38.5	7.0	0.3
Parking in restricted areas	17.8	42.3	37.8	2.3	0.0
Driving without a license with you	47.5	43.8	7.0	1.0	0.0

Although 88.5% of young drivers reported never smoking while driving and 71.5% stated they always wore a seatbelt, over 20% admitted to engaging in unsafe behaviour such as making illegal U-turns in restricted areas, changing lanes without

using signals, running yellow lights, overtaking in restricted zones, speeding, and parking in prohibited areas. Notably, nearly half of the respondents did not carry their driving license while driving, despite possessing a valid one. These findings highlight the need for young driver education programs to address these issues and emphasize the importance of adopting positive and responsible driving behaviour.

These identified issues should be addressed during the driving license process to ensure that new drivers can drive confidently and safely. The issuance of licenses to those lacking these skills poses risks to pedestrians, other drivers, and the drivers themselves. Similar research in Victoria, Australia, involved a small sample of trainee drivers who documented their driving experiences, revealing that new drivers generally have limited experience and tend to drive in favourable conditions facing out their driving licencing process [36]. Amarasingha and Firdhaws also highlighted the importance of early intervention to enhance traffic safety by addressing issues such as driving under the influence, phone use, and illegal manoeuvres [3].

4.1. Cronbach's Alpha Reliability Test

Cronbach's reliability test was conducted using 19 Likert scale questions included in the questionnaire. The Cronbach's alpha value for the set of variables related to driving confidence was calculated as 0.76, indicating an acceptable level of internal consistency. Similarly, the set of variables related to driving behaviour yielded a Cronbach's alpha of 0.94, which also falls within the acceptable range. These results demonstrate that the average correlation among the questionnaire items is within the acceptable threshold, as Cronbach's alpha values between 0.70 and 0.95 are considered acceptable.

The highest inter-item correlation value is 0.978, observed between "confidence in nighttime backing on a hilly road" and "confidence in backing on a hilly road in rainy weather." This high value indicates that young drivers with confidence issues one of these scenarios also have the issue in the other. The second-highest inter-item correlation value is 0.970, found between "confidence in nighttime backing on a hilly road" and "confidence in daytime backing on a hilly road." This suggests that young drivers also struggle with confidence in nighttime, have also struggled with daytime backing on a hilly road. Table 3 shows the highest inter-item correlations, illustrating how each item is correlated with the others. Out of 361 available inter-item correlation values, 109 were below 0.2, indicating that these pairs do not influence each other. The remaining 109 inter-item correlations do exhibit an influence on each other.

4.2. Binomial Logistic Regression Analysis

To conduct the BLR analysis, one of the highly correlated variables, which was shown in Table 3, was excluded from pares examining the correlation matrix.

Table 3: High inter-item correlation pairs in the correlation matrix

Inter-Item in Pairs	Correlation Value
Confidence of nighttime backing on a hilly road vs confidence of backing on a hilly road in rainy weather.	0.978
Confidence of nighttime backing on a hilly road vs confidence of daytime backing on a hilly road.	0.970
Confidence during nighttime rainy weather vs confidence during daytime rainy weather.	0.931
Confidence during high traffic congestion vs confidence during nighttime	0.898
Confidence during daytime rainy weather vs Confidence during high traffic congestion	0.876
Confidence in Nighttime rainy weather vs Confidence during high traffic congestion.	0.861

In addition to the considered 16 variables related to Likert questions; age, gender, and thoughts on the Sri Lankan driving license process are also considered as the independent variables. For the dependent variable in the BLR analysis, was whether the respondent had ever been involved in a crash as a driver.

After verifying that the assumptions are satisfied, the developed model is evaluated for improvement over the baseline model. To determine if there is a significant difference between the log-likelihoods of the baseline and the new model, the chi-square test is employed. The log-likelihoods of the developed model have significantly decreased compared to the baseline, indicating that the new model explains more of the variation in the outcome, thus representing an improvement. The extent of explained variation is measured using both the Cox & Snell R Square of 0.328 and the Nagelkerke R Square of 0.506 values. The Nagelkerke R Square, which is preferred, suggests that the model accounts for approximately 50% of the variation in the outcome. The Hosmer and Lemeshow test for goodness of fit indicates that the model is a good fit for the data, with a p-value of 0.18 (> 0.05). The parameter estimates were done using the backword elimination methods and their significance values are presented in Table 4. The parameters were estimated based on the respondents' crash involvement, using those with no crash involvement as the reference group. For the independent variables, the reference category was the rating "Very good", or rating “Never”.

The likelihood of the outcome changes by Exp(B) for every unit change in the predictor variable. The expected change in log odds is represented by B (Beta). Each beta coefficient has a corresponding t-value and significance level, which can be either positive or negative. If the beta coefficient is negative, a one-unit increase in the predictor variable results in a decrease in the outcome variable by the value of the beta coefficient.

Table 4: Parameter estimates of significant variables in the binary logistics regression model

Variable		Estimate(B)	Sig.	Exp(B)
Sri Lankan driving license process	Good	0.000	<0.001	-
	Average	-2.331	<0.001	0.097
	Bad	-1.781	<0.001	0.169
Confidence during nighttime driving	Very good	0.000	0.003	-
	Good	1.293	0.041	0.071
	Average	1.273	<0.001	0.012
	Bad	1.282	0.010	0.037
Driving confidence during nighttime, high traffic congestion	Very good	0.000	0.033	-
	Good	4.951	0.005	141.376
	Average	6.112	0.002	451.418
	Bad	4.982	0.015	145.815
	Very bad	3.782	0.126	43.114
Driving confidence during nighttime, rainy weather conditions	Very good	0.000	0.031	-
	Good	-3.532	0.013	0.029
	Average	-4.774	0.001	0.008
	Bad	-4.532	0.004	0.011
	Very bad	-4.127	0.058	0.016
Overtake vehicles in restricted areas. (Eg: double-lined areas and curvy roads)	Never	0.000	0.002	-
	Rarely	-1.184	0.023	0.306
	Sometimes	-2.131	<0.001	0.119
	Most of the time	-3.145	<0.001	0.043
	Always	-22.596	1.000	0.000
Constant		3.467	0.008	32.046

To determine if there is a statistically significant association between the response and each term in the model, compare each term's p-value to the significance threshold. The null hypothesis states that there is no relationship between the term and the response. A common significance threshold is 0.05, which means there is a 5% risk of incorrectly concluding that a correlation exists. In the BLR model, only three confidence factors, three behavioural parameters, and the opinion on the Sri Lankan driving license process were found to be p-values below the significance level of 0.05. This indicates that the relationships between these response variables and the dependent variable, whether the respondent had ever been involved in an accident as a driver, alongside other significant variables in the developed model.

The parameter estimates revealed that if young adults' overall confidence during nighttime driving, or nighttime driving in high traffic congestion, is improving, making them less likely to be involved in accidents. This aligns with Groeger and Brady, who found that drivers receiving targeted training for challenging conditions, such as nighttime or congested traffic, show enhanced confidence and a reduced likelihood of accidents [37]. Similarly, McKnight and McKnight concluded that improved situational awareness and confidence, especially during nighttime or in high-stress traffic environments, contribute to better hazard detection and lower accident rates among young drivers [38].

Variable driving confidence during nighttime, rainy weather condition has negative coefficients compared to very good response indicating young adult drivers are more likely to involve in crashes even their confidence improve; this may be because they are overestimating their driving habit and therefore not driving cautiously. The combination of nighttime driving, adverse weather conditions, and inexperience likely contributes to a higher crash risk among young drivers. The relationship between confidence and crash involvement among young drivers is multifaceted. While confidence can positively contribute to safer driving by enhancing decision-making and reducing hesitation in challenging situations, overconfidence may lead to riskier behaviour and an increased likelihood of crashes.

The variable opinion on Sri Lankan driving license process, shows the young adults who responded the driving license granting process is bad more likely to involved in crashes. In other words, individuals who have been involved in more accidents rated the Sri Lankan driving licensure process poorly. This may be due to a lack of confidence in their driving skills, even after successfully completing the driving licensing process. Similarly, Walshe et al. found that better driving skills at licensure were associated with a longer time to the first crash, suggesting that comprehensive driver education can enhance driving skills and reduce crash risk [39]. The variable ‘overtake vehicles in restricted areas’ has negative coefficients compared to its very good category indicating that young drivers more like to involve in crashes attempting to overtake vehicles in restricted areas.

4.3. Recommendations

This research addresses a critical gap by identifying risky driving behaviour among young drivers, including overtaking in restricted areas, drunk driving, and their confidence in navigating challenging conditions. These findings highlight the need for improvements in Sri Lanka’s driver licensing system to ensure that young drivers are adequately prepared for real-world driving challenges.

One key area for improvement is the enhancement of driver training programs. The study suggests that current training programs may not sufficiently equip drivers with essential skills, leading to unsafe driving practices. Scenario-based training could be introduced to emphasize defensive driving techniques, hazard awareness, and ethical driving behavior. By incorporating these elements, driver education can better prepare young drivers for complex and high-risk situations they may encounter on the road.

Another crucial improvement involves strengthening the standards of the licensing examination. The current system does not fully assess a driver's confidence in challenging conditions. Practical driving tests should be revised to include real-world challenges such as night driving, highway merging, and emergency braking situations. Additionally, the written examination should be more comprehensive, covering driving behaviour, traffic regulations, and road safety principles in greater depth. A more rigorous reversing (backing) test and mandatory nighttime driving training should also be introduced. Furthermore, the road test could be made more challenging to thoroughly assess participants' real driving abilities, ensuring that they can drive safely and confidently after obtaining their licenses.

Policy reforms are also necessary to address gaps in the licensing process. The findings suggest that the existing driver education framework does not sufficiently cover critical driving behaviour. Implementing a Graduated Driver Licensing (GDL) system could be beneficial, introducing a mandatory probationary period for new drivers. This system could restrict high-risk behaviour, such as nighttime driving and carrying multiple passengers until young drivers gain sufficient experience. Additionally, young drivers could be encouraged to develop responsible driving habits, including always wearing seatbelts, avoiding distractions, and limiting the number of passengers in their vehicles.

Targeted awareness campaigns and behavioural interventions should also be strengthened. Reckless driving behaviour, such as speeding and drunk driving, remains common among young drivers. Integrating behavioural assessments into the licensing process could help identify high-risk drivers early, allowing for additional training or interventions before they are allowed to drive independently. Public awareness campaigns could also focus on educating young drivers about the consequences of unsafe driving practices, reinforcing the importance of responsible road use.

Another potential improvement is the integration of advanced training techniques, such as simulator-based training. Many young drivers lack confidence in handling complex driving conditions, and simulators can provide a safe environment to practice challenging scenarios like adverse weather, heavy traffic, and emergency

maneuvers. By incorporating technology into driver training, learners can develop critical thinking and decision-making skills before they face real-world driving challenges.

Continuous evaluation of the licensing system is essential for long-term improvements. Currently, the effectiveness of licensing programs is not regularly assessed, leading to gaps in driver training and road safety outcomes. Establishing a periodic review mechanism that utilizes crash data and driver performance records could help refine licensing requirements and training curricula. This data-driven approach would ensure that the licensing process remains relevant and adapts to evolving road safety needs.

Finally, strengthening post-licensing support can help young drivers transition smoothly into independent driving. Many newly licensed drivers struggle with real-world challenges, even after passing their exams. Introducing post-licensing refresher courses or mentorship programs would allow new drivers to receive additional training and assessment after a few months on the road. This approach could reinforce safe driving habits and provide ongoing support to young drivers as they gain more experience.

In conclusion, this research highlights the need for a more structured, evidence-based approach to driver education and licensing in Sri Lanka. By implementing these improvements, the licensing system can better equip young drivers with the skills, knowledge, and confidence necessary for safe and responsible driving. These changes have the potential to reduce road crashes, improve overall road safety, and create a more effective and reliable driver training framework.

5. CONCLUSIONS

The primary aim of this research on young adults' driving experience is to enhance driving education to ensure that drivers can operate their vehicles safely, efficiently, and reliably under any conditions after obtaining a driving license. This improvement is intended to help prevent traffic jams and accidents. The objectives include investigating the various driving experiences of young drivers who have just obtained their licenses and advising policymakers on strategies to reduce traffic crashes and congestion caused by inexperienced young drivers. The data collection was done at Diyatha Uyana, Malabe SLIIT campus, and Nugegoda town in the Colombo district. The research involves distributing printed questionnaires to young adults aged 18 to 25 in these areas. Data analysis will use Cronbach’s alpha reliability test and BLR modelling. The Cronbach’s alpha values between 0.70 and 0.95 indicate acceptable internal consistency across the items in the questionnaire. For the BLR analysis, the

dependent variable is whether the respondent has ever been involved in an accident as a driver. Significant relationships were found between the dependent variable and several predictors, including young adults' confidence during nighttime driving, or nighttime driving in high traffic congestion, driving confidence during nighttime, rainy weather condition, opinion on Sri Lankan driving license process, and overtake vehicles in restricted areas. The findings suggest that less confidence and risky behaviour is common among young drivers and highlight the need for improved driving education and driving licensing process for better driving behaviour.

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