

# **EVIDENCE-BASED ENFORCEMENT STRATEGY FOR TRAFFIC VIOLATIONS**

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Degree of Master of Engineering

Department of Civil Engineering

University of Moratuwa

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Department of Civil Engineering

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## **DECLARATION**

I declare that this is my own work, and this thesis/dissertation does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other University or Institute of higher learning, and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text. I retain the right to use this content in whole or part in future works (such as articles or books).

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The above candidate has carried out research for the PhD/MPhil/Masters thesis/dissertation under my supervision. I confirm that the declaration made above by the student is true and correct.

Name of Supervisor: Prof. J.M.S.J. Bandara

Signature of the Supervisor:

Date: 2025.01.10

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## ABSTRACT

This study presents an evidence-based enforcement strategy for traffic violations in Sri Lanka, with a focus on reducing road traffic crashes, fatalities, and congestion through enhanced traffic management. In 2018, road traffic crashes resulted in 3,590 deaths, constituting 2.82% of total fatalities, and researchers have emphasised that majority of these road traffic crashes involves breach of traffic regulations by any party involved in a specific accident. This is where the traffic enforcement comes in to the picture and it has been well established that enforcement of traffic rule violation contributes significantly in reduction of Road Traffic Crashes and the crash severity apart from engineering and education. However, the findings reveal significant gaps in the current enforcement strategies, in reduction of road traffic crashes and fatalities in Sri Lanka and many other countries in the South East region of Asia where the deaths on roads kept on increasing for the last decade. Thus, this research is aimed to proposing an evidence-based traffic enforcement mechanism for Sri Lanka by mitigating the shortcomings in the traditional traffic enforcement. The proposed enforcement strategy in this research, integrates advanced technologies like Closed Circuit Television (CCTV), Radio Frequency Identification (RFID), and Light Detection and Ranging (LIDAR), alongside traditional policing methods, tailored to the Sri Lankan context. This strategy is designed to be both cost-effective and scalable, offering a practical solution for improving road safety in Sri Lanka. The study's approach can serve as a model for other low-income and middle-income countries facing similar challenges in traffic management and enforcement.

**Keywords:** Evidence Based Traffic Enforcement, Road Traffic Crashes, Crash Data Analysis, Road Safety.

# TABLE OF CONTENTS

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| DECLARATION.....                                                           | i    |
| ACKNOWLEDGEMENT .....                                                      | ii   |
| ABSTRACT.....                                                              | iv   |
| TABLE OF CONTENTS .....                                                    | v    |
| LIST OF FIGURES .....                                                      | viii |
| LIST OF TABLES .....                                                       | ix   |
| LIST OF ABBREVIATIONS.....                                                 | x    |
| Chapter 1 - INTRODUCTION .....                                             | 11   |
| 1.1    Problem Statement and Background .....                              | 11   |
| 1.2    The Objective of the Research.....                                  | 13   |
| 1.3    Scope of Work .....                                                 | 13   |
| Chapter 2 - LITERATURE REVIEW .....                                        | 15   |
| 2.1    Road Safety and Road Traffic Crashes (RTC) in South East Asia ..... | 15   |
| 2.1.1 Road Traffic Crashes in Sri Lanka .....                              | 16   |
| 2.2    Traffic Enforcement.....                                            | 18   |
| 2.2.1 Traffic Law Enforcement and Reduction of Road Traffic Crashes.....   | 19   |
| 2.2.2 Effects of Traffic Law Enforcement on Driver Behavior.....           | 20   |
| 2.3    Key Risk Factors to be Enforced.....                                | 21   |
| 2.4    Methods of Enforcement .....                                        | 23   |
| 2.4.1 Automated/ Evidence Based Enforcement.....                           | 24   |
| 2.4.2 Past Studies on Evidence Based Enforcement in Sri Lanka .....        | 25   |
| 2.5    Tools Available for Evidence Based Traffic Enforcement.....         | 26   |
| 2.5.1 Community Based Traffic Enforcement .....                            | 26   |
| 2.5.2 CCTV Based Traffic Enforcement.....                                  | 27   |
| 2.5.3 RFID Based Traffic Enforcement .....                                 | 30   |
| 2.5.4 Radar Speed Detection.....                                           | 32   |
| 2.5.5 Traffic Enforcement with LIDAR Cameras.....                          | 35   |
| Chapter 3 - METHODOLOGY.....                                               | 39   |
| 3.1    Defining the research flow .....                                    | 39   |
| 3.2    Shortlisting Traffic Rule Violations and locations.....             | 39   |
| 3.2.1 Analysis of Sri Lanka Police Accident Database .....                 | 39   |
| 3.2.2 Multi-Criteria Decision Analysis. ....                               | 43   |

|                                                                           |                                                                                                                        |    |
|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----|
| 3.3                                                                       | Understanding Public Expectations and Perception Regarding an Effective and Efficient Traffic Enforcement System. .... | 44 |
| 3.3.1                                                                     | Questionnaire Survey.....                                                                                              | 44 |
| 3.4                                                                       | Evaluate the Available Traffic Enforcement Tools. ....                                                                 | 46 |
| 3.5                                                                       | Identify Implementation Issues of a New Enforcement Mechanism.....                                                     | 47 |
| 3.5.1                                                                     | PESTEL Analysis Framework .....                                                                                        | 47 |
| Chapter 4 - DATA ANALYSIS .....                                           |                                                                                                                        | 48 |
| 4.1                                                                       | Outcome of Descriptive Analysis of Crash Data.....                                                                     | 48 |
| 4.1.1                                                                     | Prioritizing of Accident Causal Factors based on the frequency of occurring.....                                       | 48 |
| 4.1.2                                                                     | Prioritizing of Accident Causal Factors with crash severity .....                                                      | 49 |
| 4.1.2.1                                                                   | Statistical Analysis for Justifying the Conclusion.....                                                                | 51 |
| 4.1.3                                                                     | Prioritizing of Accident Locations .....                                                                               | 53 |
| 4.1.4                                                                     | Road Traffic Crashes Vs Type of Traffic Control .....                                                                  | 57 |
| 4.1.5                                                                     | Problems encountered.....                                                                                              | 60 |
| 4.2                                                                       | Outcome of Multi Criterial Data Analysis in Prioritizing Critical Traffic Rule Violations to be Enforced.....          | 61 |
| 4.3                                                                       | Results and Discussion of the Questionnaire Survey .....                                                               | 66 |
| Chapter 5 - EVALUATION OF EVIDENCE BASED ENFORCEMENT SYSTEMS IN USE ..... |                                                                                                                        | 84 |
| 5.1                                                                       | Background.....                                                                                                        | 84 |
| 5.2                                                                       | Comparison of Traffic Violation Detection Technologies .....                                                           | 85 |
| Table 5-1: Summary of traffic violation detection technologies.....       |                                                                                                                        | 85 |
| Chapter 6 - PESTEL ANALYSIS .....                                         |                                                                                                                        | 87 |
| 6.1                                                                       | In-Depth Analysis of Viability of Evidence Based Enforcement System for Sri Lanka .....                                | 87 |
| 6.1.1                                                                     | PESTEL Analysis - Political Impact on New Enforcement System .....                                                     | 87 |
| 6.1.2                                                                     | PESTEL Analysis - Economical Impact on New Enforcement System .....                                                    | 88 |
| 6.1.3                                                                     | PESTEL Analysis - Social Impact on New Enforcement System.....                                                         | 89 |
| 6.1.4                                                                     | PESTEL Analysis - Technological Impact on New Enforcement System .....                                                 | 91 |
| 6.1.5                                                                     | PESTEL Analysis - Environmental Impact on New Enforcement System.....                                                  | 93 |
| 6.1.6                                                                     | PESTEL Analysis - Legal Impact on New Enforcement System .....                                                         | 95 |
| Chapter 7 - CONCLUSIONS AND RECOMMENDATIONS .....                         |                                                                                                                        | 97 |
| 7.1                                                                       | Conclusion.....                                                                                                        | 97 |
| 7.2                                                                       | Recommendations .....                                                                                                  | 98 |
| 7.2.1                                                                     | Traffic Violations to be considered to be enforced .....                                                               | 98 |
| 7.2.2                                                                     | Locations to be considered to be enforced.....                                                                         | 99 |

|                                                 |     |
|-------------------------------------------------|-----|
| 7.2.3 Traffic Enforcement Strategy .....        | 100 |
| 7.3 Limitations and Challenges to Overcome..... | 102 |
| REFERENCES .....                                | 103 |
| APPENDIX – A .....                              | 106 |
| Questionnaire survey .....                      | 106 |

## LIST OF FIGURES

|                                                                                                                      |    |
|----------------------------------------------------------------------------------------------------------------------|----|
| Figure 1-1: The best countermeasure to reduce accidents.....                                                         | 11 |
| Figure 1-2: The best countermeasure to reduce accidents according to highly educated participants .                  | 12 |
| Figure 2-1: Road user deaths in WHO regions based on WHO Global status report on road safety 2018 .....              | 16 |
| Figure 2-2: Deaths on roads in Sri Lanka for 100k people based on WHO global status report on road safety 2018 ..... | 17 |
| Figure 2-3: Number of road crashes in Sri Lanka .....                                                                | 18 |
| Figure 2-4: Road fatalities in Sri Lanka .....                                                                       | 18 |
| Figure 2-5: Five Pillars for reducing road traffic crash fatalities .....                                            | 19 |
| Figure 2-6: Prioritizing of factors affecting road traffic crashes. ....                                             | 20 |
| Figure 2-7: Countries with laws on 7 risk factors in ESCAP region, 2016 .....                                        | 22 |
| Figure 3-1: Age demography of Sri Lanka.....                                                                         | 45 |
| Figure 3-2: Age wise distribution of the sample .....                                                                | 46 |
| Figure 4-1: Accident causal factors within Western province .....                                                    | 48 |
| Figure 4-2: Accident causal factors excluding “negligent driving” .....                                              | 49 |
| Figure 4-3: Accident severity vs safety belt usage analysis of 6,643 accidents .....                                 | 50 |
| Figure 4-4: Accident severity vs helmet usage analysis of 59,275 accidents .....                                     | 50 |
| Figure 4-5: Non-available protection type .....                                                                      | 53 |
| Figure 4-6: Yearly Accident distribution in Western province .....                                                   | 54 |
| Figure 4-7: Road links having higher rate of road traffic crashes .....                                              | 54 |
| Figure 4-8: Accident distribution in each road link.....                                                             | 55 |
| Figure 4-9: Average accident occurrences sorted according to the type of traffic control near junctions .....        | 57 |
| Figure 4-10: Non-Available Human Pre-Crash Factors .....                                                             | 60 |
| Figure 4-11: Question no. 02 – Detection for traffic violation.....                                                  | 66 |
| Figure 4-12: Possibility of getting a ticket for traffic violation.....                                              | 66 |
| Figure 4-13: Gender vs being fined.....                                                                              | 67 |
| Figure 4-14: Common reason for the crash/ crashes .....                                                              | 69 |
| Figure 4-15: Responses of Q. 6.1 – overtaking in a continuous line at hilly terrain. ....                            | 70 |
| Figure 4-16: Responses of Q. 6.2 – crossing a traffic signal at the very last moment.....                            | 70 |
| Figure 4-17: Responses of Q. 6.3 – exceeding the speed limit.....                                                    | 70 |
| Figure 4-18: Responses of Q. 6.4 – crossing a signalized pedestrian crossing .....                                   | 71 |
| Figure 4-19: Responses of Q. 6.5 – traveling in the inner lane of four lane divided Road .....                       | 71 |
| Figure 4-20: Responses of Q. 6.6 – overtaking at a continuous double line .....                                      | 71 |
| Figure 4-21: Summary of question 06.....                                                                             | 72 |
| Figure 4-22: Responds regarding traditional enforcement and automated enforcement. ....                              | 75 |
| Figure 4-23: Public anticipation of traffic enforcement .....                                                        | 75 |
| Figure 4-24: Probability of arguing with police officers regarding a traffic offence.....                            | 77 |
| Figure 4-25: Most possible instance of encountering with an argument with police. ....                               | 78 |
| Figure 4-26: Responses for public involvement in traffic enforcement .....                                           | 83 |
| Figure 4-27: Factors to become community-based enforcement unfeasible. ....                                          | 83 |

## LIST OF TABLES

|                                                                                                                            |    |
|----------------------------------------------------------------------------------------------------------------------------|----|
| Table 2-1: Regional road user fatality risks based on WHO global status report on road safety 2018.                        | 16 |
| Table 2-2: Road crash data in Sri Lanka .....                                                                              | 17 |
| Table 3-1: Age distribution of Sri Lanka .....                                                                             | 45 |
| Table 4-1: Usage of safety belt and severity of the road traffic crash .....                                               | 51 |
| Table 4-2: Usage of helmets and severity of the road traffic crash .....                                                   | 51 |
| Table 4-3: Accident distribution along each road link identified to have the highest rate of occurrence of accidents ..... | 56 |
| Table 4-4: Ranked locations of each road link based on frequency of occurring RTC .....                                    | 56 |
| Table 4-5: Average accident occurrences sorted according to the type of traffic control near junctions .....               | 57 |
| Table 4-6: Road traffic crashes vs type of traffic control .....                                                           | 58 |
| Table 4-7: Traffic rule violations as per the 2009 no 08 Motor Traffic Act.....                                            | 61 |
| Table 4-8: Rated score table for the traffic violations .....                                                              | 62 |
| Table 4-9: Weighted Scores for the traffic violations .....                                                                | 64 |
| Table 4-10: Highest ranked Traffic violations for enforcement .....                                                        | 65 |
| Table 4-11: Gender Vs possibility of being fined for a traffic violation.....                                              | 67 |
| Table 4-12: Expected Frequencies for Male and Female .....                                                                 | 68 |
| Table 4-13: Chi Square values for Male and Female .....                                                                    | 68 |
| Table 4-14: Responses for driver perception for committing traffic violation .....                                         | 73 |
| Table 4-15: Re arranged table for Responses for driver perception for committing traffic violation...                      | 73 |
| Table 4-16: SPSS analysis for traffic rule violations focused in the questionnaire .....                                   | 74 |
| Table 4-17: Chi Square test on public anticipation on traffic enforcement .....                                            | 76 |
| Table 4-18: SPSS analysis for being detected for a traffic violation and entering into an argument with police.....        | 78 |
| Table 4-19: Logistic regression modelling crossing a continuous line.....                                                  | 80 |
| Table 4-20: Logistic regression modelling for red light violation .....                                                    | 81 |
| Table 4-21: Logistic regression modelling for Crossing a double line.....                                                  | 82 |
| Table 4-22: Statistical significance for providing proper enforcement based on encountering with arguments .....           | 82 |
| Table 5-1: Summary of traffic violation detection technologies .....                                                       | 85 |

## LIST OF ABBREVIATIONS

|              |                                                         |
|--------------|---------------------------------------------------------|
| <b>GDP</b>   | Gross Domestic Product                                  |
| <b>RTC</b>   | Road Traffic Crashes                                    |
| <b>UN</b>    | United Nations                                          |
| <b>SDG</b>   | Sustainable Development Goal                            |
| <b>SEA</b>   | South-East Asia                                         |
| <b>AHP</b>   | Analytic Hierarchy Process                              |
| <b>ESCAP</b> | Economic and Social Commission for Asia and the Pacific |
| <b>OECD</b>  | Organization for Economic Co-operation and Development  |
| <b>USD</b>   | United State Dollar                                     |
| <b>USA</b>   | United States of America                                |
| <b>CMC</b>   | Colombo Municipal Council                               |
| <b>ANPR</b>  | Automatic Number Plate Recognition                      |
| <b>CCTV</b>  | Closed Circuit Television                               |
| <b>MS</b>    | Microsoft                                               |
| <b>VRUs</b>  | Vulnerable Road Users                                   |
| <b>WHO</b>   | World Health Organization                               |
| <b>DMT</b>   | Department of Motor Traffic                             |
| <b>NCRS</b>  | National Council for Road Safety                        |