

**REVIEW OF DECADE OF ACTION IN ROAD SAFETY:
TRENDS IN VULNERABLE ROAD USER CRASHES IN
SRI LANKA**

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Degree of Master of Engineering

Department of Civil Engineering

University of Moratuwa

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Department of Civil Engineering

University of Moratuwa

Sri Lanka

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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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ABSTRACT

Vulnerable road users (VRUs), including pedestrians, cyclists, motor cyclists, and three-wheeler users, account for a significant proportion of global traffic fatalities, particularly in low-middle-income countries. In Sri Lanka, VRU-related fatalities constitute more than fifty percent of all road crash deaths. This study aims to examine the trends and factors influencing VRU crashes and fatalities during the decade of action (2011-2020), considering changes in motorization, demographics, and economic factors while accounting for the impacts of the Easter attack and the COVID-19 pandemic. Data from 2010 to 2020 were analysed, with the exclusion of 2020 data due to the influence of COVID-19 on travel behavior.

The relationship between economic and social factors was examined using Pearson Correlation and Granger Causality Tests, while the significance of the trends was assessed using the ANOVA Test. To ensure the accuracy of the trend, two statistical methods, Mann-Kendall, and Innovative Trend Analysis, were utilized for further trend analysis and comparison.

The findings reveal that VRU-related fatalities comprised 87% of total road crash fatalities in Sri Lanka from 2010 to 2020. On average, there were 6.57 VRU fatalities per day, resulting in an average death rate of 11.38 per 100,000 population per year between 2010 and 2019. The analysis also indicates a strong correlation between new motor cycle registration levels and VRU involvement in road crashes. VRU involvement, VRU fatalities, VRU motor cycle crashes, motor cycle fatalities, three-wheeler crashes, three-wheeler fatalities, pedestrian crashes, and pedestrian fatalities exhibited a statistically significant increasing trend from 2010 to 2019. Conversely, bicycle crashes displayed a statistically significant decreasing trend. Pedestrian crashes, while statistically significant, did not demonstrate a trend.

These findings underscore the urgent need for targeted road safety measures to address the identified issues. Efforts should prioritize improving safety for all VRUs and reducing the number of crashes and fatalities on Sri Lankan roads.

Keywords: Vulnerable Road Users, Crash Data Analysis, Road Safety, Decade of Action

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LIST OF ABBREVIATIONS

CYC	Cycle
GDP	Gross Domestic Product
IHME	Institute for Health Metrics and Evaluation
ITA	Innovative Trend Analysis
MAAP	Microcomputer Accident Analysis Package
MC	Motor Cycle
MK	Mann-Kendall
PED	Pedestrian
SDG	Sustainable Development Goal
SEA	South-East Asia
TW	Three-Wheeler
USA	United States of America
VRUs	Vulnerable Road Users
WHO	World Health Organization