

Motorcycle Rider Skill Assessment to Enhance Road Safety

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Abstract

In Low and Middle-Income Countries (LMIC) like Sri Lanka, motorcycles are a cornerstone of mobility, offering affordability, accessibility, and efficiency in navigating congested urban areas and connecting rural regions. Their widespread use for personal, commercial, and logistical purposes, such as delivering goods and services, has made them indispensable for economic and social activities. However, this dependency has led to a troubling surge in accidents and fatalities, posing a significant public safety issue that demands immediate attention. Despite international efforts, including the Decade of Action for Road Safety by the World Health Organization, substantial reductions in motorcycle-related crashes have been challenging to achieve. A detailed analysis of crash data from 2016 to 2020 highlights that motorcycles consistently account for an average of 29.2% of vehicle crashes annually in Sri Lanka, the highest among all vehicle types, underscoring their disproportionate involvement in road accidents. The contributing factors are multifaceted and include behavioural issues such as excessive speeding, aggressive or negligent driving, judgment errors, distractions, fatigue, and alcohol impairment, all of which significantly increase the likelihood of collisions. Additionally, inconsistent helmet usage, particularly in rural areas, further exacerbates the severity of crashes despite being legally mandated. Poor enforcement, inadequate awareness, and cultural resistance to safety measures compound these risks. Environmental and infrastructural deficiencies, including poorly maintained roads, inadequate street lighting, defective signage, and the lack of dedicated motorcycle lanes, further increase vulnerability. To address these concerns, a video-based survey was conducted to evaluate real-world rider behaviour and decision-making skills under simulated traffic scenarios. The findings revealed alarming gaps in knowledge and situational awareness, with over 50% of respondents failing questions on pedestrian crossings and vehicle entry rules, while even experienced riders with eight to ten years of riding managed only 70% accuracy in navigating intersections. Younger riders, particularly those with less than five years of experience, were disproportionately involved in crashes, indicating serious shortcomings in training programs and licensing processes. These failures highlight the need for stricter licensing requirements, improved driver education, and more rigorous evaluations. Furthermore, specific high-risk locations such as intersections, pedestrian crossings, and long straight road sections were identified as hotspots for accidents due to high speeds and insufficient infrastructure. Addressing these issues requires a multifaceted approach that integrates behavioural interventions, infrastructural improvements, and stricter enforcement of road safety laws. Key recommendations include enhancing road conditions through regular maintenance, expanding street lighting, and establishing dedicated motorcycle lanes to separate two-wheelers from larger, faster-moving vehicles. Stricter enforcement of helmet usage laws, mandatory protective gear, and regular renewal of driving licenses with updated skill assessments are critical measures. Additionally, extensive educational campaigns targeting both riders and pedestrians must promote safe practices such as speed management, defensive driving, and adherence to traffic regulations. By implementing these measures, stakeholders can significantly reduce motorcycle-

related crashes and fatalities, contributing to broader road safety objectives. Sri Lanka's efforts to address these challenges can serve as a model for other LMICs grappling with similar issues, demonstrating that comprehensive, targeted interventions can mitigate the growing burden of motorcycle accidents and create safer roads for all.

Keywords: *motorcycle-crashes, questionnaire, road-safety*

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