# A Profiles of Motorcycle Accident Mortality and Risk Behavior in Thai Children

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**Abstract**
*This study investigates motorcycle-related fatalities among children under 15 in Thailand by analyzing three detailed and accurate datasets from the Open Government Data Center. Using exploratory data analysis, including descriptive statistics and two-step cluster analysis, the research seeks to identify trends, patterns, and distinct profiles of motorcycle accident mortality. The analysis reveals a noticeable increase in fatalities from motorcycle accidents during the academic year's second semester (November to February), particularly in the hours of 3-8 p.m., just after school ends. Risk behaviors factors identified include not wearing helmets and alcohol consumption, highlighting the necessity for an immediate reevaluation of the circumstances leading to these accidents and the implementation of specific preventive measures during these high-risk times. Moreover, cluster analysis, considering the timing of accidents, motorcycle usage, gender, and age, reveals five distinct mortality profiles. Significantly, the group most affected comprises boys aged 10-14 years, indicating an urgent need for targeted interventions. This detailed analysis provides critical insights into the demographics most at risk and forms the basis for creating customized safety measures. Furthermore, this research clarifies the temporal patterns of fatalities and emphasizes the essential role of parents, guardians, and educational institutions in closely monitoring children's access to motorcycles during these vulnerable periods. By offering a nuanced understanding of the factors leading to the increased risk of motorcycle accidents among minors, including the effects of gender, age, and timing of incidents in different regions of Thailand, the study contributes valuable perspectives for shaping evidence-based interventions and policies. These insights are crucial for devising strategies aimed at mitigating these preventable tragedies.*

**Keywords:** Child Rider, Motorcycle Accidents, Motorcycle Mortality, Risk Behaviors, Road Safety

## 1. Introduction

According to a 2018 WHO report, Thailand has the highest road fatality rate in Southeast Asia, with 32.7 deaths per 100,000 people. This places it second globally for road fatalities and first for motorcycle-related deaths among children and youth, resulting in approximately 2,500 deaths annually [1] and [2]. This statistic raises significant concern, especially among Thai youths aged 15-29 and children aged 5-14, for whom road accidents are the primary and a leading cause of premature death, respectively [3]. From 2000 to 2015, road accidents have been the leading cause of death for children under 15, with motorcycles identified as the most dangerous vehicles [4].

The widespread use of motorcycles by teenagers, despite legal restrictions against riders under 15, contributes to this issue, particularly in rural areas where there is notable non-compliance [5]. The increase in accidents incurs significant medical costs and results in a substantial toll of suffering and fatalities [4]. Despite efforts at various governmental levels to reduce these fatalities, there remains a lack of a clear, consistent strategy and comprehensive research into this crisis. Current initiatives focusing on educating high school and tertiary students about safe motorcycle usage are limited in accessibility, highlighting a gap in our understanding of fatalities among children under 15 [6][7] and [8].