

Safety Risks Created by the Non-Compliance Behaviour to Traffic Signals by Motorcycle Riders in Kampala, Uganda

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Background

Motorcycles have emerged as a prominent mode of transportation in the East African region over the past two decades. In the Ugandan capital of Kampala, their prevalence has grown significantly, outnumbering motor vehicles by more than two to one within the city. Many motorcycle operators function as transportation service providers, frequently without receiving adequate training on traffic laws and regulations. Despite repeated awareness campaigns, these riders have been resistant to modifying their hazardous riding practices, one of the most concerning of which is their failure to comply with traffic signals.

Aim

This study aimed to evaluate the conflicts generated due to motorcycle riders' non-compliant behaviour, utilising Traffic Conflicts Techniques, to guide the development of necessary policy and infrastructure interventions to address this non-compliant behaviour and its potential safety consequences.

Method

A sample of 10 signalised intersections that were representative of the geographical distribution and operating hours within the city, ensuring a comprehensive analysis.

Video footage was collected from 10 signalised intersections across the city, generating 41 hours of intersection traffic data. The researchers analysed the footage that was collected both during the peak and off-peak traffic periods when traffic signals were the sole means of traffic control. The traffic conflicts that were generated were analysed using the Time to Collision, Traffic Conflicts Technique.

The maximum of the two speeds for the motorised vehicles that were in conflict was used to categorise the conflicts into serious, moderate and slight conflicts. In addition, both motorised vehicles had to be moving at a speed of at least 1 km/hr and not be stationary.

Results

The study revealed that motorcycle riders exhibited a compliance rate with traffic signals of only 34.2%, significantly lower than the 87.7% compliance observed among car drivers. Importantly, the non-compliant behaviour of motorcycle riders led to the emergence of numerous traffic conflicts.

Furthermore, a notable proportion of motorised vehicles, ranging from 13% to 50%, encountered conflicting situations while navigating intersections at any given hour, resulting from the motorcycle riders' non-compliance with the traffic signals. At the single intersection that connected with a non-motorised transport route, every non-compliant motorcycle rider was on average in conflict with at least two pedestrians.

A dozen collisions were also observed during the study, most involving a motorcycle crossing the intersection as through-traffic or making a right turn during the earlier portion of the green light for that approach, close to the stop line. At such moments, the rider would collide with another motorcycle rider from the adjacent right-hand approach who was also traveling through the intersection during its red-light period.

Conclusions

- The non-compliant behaviour of the motorcycle riders results into the generation of many traffic conflicts, for which evasive actions have to be performed to avoid collisions from resulting. But not all evasive actions end successfully, just as some collisions were observed during the study.
- Many of the observed collisions occurred when a motorcycle was navigating the junction as through-traffic during the first quarter of the green light period, within a few meters of the stop-line and among the leading vehicles initiating passage through the intersection when it collided with motorcycle from the approach on the right-hand side that was navigating as through-traffic during its red-light period.
- This shows that even some compliant motorcycle riders and their passengers became victims in these collisions, shortly after waiting for their green light.
- Urgent interventions, such as increased enforcement, are needed to improve compliance and protect the law-abiding motorcycle riders and their passengers who wait for the green light.