

Application of Unobstructed Vehicle in Naturalistic Driving Study for Observing Indonesian Motorcyclist's Braking and Signaling Habits in Daily Driving.

Case Study: Bandung Urban Areas

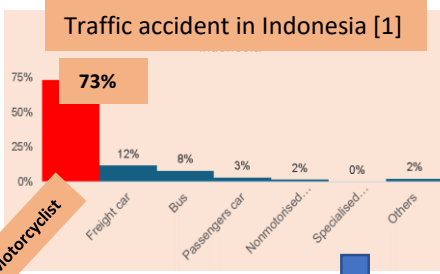
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Introduction

Background

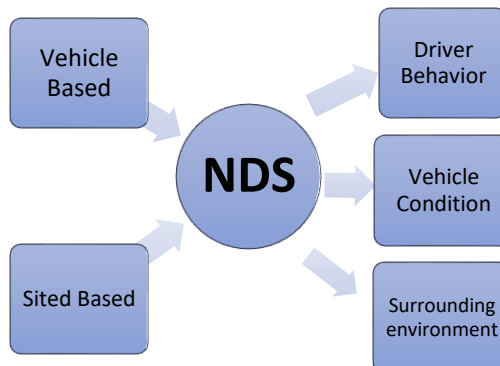


Driver behavior
Road Traffic Organization
developed basic riding skill [2]

Naturalistic Driving Study is promising

RQ: How well do motorcyclists perform basic skills while riding in traffic?

Naturalistic Driving Study (NDS) [3,4,5]



Research Purpose: to develop

Experimental Design

NDS

Driver Behavior

Brake usage

Signal usage

Methods

Case Study

Bandung City, Indonesia

18 volunteers
19 – 23 years old

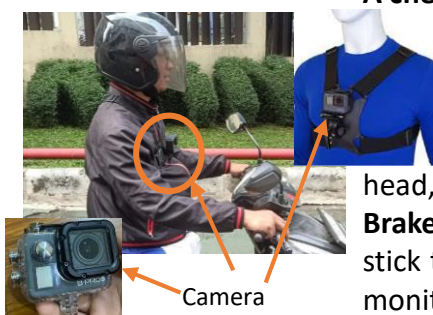
- Active driving license
- Driving daily
- Own motorcycle

Experimental design

- **The challenge:** to keep the experiment running naturally.
- The term "**unobstructed motorcycle**" is introduced to represent a vehicle without additional sensors or detectors connected to the motorcycle's machinery and system..
- Volunteers **use their own vehicles to follow a daily route** (home-office-home) to avoid unfamiliar driving conditions.

Apparatus Placement

Fig. 1 Camera position



A chest mount camera to record (Fig 1):

- brake handles,
- signal switches,
- traffic situations

The position does not impede head, hand, and body movements (Fig. 2).

Brake handle markers: We attach a glue stick to the outer tip of a brake handle to monitor brake usage (Fig. 3).

How to collect the data

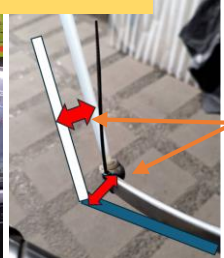
Fig. 2 Camera view

Traffic situations
Handle marker
Signal switch



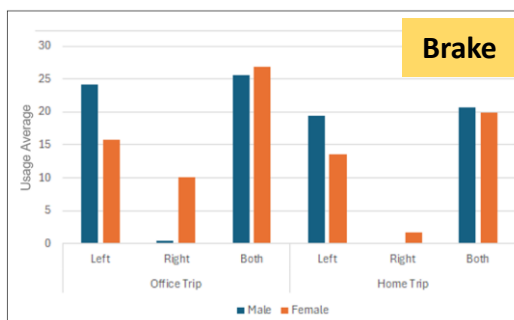
Fig. 3 Marker

Handle movement



Result and Discussion

On average, the office trip (10.6 ± 3.7 km) and home trip (9.6 ± 4.5 km) were not significantly different. The result showed that volunteers drove a similar route for both trips.



- Braking behaviors indicated a **decrease in usage during the home trip**, correlated with lower evening traffic peak hours compared to the morning.
- Signal usage typically **increases at night** due to reduced vision at night.

Conclusion

- ✓ The brake and signal usage patterns reflect typical motorcyclist behavior in daily driving.
- ✓ NDS method is valuable for studying driving safety.
- ✓ This study did not account for traffic situations associated with brake and signal use.
- ✓ **Further research** is needed to identify **safety critical events** related to these findings.

References

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