Powered two-wheeleers (PTWs*) in LMICs

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Unità di Ricerca Psicologia del Traffico

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Powered two-wheeleers (PTWs*) in LMICs

The PTW* (Moped, Light Motorcycle and Motorcycle) fleet is growing rapidly in most parts of the world.
770 million, 90% in LMICs (WHO 2018)

PTWs* are becoming one of the main means of transporting both people and goods and are attracting an increasingly varied user population (WHO 2017)

PTWs* are used for commercial scope (MotoTaxi-Okada-Bodaboda)

PTWs* in LMICs….Plus and Minus aspects

Positive aspects of PTWs

Easy access and affordable

Easy to use and maintain

Provide employment

Used as public transport in rural areas

Saving time in congested traffic

PTWs* in LMICs….Plus and Minus aspects

<u>Negative aspects of PTWs</u>

Crashes, fatalities and injuries

Risk factor:

Non-use or use of low-standard helmets

Other risk-taking behaviours:

Drinking and driving

Mobile phone use while riding

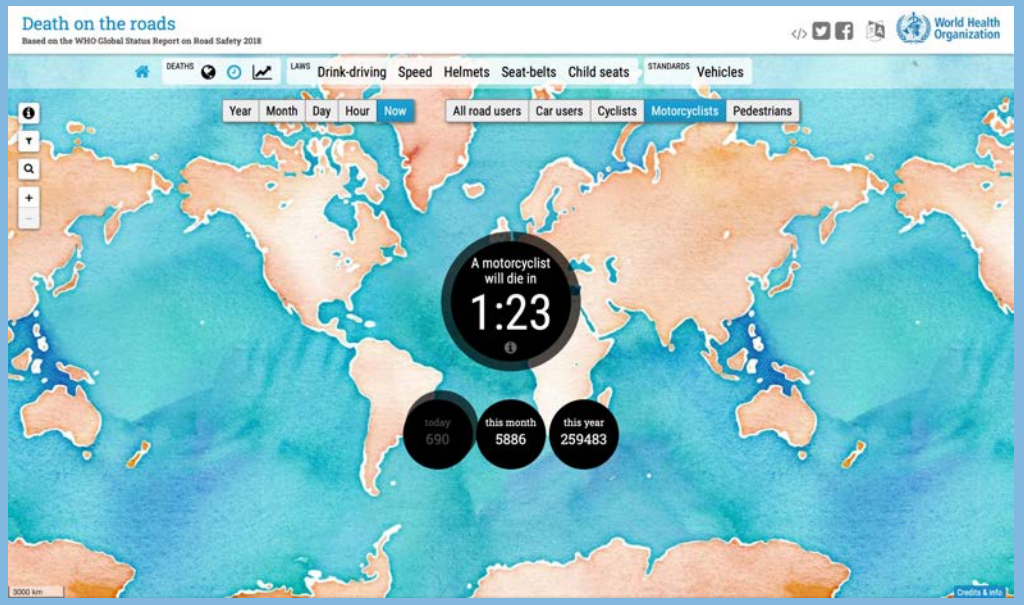
Overspeeding and braking errors

Rider's age and level of experience

A motorcyclist dies every 1:23 minute

Death on the roads

(WHO 2018)

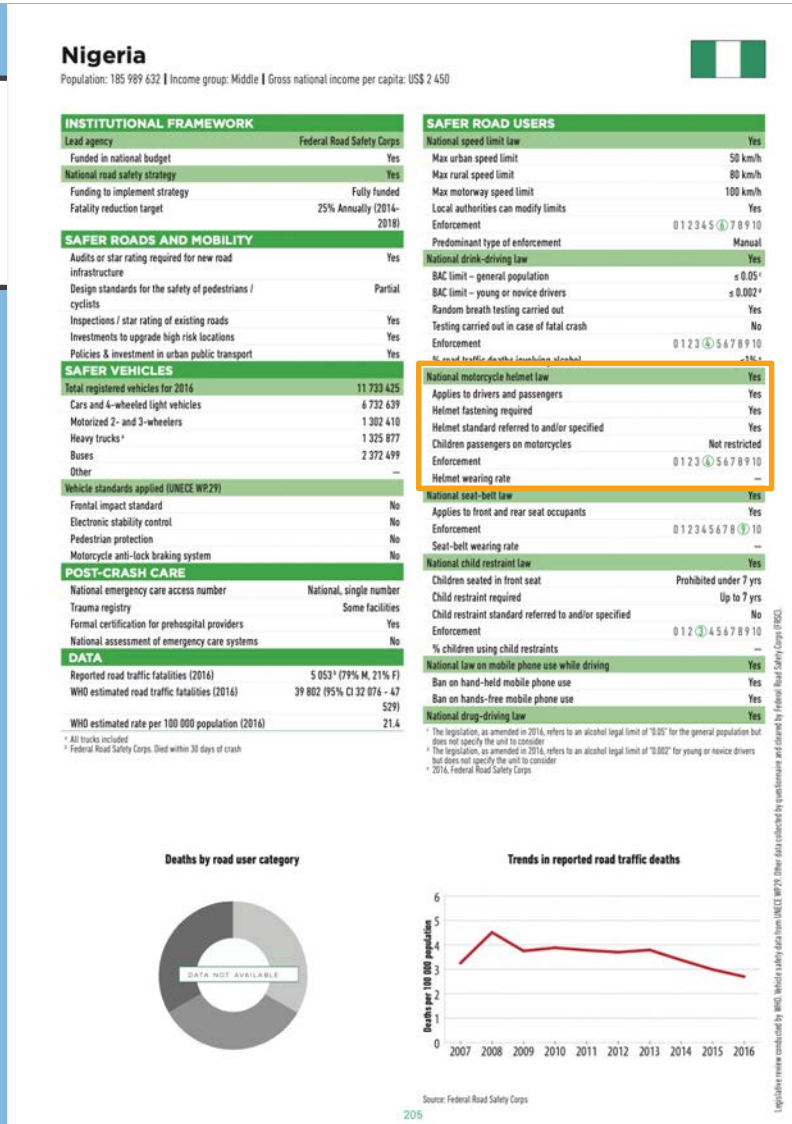


‘Ajali haina kinga’

Accidents have no prevention
(Lamont 2012)

New data…

Helmet wearing rate (WHO 2018)



Nigeria

Population: 185 989 632 | Income group: Middle | Gross national income per capita: US$ 2 450

INSTITUTIONAL FRAMEWORK	
Lead agency	Federal Road Safety Corps
Funded in national budget	Yes
National road safety strategy	Yes
Funding to implement strategy	Fully funded
Fatality reduction target	25% Annually (2014-2018)

SAFER ROADS AND MOBILITY	
Audits or star rating required for new road infrastructure	Yes
Design standards for the safety of pedestrians / cyclists	Partial
Inspections / star rating of existing roads	Yes
Investments to upgrade high risk locations	Yes
Policies & investment in urban public transport	Yes

SAFER VEHICLES	
Total registered vehicles for 2016	11 733 425
Cars and 4-wheeled light vehicles	6 732 639
Motorized 2- and 3-wheelers	1 302 410
Heavy trucks[a]	1 325 877
Buses	2 372 499
Other	–
Vehicle standards applied (UNECE WP.29)	
Frontal impact standard	No
Electronic stability control	No
Pedestrian protection	No
Motorcycle anti-lock braking system	No

POST-CRASH CARE	
National emergency care access number	National, single number
Trauma registry	Some facilities
Formal certification for prehospital providers	Yes
National assessment of emergency care systems	No

DATA	
Reported road traffic fatalities (2016)	5 053[b] (79% M, 21% F)
WHO estimated road traffic fatalities (2016)	39 802 (95% CI 32 076 - 47 529)
WHO estimated rate per 100 000 population (2016)	21.4

[a] All trucks included
[b] Federal Road Safety Corps. Died within 30 days of crash

SAFER ROAD USERS	
National speed limit law	Yes
Max urban speed limit	50 km/h
Max rural speed limit	80 km/h
Max motorway speed limit	100 km/h
Local authorities can modify limits	Yes
Enforcement	0 1 2 3 4 5 6 7 8 9 10
Predominant type of enforcement	Manual
National drink-driving law	Yes
BAC limit – general population	≤ 0.05[c]
BAC limit – young or novice drivers	≤ 0.002[d]
Random breath testing carried out	Yes
Testing carried out in case of fatal crash	No
Enforcement	0 1 2 3 4 5 6 7 8 9 10
% road traffic deaths involving alcohol	<1%[e]
National motorcycle helmet law	Yes
Applies to drivers and passengers	Yes
Helmet fastening required	Yes
Helmet standard referred to and/or specified	Yes
Children passengers on motorcycles	Not restricted
Enforcement	0 1 2 3 4 5 6 7 8 9 10
Helmet wearing rate	–
National seat-belt law	Yes
Applies to front and rear seat occupants	Yes
Enforcement	0 1 2 3 4 5 6 7 8 9 10
Seat-belt wearing rate	–
National child restraint law	Yes
Children seated in front seat	Prohibited under 7 yrs
Child restraint required	Up to 7 yrs
Child restraint standard referred to and/or specified	No
Enforcement	0 1 2 3 4 5 6 7 8 9 10
% children using child restraints	–
National law on mobile phone use while driving	Yes
Ban on hand-held mobile phone use	Yes
Ban on hands-free mobile phone use	Yes
National drug-driving law	Yes

[c] The legislation, as amended in 2016, refers to an alcohol legal limit of "0.05" for the general population but does not specify the unit to consider
[d] The legislation, as amended in 2016, refers to an alcohol legal limit of "0.002" for young or novice drivers but does not specify the unit to consider
[e] 2016, Federal Road Safety Corps

Deaths by road user category

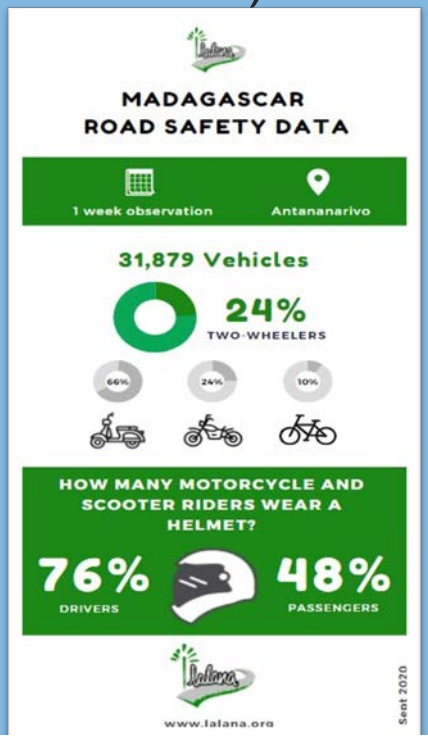
Trends in reported road traffic deaths

Source: Federal Road Safety Corps

Legislative review conducted by WHO. Vehicle safety data from UNECE WP.29. Other data collected by questionnaire and cleared by Federal Road Safety Corps (FRSC).

New data…

Helmet wearing rate (WHO 2018)



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Patterns of motorcycle helmet use – A naturalistic observation study in Myanmar

Felix Wilhelm Siebert[a,*], Deike Albers[b], U Aung Naing[c], Paolo Perego[d], Chamaipan Santikarn[e]

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Transportation Research Part F: Traffic Psychology and Behaviour

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Disparity of motorcycle helmet use in Nepal – Weak law enforcement or riders' reluctance?

Felix Wilhelm Siebert [a], Lennart Hellmann [b], Puspa Raj Pant [c], Hanhe Lin [d], Rüdiger Trimpop [b]

New data…

Helmet wearing rate (WHO 2018)

Knowledge, attitudes, and practices of helmet use (Bachani et al. 2013)

Knowledge, attitudes of rider behaviour (Perego & Biassoni 2016)

Conference Proceedings
SARF/IRF/PIARC Regional Conference for Africa 2018

Bodaboda drivers' behaviour

Paolo Perego
Università Cattolica del Sacro Cuore di Milano, Italy

Abstract In Tanzania between 2006 and 2014, the number of motorcycle riders in Tanzania. This is why researchers and road

Motorcycle helmet use – comparing self-reported and observational data

Felix Wilhelm Siebert, Laura Magni, Paolo Perego

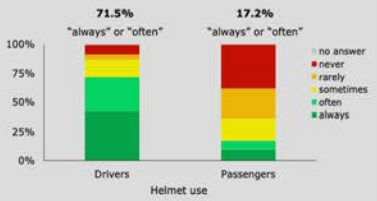
Introduction

- Motorcycle helmet use can decrease the risk of fatal injuries in case of a crash by 42% (Liu et al., 2004)
- Despite this, only 40% of countries have data on motorcycle helmet use (World Health Organization, 2015)
- Helmet use data is often collected through road-side observations, which are labor-intensive and costly (Eby, 2011)
- Questionnaires are an efficient way to collect helmet use data, but their validity is disputed (Bachani et al., 2013)
- Although motorcyclists represented the highest share (33%) of the road related fatalities in Tanzania in 2015, the country does not regularly collect helmet use data (Ministry of Home Affairs & Ministry of Finance & Planning Tanzania, 2016)
- We investigated if self-reported helmet use data is comparable to observed helmet use in **Arusha, Tanzania**

Questionnaire

***N* = 513** motorcycle drivers (98.2% ♂)
Questionnaire survey handed out to drivers

"Do you use a motorcycle helmet?"
"Do your passengers use a motorcycle helmet?"



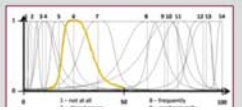
Observation

***N* = 2922** motorcycle drivers (99% ♂)
***N* = 1122** motorcycle passengers (83.3% ♂)

Helmet use observed in traffic and coded with BORIS (Friard, & Gamba, 2016)

Discussion

- Self-reported motorcycle helmet use was **lower** than helmet use observed in traffic
- Difference is larger for passenger helmet use (rated by drivers)
- Surprising result in light of earlier studies (Bachani et al., 2013), where self-reported helmet use was higher than observed helmet use



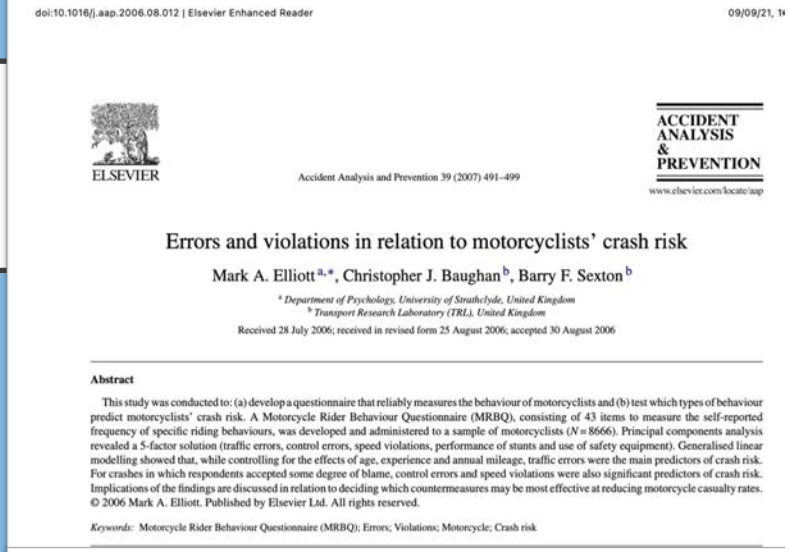
New data…

Helmet wearing rate (WHO 2018)

Knowledge, attitudes, and practices of helmet use (Bachani et al. 2013)

Knowledge, attitudes of rider behaviour (Perego & Biassoni 2016)

Motorcycle Rider Behaviour Questionnaire (MRBQ) (Elliot et al. 2007)



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Errors and violations in relation to motorcyclists' crash risk

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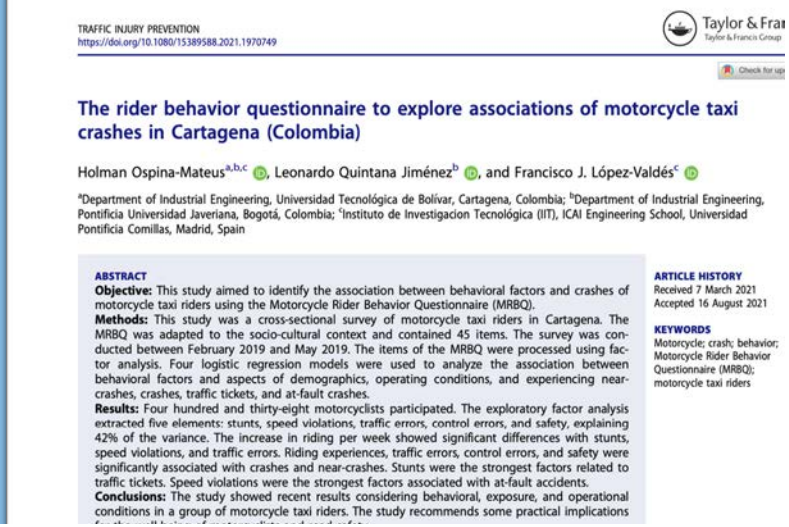
Abstract

This study was conducted to: (a) develop a questionnaire that reliably measures the behaviour of motorcyclists and (b) test which types of behaviour predict motorcyclists' crash risk. A Motorcycle Rider Behaviour Questionnaire (MRBQ), consisting of 43 items to measure the self-reported frequency of specific riding behaviours, was developed and administered to a sample of motorcyclists ($N = 8666$). Principal components analysis revealed a 5-factor solution (traffic errors, control errors, speed violations, performance of stunts and use of safety equipment). Generalised linear modelling showed that, while controlling for the effects of age, experience and annual mileage, traffic errors were the main predictors of crash risk. For crashes in which respondents accepted some degree of blame, control errors and speed violations were also significant predictors of crash risk. Implications of the findings are discussed in relation to deciding which countermeasures may be most effective at reducing motorcycle casualty rates.

Keywords: Motorcycle Rider Behaviour Questionnaire (MRBQ); Errors; Violations; Motorcycle; Crash risk



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The rider behavior questionnaire to explore associations of motorcycle taxi crashes in Cartagena (Colombia)

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[a]Department of Industrial Engineering, Universidad Tecnológica de Bolívar, Cartagena, Colombia; [b]Department of Industrial Engineering, Pontificia Universidad Javeriana, Bogotá, Colombia; [c]Instituto de Investigacion Tecnológica (IIT), ICAI Engineering School, Universidad Pontificia Comillas, Madrid, Spain

ABSTRACT

Objective: This study aimed to identify the association between behavioral factors and crashes of motorcycle taxi riders using the Motorcycle Rider Behavior Questionnaire (MRBQ).
Methods: This study was a cross-sectional survey of motorcycle taxi riders in Cartagena. The MRBQ was adapted to the socio-cultural context and contained 45 items. The survey was conducted between February 2019 and May 2019. The items of the MRBQ were processed using factor analysis. Four logistic regression models were used to analyze the association between behavioral factors and aspects of demographics, operating conditions, and experiencing near-crashes, crashes, traffic tickets, and at-fault crashes.
Results: Four hundred and thirty-eight motorcyclists participated. The exploratory factor analysis extracted five elements: stunts, speed violations, traffic errors, control errors, and safety, explaining 42% of the variance. The increase in riding per week showed significant differences with stunts, speed violations, and traffic errors. Riding experiences, traffic errors, control errors, and safety were significantly associated with crashes and near-crashes. Stunts were the strongest factors related to traffic tickets. Speed violations were the strongest factors associated with at-fault accidents.
Conclusions: The study showed recent results considering behavioral, exposure, and operational conditions in a group of motorcycle taxi riders. The study recommends some practical implications

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Received 7 March 2021
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KEYWORDS
Motorcycle; crash; behavior; Motorcycle Rider Behavior Questionnaire (MRBQ); motorcycle taxi riders

…and with new d

Specific laws

Specific enforcement

Chad

Population: 14 452 543 | Income group: Low | Gross national income per capita: US$ 720

INSTITUTIONAL FRAMEWORK	
Lead agency	Ministry of Infrastructure, Transport and Civil Aviation
Funded in national budget	Yes
National road safety strategy	Yes
Funding to implement strategy	Partially funded
Fatality reduction target	From 4.4% to 2% (by 2018)
SAFER ROADS AND MOBILITY	
Audits or star rating required for new road infrastructure	Yes
Design standards for the safety of pedestrians / cyclists	Yes
Inspections / star rating of existing roads	No
Investments to upgrade high risk locations	Yes
Policies & investment in urban public transport	No
SAFER VEHICLES	
Total registered vehicles for 2016	1 124 000
Cars and 4-wheeled light vehicles	–
Motorized 2- and 3-wheelers	–
Heavy trucks	–
Buses	–
Other	–
Vehicle standards applied (UNECE WP.29)	
Frontal impact standard	No
Electronic stability control	No
Pedestrian protection	No
Motorcycle anti-lock braking system	No
POST-CRASH CARE	
National emergency care access number	–
Trauma registry	Some facilities
Formal certification for prehospital providers	Yes
National assessment of emergency care systems	No
DATA	
Reported road traffic fatalities (2016)	1 122 (96% M, 4% F)*
WHO estimated road traffic fatalities (2016)	3 990 (95% CI 3 110 - 4 870)
WHO estimated rate per 100 000 population (2016)	27.6

* Police Report and Hospital Register. From Jan-Oct 2016. Died within 7 days of crash

SAFER ROAD USERS	
National speed limit law	Yes
Max urban speed limit	60 km/h
Max rural speed limit	110 km/h
Max motorway speed limit	No
Local authorities can modify limits	Yes
Enforcement	0 1 2 ③ 4 5 6 7 8 9 10
Predominant type of enforcement	–
National drink-driving law	Yes
BAC limit – general population	≤ 0.08 g/dl
BAC limit – young or novice drivers	≤ 0.08 g/dl
Random breath testing carried out	No
Testing carried out in case of fatal crash	No
Enforcement	0 ① 2 3 4 5 6 7 8 9 10
% road traffic deaths involving alcohol	–
National motorcycle helmet law	Yes
Applies to drivers and passengers	Yes
Helmet fastening required	No
Helmet standard referred to and/or specified	No
Children passengers on motorcycles	Prohibited under 5 yrs
Enforcement	0 1 2 3 4 ⑤ 6 7 8 9 10
Helmet wearing rate	–
National seat-belt law	Yes
Applies to front and rear seat occupants	No
Enforcement	0 1 2 3 ④ 5 6 7 8 9 10
Seat-belt wearing rate	–
National child restraint law	No
Children seated in front seat	Not restricted
Child restraint required	–
Child restraint standard referred to and/or specified	–
Enforcement	–
% children using child restraints	–
National law on mobile phone use while driving	Yes
Ban on hand-held mobile phone use	Yes
Ban on hands-free mobile phone use	Yes
National drug-driving law	No

Data cleared by Ministry of Public Health

National motorcycle helmet law	Yes
Applies to drivers and passengers	Yes
Helmet fastening required	No
Helmet standard referred to and/or specified	No
Children passengers on motorcycles	Prohibited under 5 yrs
Enforcement	0 1 2 3 4 ⑤ 6 7 8 9 10
Helmet wearing rate	–

…and with new data…

Specific laws

Specific enforcement

Specific education:
driving licence curriculum
training of trainers
driving test reliable and effective

Boda Boda Safety Association of Kenya
BAK
SAFETY FIRST TOGETHER WE CAN
Its our time to Develop and Prosper

EFA
Europäische Fahrlehrer-Assoziation e.V.
Fédération Européenne Des Auto-Écoles
European Driving Schools Association
Driver Training For Life

Thank you

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