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TO LEGALISE OR NOT TO LEGALISE? ANALYSING THE RIDING BEHAVIOURS OF THE TRICYCLE RIDERS IN GHANA



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Background to the study



Tricycle business has been a notable development in the realm of urban mobility (Graaf et al., 2021).

Tricycles, also known as Pragma, Mahama Camboo , Yellow Yellow , Aboboyaa, and Keke, auto-rickshaws" or "tuk-tuks“ are popular due to their affordability, and ability to navigate through congested urban streets (Rao et al., 2023; Fosu, 2023)

However, this mode of transport has been characterized by several road crashes that sometimes result in fatalities, as they are accounted for 31.7% of road traffic fatalities in 2021 (Adomabea,2023)



Background to the study



An estimated **1.19 million people** died due to road traffic crashes in 2023 (WHO, 2023)



highest global road traffic fatality rate, estimated at **19.4 deaths per 100,000** population (WHO, 2023).



motorized two- and three-wheelers, including tricycles, have been identified as one of the most dangerous modes of transport.

- Studies indicate that the risk of death from a crash involving a motorized two- or three-wheeler is 28 to 34 times higher than that of a car occupant (Yasin et al., 2022).
- In Ghana, tricycles have been involved in numerous road crashes, and they are often attributed to reckless riding, lack of formal training, and inadequate adherence to traffic regulations (Adomabea et al., 2023).

Problem Statement

Tricycles: A Growing but Contested Transport Solution

Tricycle transportation has emerged as a popular alternative with about 2.5 to 3 million two-three wheelers, owing to governments' inability to provide efficient and reliable public transport systems (Tunje and Yogo, 2020).

Political & Legal Divide:

NDC vs NPP position on legalisation.

Safety Crisis

Tricycles have limited crashworthiness,

- ✓ low-speed collisions posing severe injury risks (Omoke et al., 2019).

Research Gaps

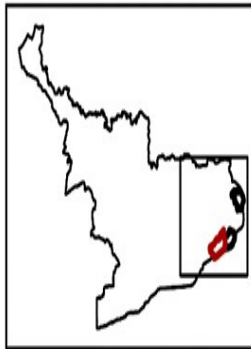
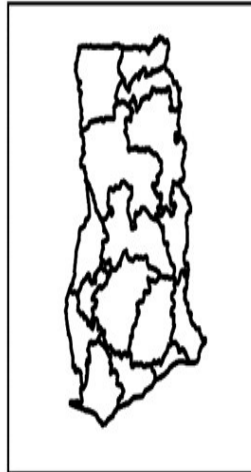
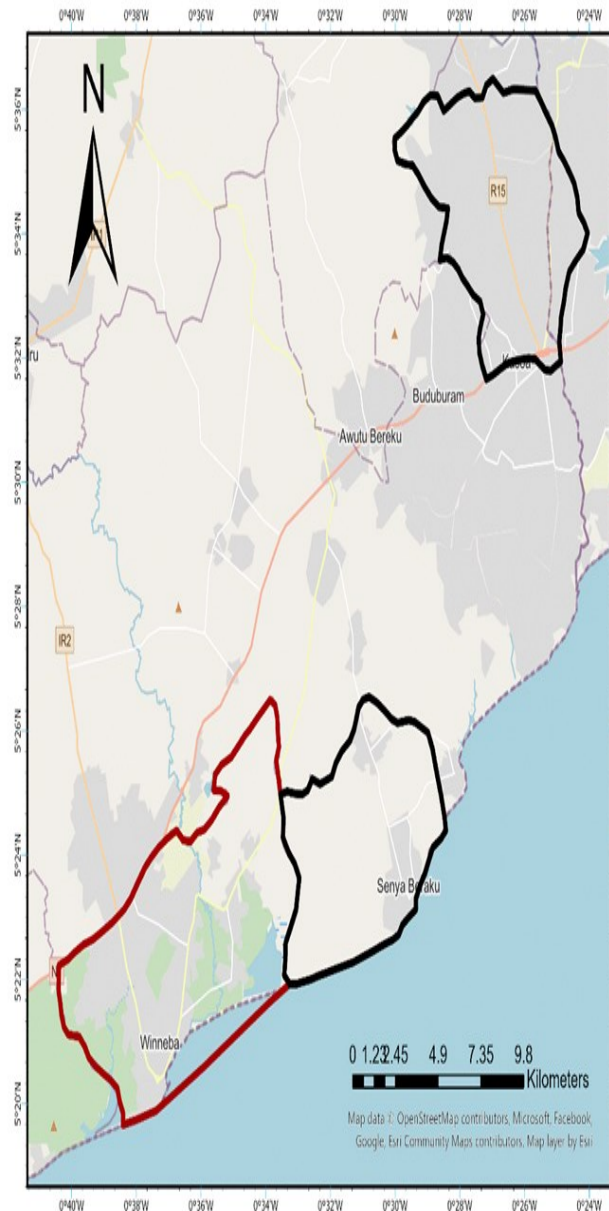
Existing studies focus on;

- ✓ **When and where crashes occur** (Adomabea et al., 2023; Owusu-Ansah et al., 2024)
- ✓ **Temporal, spatial, and infrastructural factors** (Agyemang et al., 2017; Afukaar et al., 2019).
- ✓ **However, these studies pay limited attention to how rider behavioural patterns contribute to crash risk.**

Problem Statement

- **Kasoa** and **Winneba** have seen a rise in the use of motorized two- and three-wheelers as a means of commercial transport (Jack et al., 2021)
 - ✓ Involving in about 28% of RTC.
- The ongoing **debate** underscores the need for a balanced approach that considers **both safety concerns and economic realities.**
- While economic arguments have dominated discussions, there has been limited focus on the **safety** implications of commercialising tricycle operations.
- **This Study's Focus**
Investigates behavioral risks (speeding, helmet use, compliance) to inform:
Legalization debates and **Evidence-based safety policies**

Profile of the Study Areas



	AWUTU SENYA EAST	EFFUTU MUNICIPAL
Total population (2021, PHC)	236,527	107,798
Economic activities	<ul style="list-style-type: none"> • Retail and wholesale trading • Street vending and informal business 	<ul style="list-style-type: none"> • Fishing • Trade • Tourism.
Transport mode	Taxis, Trotros, and tricycles	Taxis, Trotros, and tricycles

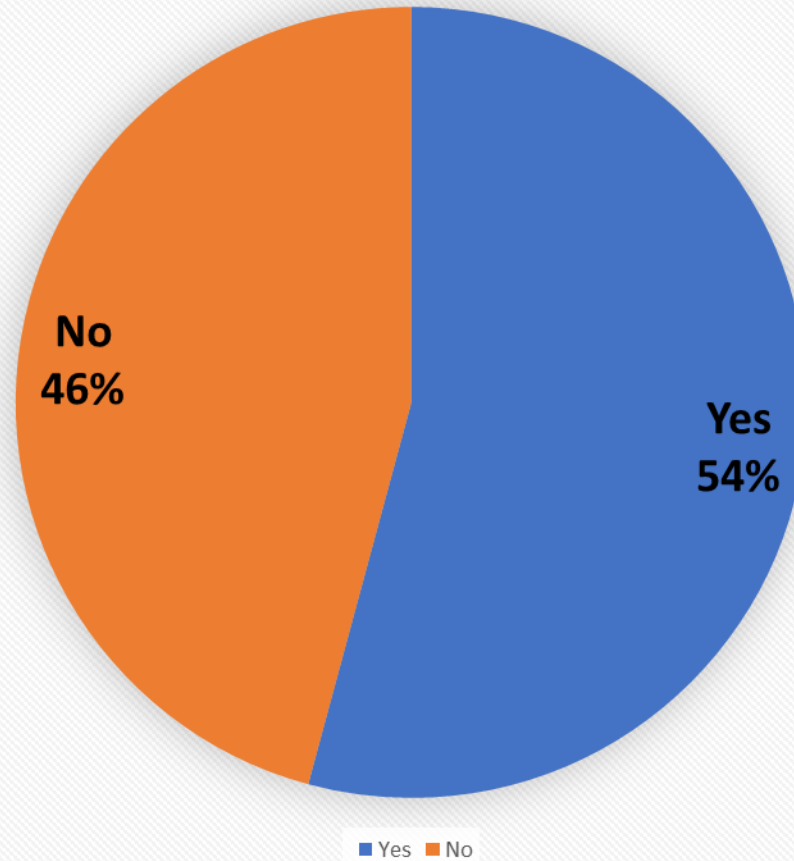


Methodology

METHODOLOGY	QUANTITATIVE	QUALITATIVE
Design	Explanatory Sequential	
Target population	Tricycle riders	Tricycle riders, MTTD officers, DVLA Officer
Sample Size	264 riders Krejcie and Morgan's (1970) sample size formula for a finite population sample size	10 riders, 4 MTTD officers, 1 DVLA Officer
Sampling techniques	On-the-spot (Intercept)	Purposive sampling
Instruments	Questionnaire (KoboToolBox)	semi- structured Interview guide
Analysis	Descriptive and Inferential (Reliability analysis; Regression), SPSS v 27, Ms Excel,	Inductive coding/thematic analysis, Document analysis MAXQDA v 2020
Ethical Consideration	Confidentiality and privacy of the information shared during the study. Maintained anonymity and protect the participants' identities.	

Sociodemographic of Respondent

CRASH INVOLVEMENT



Errors= 9 items, Lapses=4 items, and Violation= 3 items.

Most recurring behaviour

Least recurring behaviour

Never (1.00 – 1.80), Rarely (1.81 – 2.60)

Sometimes (2.61 – 3.40), Often (3.41 – 4.20)

Always (4.21 – 5.00)

Category	Item	Mean	SD	Composite	
				Mean	SD
Errors	Manoeuvre without checking mirror	2.66	1.03	2.94	0.94
	Disregard the speed limit on a motorway road	3.33	1.39		
Lapses	Ride without using a helmet	3.51	0.97	3.71	0.99
	Refuse to wear a protective jacket whenever riding	3.87	1.13		
Violations	Deliberately annoy other drivers by tailgating and not giving way	2.64	1.29	2.84	1.18
	Disregard red lights when driving late at night along empty roads	3.02	1.40		

Influence of Riding Behaviours on Tricycle Rider Crash Involvement

- Multinomial logistic regression analysis
 - The model explained between:
 - ✓ 9.0% (Cox and Snell R-squared) and
 - ✓ 9.8% (Nagelkerke R-squared) of the variance in crash involvement.
 - The model was statistically significant ($\chi^2(93) = 140.740$, $p = .001$), indicating that the predictors could differentiate between crash involvement categories

Influence of Riding Behaviours on Tricycle Rider Crash Involvement

- Multinomial logistic regression analysis

No. of times rider is involved in a crash	Predictors	B	Std. Error	Wald	df	Sig	Exp(B)	95% C.I for Exp(B)	
								Lower Bound	Upper Bound
1-2	Intercept	-.085	1.062	.006	1	.936			
	Error	.039	.339	.013	1	.908	1.040	.535	2.021
	Violation	-.196	.262	.558	1	.455	.822	.492	1.374
	Lapses	.601	.275	4.784	1	.029	1.823	1.064	3.123
	Intercept	1.258			1	.236			
3-4	Error	-.123			1	.721	.884	.450	1.739
	Violation	-.187			1	.494	.829	.484	1.419
	Lapses	.229	.280	.671	1	.413	1.258	.727	2.176

Reference category = 5+ times

This indicates that riders who frequently experienced lapses were about 1.82 times more likely to be involved in 1-2 crashes compared to riders who had been involved in 5+ crashes

Analysis of rider's behaviour in terms of age

DV	χ^2 (Kruskal-Wallis H)	df	p-value
Errors	14.388	3	.002
Violations	7.731	3	.052
Lapses	9.469	3	.024

Post hoc Analysis of rider's behaviour in terms of age (errors)

Sample Comparison	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.a
18–24 years – 25–31 years	-16.727	8.633	-1.937	.053	.316
32–38 years – 18–24 years	50.217	24.590	2.042	.041	.247
39+ years – 32–38 years	53.438	53.565	.998	.318	1.000
32–38 years – 25–31 years	66.943	24.851	2.694	.007	.042
39+ years – 18–24 years	103.654	48.230	2.149	.032	.190
39+ years – 25–31 years	120.381	48.364	2.489	.013	.077

Analysis of rider's behaviour in terms of education

DV	χ^2 (Kruskal-Wallis H)	df	p-value
Errors	8.730	3	.033
Violations	7.603	3	.055
Lapses	5.951	3	.114

“...We frequently observe cases where riders disregard speed limits, fail to check mirrors before manoeuvring, and pull out in front of other vehicles without properly assessing the situation” (MTTD Officer-1 at Winneba)

“...One of the most alarming issues we have identified is the refusal of riders to wear helmets. We have seen multiple cases where riders suffered severe head injuries that could have been avoided if they had worn helmets.”
(MTTD officer -2 at Winneba)

- Risky riding behaviours remain common among tricycle riders
- Failure to use protective gear was the most dominant unsafe behaviour.
- Riding lapses significantly increased the likelihood of crash involvement
- Education level influenced riding errors
- Most risky behaviours identified are preventable.

Lesson for urban transport needs and planning

- ❑ While banning tricycles may not be practical due to their economic importance, legalizing them without proper control could worsen safety problems.**
- ❑ Therefore, the study supports conditional legalization, where tricycles are allowed to operate under strict regulations.**
- ❑ This should include rider training, enforcement of safety rules, improved vehicle standards, and better monitoring systems.**
- ❑ Ultimately, the focus should not be on whether to legalize tricycles, but on how to legalize them safely to protect both riders and passengers.**

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Thank you!