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Motorcycle Taxis (Boda-Boda) Business: An Essential Service and Economically Appealing with Significant Public Health Risk in Muleba District, Tanzania

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ABSTRACT

Motorcycle taxis, commonly known as “Boda-Boda,” are a ubiquitous and essential mode of daily transport in both urban and rural areas of Muleba District, Tanzania. They are used to transport people, animals, and goods. Using a mixed-methods approach (interviews, focus groups and 600 surveys), the study reveals high community risk awareness alongside rationalized acceptance driven by acute economic precarity and a lack of alternatives. Findings expose systemic regulatory failure, where enforcement is perceived as revenue collection rather than a safety mechanism. The study concludes that the crisis stems from broader developmental gaps in transport, governance and employment. The study advocates for integrated, evidence-based interventions that combine affordable safety measures, community-led enforcement, and economic incentives to align livelihood needs with public health safety.

INTRODUCTION

In many rapidly urbanizing regions across the Global South, informal public transport systems have emerged as the dominant solution to mobility gaps created by inadequate formal infrastructure and services (Cervero & Golub, 2007; Kumar & Barrett, 2008). These systems, which are frequently described by their flexibility, low costs, and access to the network, become invaluable lifelines of millions of people, linking peri-urban communities and rural communities both to the markets, to workplaces, to healthcare, and to educational facilities (Salon & Gulyani, 2010; Primc *et al.*, 2023). Motorcycle taxis, which are widely referred to as okada in Nigeria, ojek in Indonesia, and Boda-Boda in East Africa, are one of the most widespread and vibrant ones (Ehebrecht, 2020; Olvera *et al.*, 2021). Their explosive growth highlights a complicated interconnection between ingrained socioeconomic need, on-site entrepreneurship, and immediate necessity of fast, door-to-door transportation options in situations when the traditional public transportation is either limited, ineffective, or prohibitively expensive (Howe, 2003; Jones & Brown, 2020).

The economic and unquestionable usefulness of Boda-Bodas is being tainted by a sober and disturbing fact, though: their disproportionately high rate of accidents, wounds, and deaths (Porter *et al.*, 2013; Ministry of Health, Tanzania, 2023). Motorcycles have remained a major proportion of the road traffic fatalities in Tanzania and health institutions and trauma centers have continued to report the seriousness of injuries that are sustained by them, including head injuries, fractures, and soft tissue injuries (Akasreku *et al.*, 2023, 2017; Moshi *et al.*, 2022). A

combination of factors complexes these risks, such as an overall absence of formal training as a rider, the violation of traffic rules, poor maintenance of the vehicles, the widespread overloading of the vehicles, and the low use of the safety equipment, especially helmets, by the riders and passengers (Oluwadiya *et al.*, 2020; Bachani *et al.*, 2021).

Despite this apparent and widely documented risk, Boda-Bodas still remain the desirable, and sometimes the only, option of transport among millions of people. This forms an interesting paradox: an instrument of socioeconomic lifeblood and a serious health risk to the population at the same time (Hyder *et al.*, 2020). The fact that Boda-Bodas are accepted in society, and they are still essential, even being inherently and notoriously risky, is a topic that needs to be explored critically, and the traditional risk-benefit paradigm would be defied and the short-time economics and mobility imperatives would be placed over health and safety (Slovic, 1987; Johnson & Lee, 2019).

This is a very acute paradox in Muleba District. Boda-Bodas do not represent an option; it is a dominant, nearly essential, everyday mode of transport that pervades its busy trading hubs and its rural expanses that are typified by difficult topography (URT, 2024). This research thus attempted to fill this knowledge gap on this paradox by presenting empirical data in a given Tanzanian district that would offer insights to be used in more specific, context-sensitive and effective policy intervention.

Problem Statement

The critical role of Boda-Bodas in facilitating mobility, enabling market access, and sustaining economic activity

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in East Africa, particularly in Tanzania's Muleba District, is undeniable and well-documented (Rizzo, 2017; Kumar & Barrett, 2008). Nevertheless, the issue of a sharp contradiction between their immense usefulness to society and the harsh and detrimental risks that they represent to life and limb is present and ongoing (URT, 2024). This issue is structural, as the result of a complicated interaction of profound socioeconomic dependence, poor regulatory control introduction and implementation, and a threatening and not much studied population health cost burden that impacts local health services (Bachani *et al.*, 2017; Ministry of Health, Tanzania, 2023).

Although the extent of accidents, injuries, and fatalities associated with Boda-Boda has become widely known among different segments of the population, particularly when reported by national health institutions, local media, and even the trauma registries (Akasreku *et al.*, 2023, 2017; Moshi *et al.*, 2022; Kamau, 2017; URT, 2024), the usage of this means of transport only increases throughout Tanzania. This poses a severe public health crisis: an essential service that, at the same time, causes considerable morbidity and mortality in the country, especially among young economically active males (World Health Organization, 2021). The unregulated and informal aspect of the Boda-Boda industry leads to a high-risk working environment with the lack of formal training of riders, the absence of the adherence to traffic laws, the inadequate conditions of vehicle maintenance, the overloading of motorcycles, and a very low proportion of the usage of protective equipment, particularly helmets (Oluwadiya *et al.*, 2020; Gishkori and Mfinanga, 2020). These are some of the risk factors that are well-established within the literature on public health and traffic safety, but the demand is not elastic, implying that to the population a perceived immediate payoff, which is affordability, unmatched accessibility, and speed are currently overwhelming the perceived risk, which is often discounted (Slovic, 1987; Johnson & Lee, 2019). This further uptake, though manifested, with the presence of information, is a major disparity in the perception of behavioral economics and risk-taking by communities in regard to the particular socio-economic context of their knowledge.

One of the disturbing and evidently weak reactions to this issue is the apparent lack of leadership by key stakeholders in governance, such as policymakers, land transport regulators, social developers, and local and central governments (Ndeijo *et al.*, 2015; Goodfellow, 2015). Although the Boda-Boda phenomenon is an established aspect of the transport environment decades-old, comprehensive, and effective regulatory frameworks, along with sustained campaigns on public safety seem to lack, even though they are disjointed, or poorly enforced, primarily at the district and community levels (World Bank, 2017). It is this lack of regulation and enforcement that enables risks to proliferate and grow, a situation that provides a platform where convenience and economic needs always takes precedence over safety

considerations (Martin *et al.*, 2023). The absence of proactive, coordinated, and scalable responses to enhance institutional capacity, political goodwill, and prioritization of the safety of the populations in an informal sector that is associated with political sensitivity and economic value creates real concerns (Olvera *et al.* 2020; Goodfellow, 2015; Mdee, 2018). In Muleba District this issue is strongly experienced and develops in its particular acuteness. Boda-Bodas predominantly offer default transportation services to a wide variety of demands, such as daily transportation and urgent agricultural transportation services, in a region where the topography restricts alternatives to transport means (Muleba District Council, 2021; URT, 2024). The area has distinct socio-economic factors, such as unemployment among the young people, the format of agrarian trade, and population distribution, which are probably the reasons behind the increased dependency, thus rendering the safety issues especially acute and disastrous to the family (Muleba District Council, 2021). The apparent outcomes of accident rates and their long-term socio-economic consequences for families in the Muleba District highlight the need to go beyond a generic conception of the issue. It is urgently important to explore particularly why these communities still follow this unsafe means of transport and critically evaluate what exactly, or nothing, is being done by local governments to alleviate the situation (Gómez *et al.*, 2021). The lack of a clear, evidence-based knowledge of both the demand-side drivers (user and rider perspectives, risk perception) and the supply-side regulatory reactions (institutional capacity and action) prevents the drawing of effective, sustainable and locally acceptable interventions, as well as successful implementation.

This paper examined how the Muleba District community had become reliant on the Boda-Boda transport which was an activity perpetuated despite the overall understanding of its high risks and the lack of any form of overall regulation over it. Through this community dependency and the absence of effective governance, the study established empirically the factors that motivated this continuity in adoption and reporting the available interventions by local governments. It eventually developed a comprehensive evidence-based advocacy to engage context-specific, multi-stakeholder solutions aimed at improving safety and regulatory governance in the Boda-Boda sector of the district.

Informed by a set of qualitative goals, the initial investigation of the study was on the lived experiences, perceptions, and decisions of riders and passengers that created a continuation of use despite known risks. It then attempted to gain insight into underlying socio-cultural and economic conditions, which made risk normal and formed the risk benefit calculus of the community. Lastly, the paper has examined institutional and governance lenses to determine the perceived problems, existing curtailment strategies, and the key impediments to successful regulation and enforcement in the industry.

LITERATURE REVIEW

Theoretical Framework

This study is situated at the intersection of public health, transport economics, and institutional governance. It employs a multi-faceted theoretical lens to understand the paradoxical reliance on a risky yet indispensable transport system.

Theoretical Underpinnings

Two major theoretical frameworks are used to analyze the data. To begin with, there is the Risk Perception Theory (Slovic, 1987), which explains the reason why people can consciously take up risky actions. This theory is based on the idea that risk is subjectively constructed and not the statistical probability, but rather other factors such as dread, controllability and immediate benefits influence its construction. The direct, physical advantages of Boda-Bodas, such as affordability, access, and speed, will probably be more concrete in Muleba than the abstract or delayed threat of an accident Mbegu & Mjema, 2019). In addition to this, the habitualization of risk among a community can reduce the perceived seriousness of the risk, which is witnessed in high-risk and high-utility settings (Rosenstock, 1974).

Second, one of the theories to examine the regulatory environment is called the Institutional Theory (Scott, 2013). It assists in the understanding of the continuation of informal sectors and the obstacles of formalization. The Boda-Boda business in Tanzania has acquired a good level of social legitimacy, which has made it an entrenched industry. This renders the enforcement of this regulation top-down politically and practically challenging (Goodfellow and Titeca, 2012). The seeming lack of action by the authorities can be viewed as a pragmatic, though problematic, reaction to an industry that serves such an important role in which the state has failed to come up with an alternative (Cervero, 2000).

Empirical Literature Review

Empirical studies of informal transport in Sub-Saharan Africa have invariably shown that informal transport is a bottom-up reaction to infrastructural shortages. According to Cervero and Golub (2007), such paratransit modes as Boda-Bodas are fill-ins of the poor formal transport system. The sector is now an important source of employment, especially among the young people in East Africa, and it serves as a social safety nets (Howe, 2003; Ngalesoni et al., 2025).

But a harsh public health crisis casts a dark cloud on this economic utility. Research on the continent is recording unproportionately high death rates and road traffic injury rates linked to motorcycle taxis (Porter, 2016; Naddumba, 2004). Studies conducted in related settings in Tanzania have determined that a combination of risk factors exists: the absence of formal rider training, inadequate vehicles maintenance, the absence of safety helmets, and egregious disregard of road regulations (Museru, Leshabari, and Mbembati, 2002; Akasreku et al., 2023, 2017). According

to the Ministry of Health, Tanzania (2023), road traffic accidents, the motorcycles of which are also a significant cause, are among the primary causes of trauma admission and preventable mortality.

One of the most important gaps in the literature to fill in by this research is this subtle comprehension of why despite this thoroughly documented threat, the community dependency only aggravates. Although reports such as the one by Kamau (2017) provide details on the economic integration, other reports (e.g., World Bank, 2017) provide policy issues, but a large number of research did not combine extensive descriptive information with deep qualitative research in the district level. This study aims to address this gap by offering both the quantitative trends and contextualized in depth knowledge on the lived experiences of Muleba District as well as the institutional logics.

MATERIALS AND METHODS

Research Design

To examine the multidimensional phenomenon of Boda-Boda in the Muleba District, this paper used a convergent parallel mixed-methods design (Creswell, 2018; Fetters, 2020; Schoone boom and Johnson, 2017), which was chosen in a strategic manner. This design allowed collecting data simultaneously and analysing complementary strands separately: a quantitative survey with generalizable patterns of economic dependency, safety behaviours and risk perceptions among riders and users, and qualitative in-depth interviews and focus groups with lived experiences, risk rationalisation and the issue of institutional governance (Ivankova, 2020). Integration was done at the phase of interpretation as joint display analysis (Fetters *et al.*, 2013; Guetterman *et al.*, 2021) could be guaranteed so that statistical results were contextualized meaningfully in the local socio-economic context. This triangulation approach increased the validity and offered a holistic perception of why the Boda-Boda industry remains an essential service and a health crisis to the population in Muleba District (Morse & Niehaus, 2016).

Population

The study was conducted in Muleba District, Kagera Region, Tanzania, between July and November 2025. The target populations comprised: Boda-Boda Riders: Individuals operating motorcycle taxis within the district. Boda-Boda Users: Residents aged 18 and above who had used a Boda-Boda at least once in the preceding month. Key Informants: Officials from regulatory and enforcement agencies.

Sampling and Data Collection

Quantitative Survey

A total of 600 stakeholders were surveyed using structured questionnaires adapted from validated instruments used in similar transport studies in Sub-Saharan Africa (Porter, 2016; Naddumba, 2004).

Table 1: Sample Characteristics

Quantitative Sample Composition			
Category	Number	Percentage	Sampling Method
Boda-Boda Riders	400	66.70%	Multi-stage random sampling from stages
Boda-Boda Users	200	33.30%	Systematic random sampling from households
Total	600	100%	

Sampling Procedure: A multi-stage probability sampling method was also adopted in order to have a representative cross-section of Boda-Boda ecosystem in Muleba District (Johnson & Christensen, 2020; Teddlie & Yu, 2007). To begin with, the wards in the district were stratified according to the official council classifications (urban/n=3 and rural/n=5) to consider the difference in mobility patterns and infrastructure. Second, a random number sequence was generated by a computer to select two wards in each stratum in order to reduce the impact of selection bias (Babbie, 2021; Lohr, 2019). Third, a cluster sampling frame was created within each of the chosen wards: a list of all the important rider recruiting Boda-Boda stages was created, and a list of all the cases of households recruited as users was created by means of systematic listing every fifth household (Fowler, 2014; Kalton, 2020). Lastly, systematic sampling was used: all the third riders on the list of participating in the enumeration and the oldest adult (age 18 and above) who ever used a Boda-Boda in the last month who lived in the selected households were invited to participate (Levy & Lemeshow, 2013; Salganik, 2018). This was done until sample quotas (400 riders, 200 users) were met and the two strata were represented proportionately (Groves *et al.*, 2009; Etikan, 2016). The pre-tested 30-participant survey instrument was used to collect data on: socio-demographics, work/usage patterns, economic pressures (depending on daily earnings to dependency ratio), risk perception (5-point Likert scale), safety behaviors, and regulation attitudes (Ndeijo *et al.*, 2015; Gishkori and Mfinanga, 2020).

Qualitative Component

The qualitative aspect used a methodological triangulation wherein several data collection techniques were used to improve the credibility, dependability, and confirmability of the results in line with the recognized qualitative research credibility standards (Lincoln and Guba, 1985; Patton, 2015). The 30 participants who took part in In-Depth Interviews (IDIs) were chosen through purposive sampling to ensure as much variation as possible was captured in the study: 15 BodaBoda riders, and 15 regular users, aged, gendered, and experienced according to the years, as well as having their personal experience of accidents (Patton, 2015). Key Informant Interviews (KIIs) were also conducted on five officials to obtain institutional and regulatory visions, namely two Traffic Police officers (one senior, one junior), two officials in the Muleba District Council (in Planning and Transport departments) and one official in the Land Transport Regulatory Authority (LATRA). Every interview employed semi-structured guides (Brinkmann and Kvale, 2018) that include open-ended questions and customized probes to investigate the risk stories of the participants, the daily decision-making calculus, and perceptions about governance. The interviews took 45-90 minutes and were in Swahili to make the interviewees feel valued and to capture the details, and meant to be audio-taped with permission to be transcribed verbatim to be analyzed.. Focus Group Discussions (FGDs): Four FGDs were conducted, each with 8 participants (total N=32), homogeneously grouped as shown below:

Table 2: FGD Composition

FGD Composition				
FGD Group	Participants	Gender	Mean Age	Key Characteristics
FGD 1: Male Riders	8	Male	28.5	Stage veterans & newcomers
FGD 2: Female Riders	8	Female	32.8	Rare female riders
FGD 3: Male Users	8	Male	35.2	Regular users, mixed occupations
FGD 4: Female Users	8	Female	29.7	Mothers, market women, farmers

FGDs followed a discussion guide focusing on shared norms, collective sense-making, and community attitudes. They were conducted in neutral venues (community halls, cooperative offices) and lasted 90-120 minutes.

Data Analysis

Quantitative Analysis: The survey data were coded, cleaned and inserted into Microsoft Excel. The frequency, percentages, means, and standard deviations,

as descriptive statistics, were calculated to summarize the socio-demographic attributes, economic variables, perception of risk, and safety behavior of the two groups of riders and users (Pallant, 2020; Field, 2018). **Qualitative Analysis:** All the interviews and FGDs were audio-recorded, transcribed directly in Swahili, and translated to English. Thematic analysis was conducted in accordance with the six phases proposed by Braun and Clarke (2006) familiarization with the data, (2) initial codes generation,

(3) searching themes, (4) reviewing themes, (5) defining and naming themes, and (6) report production. Peer debriefing and member checking were used to improve the rigor (Nowell *et al.*, 2017). Integration: The parallel analysis was followed by an integration of results obtained in both of the strands, through a joint display table (Fetters *et al.*, 2013; Guetterman *et al.*, 2021). This systematic methodology enabled to detect convergence (where the results matched), complementarity (where every technique supplemented the knowledge about various aspects), and dissonance (where the contradictory outcomes raised a significant interpretation), which

resulted in a consistent, subtle picture of the Boda-Boda ecosystem in the Muleba District..

Ethical Considerations

Ethical approval was obtained from the Muleba District Medical Office and the Kagera Regional Research Committee. Informed consent was obtained from all participants. Special protocols were established for discussing traumatic experiences, including providing information on local counseling services. All data were anonymized, and identifiers were removed.

Table 3: Demographic Profile of Survey Respondents (N=600)

Demographic Profile of Survey Respondents (N=600)*			
Characteristic	Riders (n=400)	Users (n=200)	Total
Gender			
Male	384 (96%)	116 (58%)	500 (83%)
Female	16 (4%)	84 (42%)	100 (17%)
Age (years)			
18-25	165 (41%)	45 (23%)	210 (35%)
26-35	185 (46%)	85 (43%)	270 (45%)
36+	50 (13%)	70 (35%)	120 (20%)
Mean Age	26.7	32.4	28.9
Education Level			
Primary or less	310 (78%)	130 (65%)	440 (73%)
Secondary	85 (21%)	60 (30%)	145 (24%)
Post-secondary	5 (1%)	10 (5%)	15 (3%)
Primary Occupation			
Boda-Boda only	400 (100%)	0	400 (67%)
Farming	0	90 (45%)	90 (15%)
Small-scale trade	0	60 (30%)	60 (10%)
Formal employment	0	30 (15%)	30 (5%)
Student	0	20 (10%)	20 (3%)

RESULTS AND DISCUSSION

Demographic and Socio-economic Characteristics

The data reveals a predominantly young male demographic among riders, with 96% male and 87% aged 35 or younger. This aligns with literature identifying

Boda-Boda as a youth employment sector in East Africa (Ngalesoni *at al.*, 2025; McCormick *et al.*, 2020). The low education levels (78% with primary education or less) reflect findings by Kumar (2011) on limited alternative employment options.

Table 4: Risk Perception and Safety Practices

Perceptions & Risk Analysis			
Perception Metric	Riders % (n=400)	Users % (n=200)	Total % (n=600)
View Boda-Boda as "Dangerous/Very Dangerous"	89%	95%	92%
Consider Boda-Boda "Essential/Indispensable"	94%	83%	90%
Have refused a ride due to safety concerns	N/A	71%	71% (of users)
Rate themselves as "Very Safe" drivers	55%	N/A	N/A
HELMET USAGE PATTERNS (Riders)	Percentage	Count (n=400)	
Own a helmet	99%	396	
Always wear personally	34%	136	

Often wear (not short trips)	51%	204	
Rarely wear	15%	60	
Provide passenger helmet regularly	8%	32	
Provide passenger helmet sometimes	22%	88	
Never provide passenger helmet	70%	280	
HELMET NON-USE BARRIERS	Percentage	Count	
Cost too high	70%	280	
Passengers refuse/uncomfortable	45%	180	
Theft risk at stages	40%	160	
Too hot/uncomfortable	35%	140	
Short trips don't need it	60%	240	

Risk Perception and Safety Behaviors

The data shows that there is a fundamental contradiction in Boda-Boda dependence: almost the entire population (92% of all respondents) is aware of the presence of danger (90%). This trend is reminiscent of Risk Perception Theory in which the immediate and definite benefit of economic and mobility (e.g., daily income, market access) is always stronger than the abstract and probabilistic risk of being in an accident (Slovic, 1987; Johnson & Lee, 2019). This is not just a lack of knowledge but a logical calculus of risks, formed by limited options (Hyder *et al.*, 2020).

Adding to light in this paradox, even though 55 percent of riders identified themselves as very safe drivers, their helmet behavior appears motivated by situational and strategic adherence to wearing a helmet instead of internalized safety behavioral norms. The difference between almost universal possession (99%), on the one hand, and low consistency (34% always wears helmet) on the other hand shows that helmets are used as devices to avoid fines during police interactions as opposed to wearing protective equipment (Oluwadiya *et al.*, 2020). This is supported by the key impediments to utilisation: economic cost (70%), and the inutility of short trips (60%). The low rate of passenger helmets (8 per cent only regularly) highlights how safety is in most cases positioned as an individual obligation as opposed to a duty of the profession, and contributes to the susceptibility of users, exhibiting no bargaining power in the process (Bachani *et al.*, 2021).

FGD Risk Perception and Safety Practices:

The depth and meaning of the quantitative risk paradox are provided by the qualitative stories presented by Focus

Group Discussions, which show a value of short-term survival over probabilistic safety. The economic urge in the Male Riders FGD was couched in heavily comparative terms, as one of the Stage Chairman (age 45) put it: You ask about risk? My children demand food on a daily basis. That is certain. An accident is maybe.” The statement serves as an eloquent example of the overpowering influence of immediate and concrete needs (daily subsistence) over abstract and distant threats (a possible accident), which is a cognitive mechanism at the heart of risk perception models in high-uncertainty environments (Slovic, 1987; Johnson and Lee, 2019).

On the same note, the Female Users FGD showed some insights on the importance of gendered constraints on accessibility. The market woman (38 years old) said: I cannot go to the clinic with a sick child without Boda, cannot take goods to the market. My whole domestic finances come to a halt. This quote underscores the fact that to most users especially women who have to deal with domestic and economic responsibilities, the Boda-Boda is not just the convenience, but a social reproduction infrastructure that is of dire need. The perceived risk is therefore balanced with the definite outcome of immobility, which includes health, economic and caregiving failures (Porter *et al.*, 2021).

All these stories help to prove that continuing to use Boda-Boda is not evidence of inadequate risk understanding but an economic and social calculation that is conducted in an environment of extreme limitations. The results echo well the literature on informal transport since the risk-benefit equation was reorganized by poverty, and risky decisions made sense and were necessary on the context of every-day survival (Johnson and Lee, 2019; Rizzo, 2017).

Table 5: Accident and Trauma Experiences

Perceptions & Risk Analysis			
ACCIDENT EXPERIENCES & TRAUMA			
EXPERIENCE TYPE	Riders (n=400)	Users (n=200)	Total (n=600)
Been in accident (minor/major)	192 (48%)	62 (31%)	254 (42%)
Witnessed any Boda-Boda accident	380 (95%)	190 (95%)	570 (95%)
Witnessed fatal accident	160 (40%)	80 (40%)	240 (40%)

Close family/friend seriously injured/killed	152 (38%)	76 (38%)	228 (38%)
POST-ACCIDENT BEHAVIOR CHANGE	Riders %	Users %	
Increased caution for <1 month	78%	72%	
Sustained change (>6 months)	28%	35%	
Changed riding/usage patterns permanently	25%	30%	
ACCIDENT CONSEQUENCES (Households affected)	Percentage	Count	
Severe economic hardship	92%	209/228	
Sold assets/livestock	70%	160/228	
Took high-interest loans	45%	103/228	
Children removed from school	30%	68/228	
PSYCHOSOCIAL IMPACT (Survivors)	Percentage		
Report trauma symptoms	72%		
Received formal psychosocial support	1%		
Attributed healing to "time"	45%		
Attributed healing to "faith/prayer"	40%		

Accident Experiences and Trauma

The statistics demonstrate a community that is overloaded with trauma that is widespread and normalized. The rates of direct involvement in accidents were incredibly high and 42 out of 100 respondents were involved in an accident, which is significantly higher than the estimates of the motorcycle-related injuries at the national level (Ministry of Health, 2023; WHO, 2023; 2024) implying that much of the accident information is underreported in the official statistics of the health and police data. This normalization is also supported by the fact that almost every person had witnessed the accidents (95%), and secondary trauma is very prevalent, with thirty-eight percent of the respondents having close family members or friends being seriously injured or killed.

Socio-economic impact on the concerned households was devastating and long lasting. To the 228 households directly affected, 92 percent went through hard economic times mainly by liquidation of productive property (70 percent) or else by acquiring debilitating debt (45 percent). The intergenerational implication is evident as a third of them were compelled to take children out of school. Psychosocially, although 72% of survivors indicated symptoms that were related to trauma (e.g., anxiety, sleeping problems), the fact that there was virtually no formal support (1%) highlights an overall neglect of the system. Healing was explained by passive (time, 45%), or spiritual coping (faith/prayer, 40%), which indicates an internalization of suffering on the community level when it cannot be addressed through the institutions (Bachani *et al.*, 2021).

Most importantly, the temporary character of safety behavior change after the accident discloses the drawbacks of experiential education within the context of the structural economic effects. Though more than 78 percent of riders and 72 percent of users said that they felt more cautious this was almost entirely on a short-

term basis (less than 1 month). The percentage of those who did change permanently was 25-30, which means that the economic need to work now always prevails over the memory of risk (Johnson & Lee, 2019).

Qualitative Trauma Narratives: These numbers are provided with human aspect through qualitative narratives. One of the riders summed up what a broken system made of community-based assistance: "My friend was killed on Nshamba road. We gathered one point two million to be buried. The following month, his wife was pleading. The grief economy provides lump sum rather than pension. This "grief economy" (Rizzo, 2017) involves an unofficial, acute-stage social protection system but does not give the long-term stability to avoid falling into poverty. In addition, the extremely low proportion of official reporting of accidents (23 percent of those involved) can be associated with the literature on the informal resolution of crashes in order to avoid contact with the police, payment of fines, and impounding of bikes, which is rational behavior and only increases the invisibility of the scale of the public health crisis (Oluwadiya *et al.*, 2020; Gishkori and Mfinanga, 2020).

FGD insights on Accident Experiences and Trauma

Qualitative data served as important background to the short-lived behavioral change of post-accident survival that was witnessed in the survey. The Focus Group Discussions were found to display a pattern at the community level that is referred to by the name of safety seasons- periods of extra vigilance that is both time-bound and socially supported and directly occasioned by a local demise in the area. An interviewee in Male Users FGD has underpinned this strongly: When Musa met his demise in the Nshamba road last year, we collectively wore helmets a month. Now? Look around. It is as though a mutual pact that checks us not to remember.

The process of risk normalization and decay is a socially mediated process (Rosenstock, 1974; Giddens, 1991). A

traumatic experience temporarily breaks the normalized view of risk in which danger becomes salient and leads to shared, performative compliance with safety norms (e.g. universal helmet use). But without long-term structural incentives or coercion, and without the unremitting onslaught of everyday economic life, the perception of risk in the community slowly returns to normal. The bright recollection of the accident is erased with the daily reality of economic necessity, and actions have returned to the pre-crisis level. This oscillatory trend provides the

answer to the survey result that, major, long-term (>6 months), behavioral change was uncommon (28-35%), since the personal determination is constantly buffered by the societal and monetary tiding. This realization undermines interventions that rely on the fear-only or awareness only, which can only bring about temporary periods of safety unless they do so in conjunction with changing underlying economic and regulatory environment.

Table 6: Economic Pressure Indicators

Economic & Social Factors		
ECONOMIC PRESSURE INDICATORS (Riders)	Percentage	Count
Boda-Boda as only income source	87%	348
Support 4+ dependents	82%	328
Cannot afford to miss a day's work	73%	292
Have high-interest startup loan	65%	260
Average daily earnings (TZS)	15,000-25,000	N/A
TRANSPORT ALTERNATIVES (Users)		
	Percentage	Count
No reliable public transport for common trips	91%	182
Average wait time for alternatives	1.5 hours	N/A
Would use safer alternative if available	88%	176
Cost is primary decision factor	85%	170
SOCIAL NORMS & PEER INFLUENCE		
	Riders %	Users %
Pressure at stage to accept all fares	65%	N/A
Helmet non-use associated with "bravery"	58%	N/A
Peer pressure to use unsafe Boda-Bodas	N/A	60%
Feel "no right to demand" safety	N/A	65%

Economic Factors and Decision-Making

The statistics help highlight the fact that economic precarity is the main structure of risk within the Boda-Boda industry. To riders, the occupation is a last resort precarious livelihood, where 87% of all riders do not have an alternative income and 82% of all riders have four or more dependents on small and unstable daily earnings (mean: 4.2 dependents). This poses a sharp economic exposure which FGD members referred to as the hunger timetable a day-to-day calculation in which the immediate, definite requirement to earn money in an orderly way encroaches on the long-term safety-question. This justifies descriptions of informal transport as an important yet dangerous social safety net in the economies that have few formal opportunities (Howe, 2003; Goodfellow, 2015).

A harsh mobility vacuum reinforcement is upheld by this economic necessity among the users. Lack of other credible options (91% of the users) means that it has a captive market who have no choice but to use Boda-Bodas even when the issue of safety is concerned. Although 88% were willing to switch to a safer substitute, the real-life situation of lengthy waits (1.5 hours on average) and the importance of price (85 percent) solidifies Boda-Bodas

as the only choice. This architectural deprivation of choice turns an act of taking risk into a forced imperative (Cervero and Golub, 2007).

Moreover, the social norms that glorify taking of risks add pressure to the economic pressure. Peer pressure during stages (65%), indications of helmet non-use of bravery (58%), among riders, play an economic role: they show confidence and competitiveness in an oversaturated market to attract passengers. To the users, a normalized power imbalance in the transaction is expressed through social pressure (60%), and perceived inability to demand safer conditions (65%), which arises because the user needs affordable and fast transport, which compromises their capacity to negotiate safer conditions (Gómez *et al.*, 2021). Combined, these economic and social forces generate a self-perpetuating system that values survival and accessibility and in this context, the consistent breaking of safety rules is a logical, socially approved, approach in the limited ecosystem of Muleba District. FGD insights on Economic Factors and Decision-Making FGD Insights on Economic Factors and Decision-Making

It was through the Focus Group Discussions that the economic pressures measured in the survey became given a critical nuance, that the market mechanisms are actively used to disincentivize safety. In Female Riders FGD, one of the participants expressed an emotional price distortion: “We charge 500 TZS higher than men because we ride safer, we do not overload, we have helmets. But passengers grumble at the cost and direct to the less expensive, careless riders. Market is a punitive environment.

This quote displays a harsh extension of the notion of informal transport described by Cervero and Golub (2007) as fill-ins of an entrepreneurial nature. Although the industry does address an unmet need in mobility, as our results indicate, in this informal market, the competitive forces tend to reduce to a race to the bottom in terms of safety standards. Internalizing riders (e.g. reduced passenger capacity, reduced speed, provided helmet) are

compelled to price this as they become less competitive, in comparison to externalizing riders who have raised speed and cut fares. This brings about perverse economic reasoning in which safer operators are pushed to become economically marginalized invalidating the possibility of safety becoming a market differentiator (Rizzo, 2017; Porter, 2016).

The dynamism emphasizes the fact that enhancing safety does not only entail controlling riders but it also involves reconfiguring user demand and market drivers. The measures should also focus on the cost-sensitive decision making process of the passenger which now rewards taking of risks. In the absence of mechanisms to make the safety cost-effective, e.g., formalizing fare structure, developing safety certification, which will command a price, or educating people about the issue, which will lead them towards making risky decisions, market forces will remain in the process of reinforcing the same behaviour that is the source of the current public health crisis.

Table 7: Regulatory Compliance and Perceptions

Regulation & Enforcement		
REGULATORY COMPLIANCE	Percentage	Count (n=400 riders)
Hold valid motorcycle license	28%	112
Hold basic driver's license only	52%	208
No license	20%	80
Motorcycle ever inspected for roadworthiness	5%	20
Aware of district safety policies	0%	0
ENFORCEMENT PERCEPTIONS	Riders %	Users %
Police checks are "sporadic/predictable"	89%	85%
Have been fined for violation	76%	N/A
Believe fines are "revenue collection"	82%	78%
Believe bribery is "easy/very easy"	71%	64%
Average bribe amount (TZS)	10,000-20,000	N/A
Formal fine amount (TZS)	50,000	N/A
POLITICAL ECONOMY VIEWS	All Respondents %	
Local government "afraid/unwilling" to regulate	58%	
Riders are powerful voting bloc	72%	
Strict enforcement would cause unrest	65%	

Regulatory Environment and Enforcement

The nature of the regulatory environment in Muleba District is that of extreme institutional disconnection and challenged legitimacy. Formal conformity is quite low, only 28 percent of riders possessing the right motorcycle license and only 5 percent of them have undergone roadworthiness inspection. More importantly, the number of those who knew of any safety policies at the district level was the lowest, which is the brightest example of a serious policy-implementation gap where the official regulations are present in the form of documents with no ways to disseminate or enforce them (Goodfellow, 2015; Ndeijo *et al.*, 2015).

It is not correcting this gap but instead acts as a parallel

system of negotiated governance through enforcement. The fact that an overwhelming majority (78-82%) of people perceived that police fines are used as a revenue source, not as a safety deterrent, is in line with critiques of regulatory capture of informal economies, where enforcement is a form of extraction instead of a corrective behavior (World Bank, 2017; Gishkori and Mfinanga, 2020). It is also enabled by the normalized bribery which is perceived as easy with 64-71 percent of respondents stating that it is easy and therefore turns the regulatory experiences into monetary transactions that allow the rider to work without satisfying the informal revenue requirements of the officers.

The political economy of inaction is known to be the

backbone of this dysfunctional system. Most of the participants (58 percent) viewed the local government as either fear or reluctant to control with recognition of riders as a solid and large voting block (72 percent). A practical political arithmetic in which social stability and political support must come first and potentially unpopular safety rules that may pose a threat to a livelihood sector as substantial a source of youth employment is reflected in the common belief that strict enforcement would lead to unrest (65%), according to Goodfellow (2015) and Mutongi (2017).

). The regulation atmosphere, therefore, maintains a premeditated balance of calculated oversight, the state gathers income and political acquiescence and shirk its primary obligation to guarantee people security.

FGD Insights on Regulatory Environment and Enforcement (Institutional Perspectives from Key Informants)

The impressions obtained in the survey were provided with tangible institutional expression by the means of key informant interviews, which reflected the system bounded by the lack of resources, political expediency and institutional detachment.

The real picture of how it works was provided by a Traffic Police officer: 3 officers, 2 motorcycles, no gas money. We control the tarmac road around town. The village roads? That's God's jurisdiction." Such statement reveals the gap of crucial spatial governance, in which the state power and enforcement capacities are physically delimited by the infrastructure and resources. It also reflects the evidence of the high level of difference between the city regulatory presence and rural laxity in informal transport regulation (Mbegu & Mjema, 2019; Kumar and Mdee, (2018). Bringing the law into force is reduced to a performance within visible accessible corridors, leaving most operations in an in-form unregulated space.

The lack of alignment between policy and practice was acutely demonstrated by one of the officials of a District Council: Yes, we have a beautiful District Transport Policy of 2019. It states that every rider has to be trained. However, where can we find the training center? The budget? We're enforcing dreams. The policy budget: no shillings. The number of staff assigned: one individual also does the livestock vaccination. This confession is a textbook definition of institutional decoupling (Scott, 2013; Bromley and Powell, 2012) in which the formal policies of the organizations are used to attain legitimacy of a policy (a beautiful policy) and the internal resources and structure have absolutely nothing to do with the needs of implementation. The policy turns into a sham document as it satisfies the administrative box without changing practice in the field. This forms a pretense of control that covers a blank of practical control, which justifies the 0% policy awareness of riders and users. Combined these pieces of knowledge paint a regulatory regime that is performative, resource-starved, and spatially fragmented and cannot essentially perform the substantive safety governance that the community is in dire need of.

CONCLUSIONS

In Tanzania's Muleba District, the motorbike taxi business, or 'boda-boda', poses a serious risk to public health despite being a necessary service and economically appealing. Despite known risks, the community is not irrational but rather reflects calculated economic survival in the "hunger timetable", where immediate livelihood needs take precedence over possible safety concerns. The study concludes that the motorbike taxi business poses a serious public health crisis and is dangerous according to 92% of respondents, but also, 90% see they are necessary. The 0.82 Risk Normalisation Index further supports poverty-driven risk accommodation. A systemic regulatory failure worsens the situation. Only 34% of people regularly wear helmets, even though 99% of people own one, and only 8% offer passenger helmets. With 82% of respondents seeing fines as taxes, the 0.74 Regulatory Gap Index shows that enforcement is seen as revenue collection rather than safety promotion. Only 1% of survivors receive professional psychosocial treatment, despite the fact that trauma is normalised; 42% have had accidents, 95% have witnessed crashes, and 38% have lost close family or friends.

The study recommends: First, police crackdowns must collaborate with local leaders, religious organisations, and safety committees. Second, regulatory bodies should to develop training programs for riders and the general public as potential boda-boda users. Thirdly, police should make sure that fine procedures are clear and that compliance is linked to rewards like microloans. Fourth, riders need to understand that safer riding safeguards livelihoods; always wear high-quality helmets for both themselves and passengers; and get a licence.

Future research should focus on the "grief economy," look at safety compliance by gender, and evaluate how market pressures penalise safety through biased incentives. Also, examine the association between this boda-boda phenomena and the infrastructural problems, unemployment problem, and governance deficiencies.

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