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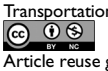

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COVID-19 and the Motorcycle Taxi Sector in Sub-Saharan African Cities: A Key Stakeholders' Perspective

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Abstract

This article assesses the impact of the COVID-19 outbreak on the urban motorcycle taxi (MCT) sector in Sub-Saharan Africa (SSA). MCT operators in SSA provide essential transport services and have shown ingenuity and an ability to adapt and innovate when responding to different challenges, including health challenges. However, policymakers and regulators often remain somewhat hostile toward the sector. The article discusses the measures and restrictions put in place to reduce the spread of COVID-19 and key stakeholders' perspectives on these and on the sector's level of compliance. Primary data were collected in six SSA countries during the last quarter of 2020. Between 10 and 15 qualitative interviews with key stakeholders relevant to the urban MCT sector were conducted in each country. These interviews were conducted with stakeholders based in the capital city and a secondary city, to ensure a geographically broader understanding of the measures, restrictions, and perspectives. The impact of COVID-19 measures on the MCT and motor-tricycle taxi sector was significant and overwhelmingly negative. Lockdowns, restrictions on the maximum number of passengers allowed to be carried at once, and more generally, a COVID-19-induced reduction in demand, resulted in a drop in income for operators, according to the key stakeholders. However, some key stakeholders indicated an increase in MCT activity and income because of the motorcycles' ability to bypass police and army controls. In most study countries measures were formulated in a non-consultative manner. This, we argue, is symptomatic of governments' unwillingness to seriously engage with the sector.

Keywords

motorcycle taxis, COVID-19, Sub-Saharan Africa, informal economy, transportation and society, transportation in developing countries, travel behavior

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In the last 25 years or so, motorcycle taxis (MCTs)—and more recently motor-tricycle taxis (MTTs)—have fundamentally changed mobility and access in urban Sub-Saharan Africa (SSA), providing rapid and door-to-door transport, supporting livelihood activities, and facilitating access to essential services, such as health, markets, and education (*1*). In many African cities, MCTs—often referred to as *okadas* in West Africa or *boda-bodas* in East Africa—are responsible for the majority of transport movements of both people and goods and provide hundreds of thousands of jobs to often low-skilled and/or marginalized youth (*2*). To illustrate, in Kenya—one of our study countries—the Kenya Economic Survey (2010) found that there were over 90,000 MCTs in the country, up from 4,000 in 2005 (*3*). By 2018, according to figures by the Motorcycle Assemblers Association of Kenya (MAAK), the total number of commercial motorcycles on Kenyan roads had increased further to 600,000 (*4*). The Kenya Economic Survey 2019 estimated that in 2018 alone nearly 200,000 new motorcycles were registered (*5*). For Sierra Leone—also one of our study countries—the national MCT union estimates that there are about 250,000 MCTs operating, with around 200,000 officially registered operators. Many of these commercial motorcycles have two or even three regular operators, taking turns in riding, and thus financially supporting themselves. The MCT union estimated that there were approximately 70,000 MTTs in operation in 2020—locally referred to as *kekehs*. In mid-2017 the number of *kekehs* was around 70, clearly showing that this form of transport has grown exponentially (*6*).

Motorcycle Taxis and Motor-Tricycle Taxis in Sub-Saharan Africa

While the exact modalities of the MCT/MTT sector vary from country to country, from city to city, and even within a particular urban setting, there are some similarities and general characteristics (*2*). A study funded by the "Mobility and Access in African Cities" program and carried out by the authors of this paper—which focused more generally on MCT modalities in the cities that were the focus of this present study—found that women and poor people were the majority users of MCT services, despite the relatively high per-kilometer fare (*7*). Not owning private motorized transport, plus the quick and door-to-door (or door-to-market) service of MCTs, as well as conventional public transport not always being available in poorer areas, were commonly listed as reasons for this. Furthermore, our "Mobility and Access" study found that most of the MCT operators became motorcycle owners via a so-called hire-purchase agreement, with the motorcycle purchased by a more affluent person. The operator then makes daily or weekly payments to the owner, until the motorcycle—plus an additional amount—is paid off (typically within 9 to 12 months). The average income for an MCT operator is often well above the minimum wage, attracting to the profession not only marginalized or semi-literate youths, but even university graduates. Most operators become members of MCT unions, which often have political connections. However, not all operators are union members, with some operators reluctant to pay membership fees for which, they argue, there is little return. Furthermore, the constant influx of new MCT operators, who typically do not immediately become members of the unions, further adds to the number of non-union-member operators.

Given that MCT riding is still a relatively new phenomenon—particularly so in Sierra Leone and Liberia where it only emerged after the end of the civil wars in the early 2000s—and very much a "bottom-up" and market-driven phenomenon, the sector is still, to varying degrees, part of the informal sector. That is, those in the sector are "rooted in their operating beyond the prevailing regulatory systems" (*8*). While gradually acknowledging the presence and importance of the MCT sector, governments' "engagement" with it typically focuses on enforcing compliance with administrative and legal requirements and has hardly matured into regulating *and* supporting the sector—for instance via road safety training programs, access to credit for motorcycle purchase schemes, or financing the construction of covered MCT stands (*9–13*). Before the COVID-19 pandemic, many of the measures taken by African cities to curb or even completely ban MCT riding ignored the essential services they deliver and seemed to be mainly a response to the rising number of traffic accidents involving or caused by MCT operators (*14*). More cynical interpretations argue that those lobbying for such bans, or those who are in a position of power to implement such bans, typically travel by 4x4 and consider MCTs to be no more than a nuisance to their daily commute (*15*).

Imposing Formal Public Health Measures on an Informal Sector: Learning from Different Approaches

The informal economy has been described as consisting of activities that in some respects lie beyond or circumvent state regulation (*16*). As Cervero and Golub (*17*) note, across the developing world informal transport often serves areas left unserved by formal transport carriers, and is often the only means of mobility available to the poor, who use these services to reach jobs, buy and sell produce, and access medical care. Ehebrecht et al. (*2*) explain that in many countries across SSA, the MCT

sector rose to fill a gap left by the collapse of underfunded national transport services in the post-independence period. The result of this growth in MCT transport has been the creation of a large, highly informalized urban transport sector that operates in a space that is largely absent of regulation. While the urban MCT sector provides vital mobility services to millions of Africans, some have described the sector as having a "dark side" that directly stems from its informality. For example, Cervero and Golub (*17*) state that with lax enforcement and weak regulations within the sector, "odds are that unlicensed operators will engage in open warfare in the quest for customers, clogging up streets, intimidating law-abiding motorists, and all-too-often causing accidents."

The urban informal transport sector therefore exists in a domain separate from the officially taxed and regulated formal sector, and has often had a strained relationship with policymakers who have attempted to impose rules on the informal sector, often unsuccessfully (*16*). Ehebrecht et al. (*2*) describe how the relationship between MCT operators, authorities, and the public can be quite contradictory—at times mutually beneficial, as shown by MCTs' frequent use by the public, and at others conflictual because of their competition with other operators, their power as a pressure group acting on authorities, their aggressive behavior and driving, and the negative externalities that they generate (such as accidents, air pollution, and insecurity). These negative externalities and perceptions of MCTs and their operators have often led to tough crackdowns on MCT activities, for example in Ghana, where they have been officially banned despite the social and economic benefits that they offer to users (*13*). Alcorn and Karner (*18*) state that in in Lagos, Nigeria, government agencies are in favor of eradicating the "disordered" informal transport system and implementing a modernist, top-down imposition of bold physical infrastructure projects.

However, attempts to impose regulations on the sector have often seen mixed results. Using the case of Uganda as an example, Goodfellow (*16*) explains that the state's lack of effective control of the MCT sector in Kampala has been the result not of a lack of any regulatory framework, but of the state's ineffectiveness in enforcing the regulations implemented. In contrast, in Kigali, Rwanda, the MCT sector is strictly regulated and regulations are tightly enforced in an effort to maintain political control against the background of the country's 1994 genocide and the political developments that have taken place in the years since (*16*).

It should also be noted that in some cases public authorities have actively sought to encourage MCT operations and to stimulate employment in this sector by providing financial assistance to aspiring riders, by creating an institutional framework that encourages their use, by abandoning importation taxes for motorcycles (Kenya), and by developing a clientelist relationship with the sector (Uganda) (*2*). These examples show that an alternative approach that takes a more supportive view of the sector is possible. Alcorn and Karner (*18*) recommend the creation of a collaborative relationship between the sector and authorities that leverages both the structural benefits of the formal "ordered" system and the informal system's adaptive nature and situated knowledges. By building collaborative, complementary links with MCT operators and their representatives, authorities take steps toward formalizing the sector and may see greater regard given to their efforts to regulate, and therefore greater compliance with the regulations that they introduce.

Given the difficult relationship that has often existed between authorities and the MCT sector, it is important to understand how the different public health responses to the outbreak of COVID-19 implemented in each of our study countries have been received and taken on board by a sector whose operators have notoriously resisted attempts to regulate or outlaw their activities over many years. We will explore the extent to which authorities have sought to create complementary relationships with the informal transport sector, and how different degrees of consultation have affected operators' adherence to public health measures. The unprecedented outbreak of COVID-19 offers us an opportunity to analyze how alternative approaches to the formulation of regulations and restrictions—consultative approaches on the one hand and top-down imposition of regulations on the other—produce different levels of compliance among operators and help or hinder the prospect of formalization of transport services that have until now existed exclusively within the informal sector.

COVID-19 and Transport in the Six Study Countries

The COVID-19 pandemic showed again that urban MCT operators provide essential services, including this time to key health workers. However, the operators also experienced risks of contracting the virus and spreading it, because of their close and frequent interactions with customers (*19*). Understanding the impact of COVID-19—and of the measures taken to mitigate the spread of the virus—on this widespread intermediate form of transport is crucial for planning, managing, operating, and supporting urban transport services, so that, among other things, essential services remain accessible for urban dwellers during periods of lockdown or curfews. Our thesis therefore is that bringing MCT operators/unions and key stakeholders in urban planning, public health, and transport planning together is essential for

the future sustainable socioeconomic and environmental development of SSA cities. This requires a further recognition and formalization of the sector, with the latter process focused not just on restrictive regulatory measures but also on constructive support to the sector.

A short overview of how COVID-19 affected the six study countries' urban transport and MCT sector is given below, to provide some context to the data discussed later. The developments discussed mainly concern the so-called "first wave" of COVID-19, which took place during the early and middle parts of 2020, and its aftermath.

West Africa

In Ghana, the first two COVID-19 cases were reported on March 12, 2020. By March 15, 2020, four more cases were reported, triggering the closure of all private and public educational institutions, as well as a ban on public, social, and religious gatherings. On March 27, the President of Ghana imposed a 2 week partial lockdown on the Greater Accra and Greater Kumasi Metropolitan Areas. By the end of June 2020, though all the 16 regions had recorded cases, relatively few deaths and high recovery rates were reported (*20*).

During the partial lockdown in March/April 2020, restrictions for the transport sector included banning intercity passenger transport, with only cargo vehicles involved in the food chain and transportation of petroleum products allowed to undertake intercity or interregional movements. Furthermore, commercial vehicles operating in the cities had to reduce the number of passengers—in compliance with physical distancing protocols—and observe hygiene protocols. Motorcycles were banned from carrying passengers during the lockdown and beyond (*20*).

In Sierra Leone the first COVID-19 case was recorded toward the end of March 2020, in the capital Freetown. Despite several restrictions and lockdowns in April, the country experienced its highest number of average daily COVID-19 cases (33 cases) between late May and early June. For 2020 Sierra Leone recorded a total of 79 COVID-19 deaths, which all happened during the first few months of the pandemic (*21*).

Of relevance to the MCT and MTT sector, COVID-19 measures included handwashing, the use of hand sanitizers and face masks, and taking fewer passengers on board. Furthermore, the MCT and MTT unions increased their presence on the street by bringing in more of their own marshals to self-regulate the sector. The unions also enforced the use of face masks and handwashing equipment in the various parking lots allocated to the MCT and MTT operators. Importantly, they ensured that no motorcycle operator carried more than one passenger at a time. For the motor-tricycle operators, no more than two passengers at any one time were allowed (*22*).

Liberia reported its first confirmed COVID-19 case on March 16, 2020. By the end of April, 141 cases and 16 deaths were recorded. The country's experience during the Ebola crisis (2014–2016) likely helped with the initial responses, including the re-adoption of certain disease control measures (*23*). On March 21, 2020, the minister of health declared a national health emergency which stipulated the removal of persons and/or the compulsory medical examination of persons suffering or suspected to be suffering from a communicable disease; compulsory handwashing and wearing of face masks in public places at all times by all persons; and the limiting of the number of people allowed in public transportation vehicles, including buses, taxis, MTTs, and MCTs.

On April 24, 2020, a stay-at-home order was extended for an additional 2 weeks in all 15 counties. The Armed Forces of Liberia were ordered to enforce the State of Emergency, announced 2 weeks earlier. By the end of 2020, a total of 85 COVID-19 deaths had been recorded (*24*).

East Africa

The first case of COVID-19 in Kenya was confirmed in Nairobi on March 13, 2020 (*25*). On the same day, the government initiated a trace and test program and advised citizens on hygiene measures to be taken to contain the spread of the virus. On March 15, 2020, a series of COVID-19 directives were announced, including a night curfew from 7 p.m. to 5 a.m., social distancing by working from home, and a ban on public gatherings (*26*, *27*). By the end of October 2020, there were 55,877 confirmed cases and 1,013 fatalities (*28*). The negative effects of the partial lockdowns on the economy were enormous, with an estimated 1.72 million jobs lost between the months of March and June 2020 (*29*).

The Kenyan government directed all public service vehicles to reduce the number of passengers to about a half of the licensed seating capacity. Operators were also required to ensure that their passengers always wore face masks and to provide handwashing facilities or alcohol-based sanitizers for their clients at the points of boarding. MCTs were required to carry not more than one passenger, and to sanitize their passenger helmets and motorcycles after carrying a passenger.

Tanzania announced its first case of COVID-19 on March 16, 2020 (*30*). The next day the prime minister announced the closure of all schools and a ban on all public and social gatherings. On March 23, the government announced that all passengers traveling from countries which were reported to have been affected by COVID-19 would be quarantined for 2 weeks at their

own cost. However, on May 4, Tanzania stopped reporting new cases of COVID-19 following test results issued by the National Health Laboratory after biological samples submitted from a pawpaw, car oil, and a goat allegedly had all showed positive for COVID-19 (*31*). Before stopping the release of daily test results, 509 cases were confirmed of which 21 had died.

In June, educational institutions reopened and the ban on public gatherings, sports, and community events was lifted. Many economic activities had continued unabated, unlike in neighboring countries where lockdowns and travel restrictions took their economic toll. In the urban transport sector, physical distancing measures were introduced.

Uganda registered its first COVID-19 case on March 21, 2020 and its first death on July 25. On March 18, 2020, so before the first case, the president announced the most stringent and comprehensive measures of the region (*32*). The first lockdown measures included the closure of schools and higher institutions of learning, and a moratorium on religious, social, political, and cultural gatherings like burials, weddings, and rallies. On May 4, the president announced a total lockdown including both public and private transport. All markets, except those for food, were closed. MCTs providing supporting operations for the food services were only allowed to carry goods/merchandise and could only operate between 7 a.m. and 2 p.m.

The Ministry of Health formulated standard operating procedures (SOPs). For the transport sector, SOPs included mass testing of people at border points and of cargo truck drivers, as well as contact tracing and testing. Whereas the ban on other means of transport was partially lifted on May 4, MCTs continued to be barred from carrying any passengers (*33*, *34*). On September 20, the president issued more guidelines that further eased the lockdown. At last, MCTs were allowed to carry one passenger at a time, as per the law prevailing before COVID-19. Still, they were to do so by following strict SOPs including handwashing, sanitizing, wearing face masks, and recording names of their clients. As of February 27, 2021, Uganda's total number of cases stood at 40,322, with 33 deaths and 14,616 recoveries.

It is clear from the above that although the West and East African study countries were exposed to COVID-19 around the same time (mid-March 2020), their responses varied: Uganda introduced the most stringent and proactive measures, while neighboring Tanzania took a rather laissez-faire approach. The two measures most affecting the MCT and MTT sectors were the lockdowns and the physical distancing requirements, with the latter reducing the number of passengers that could be carried at any one time. While all study countries seem to have fared relatively well during the first COVID-19 wave (March to December 2020), with relatively few COVID-19 positive cases and very low COVID-19 deaths, the lack of sufficient COVID-19 testing facilities in the study countries will have clouded what must have been a higher, or much higher, number of COVID-19 cases and deaths in 2020.

Methods

Aims and Objectives

The aim of the research discussed here was to improve the understanding of the impact of the COVID-19 outbreak on the urban MCT sector in SSA, including the impact of the measures and restrictions put in place to reduce the spread of the disease. Through case studies of three West African countries (Sierra Leone, Liberia, and Ghana) and three East African countries (Uganda, Kenya, and Tanzania), shown in Figure 1, this study established:

- Whether and how the COVID-19 pandemic has affected urban MCT services in general;
- Whether MCT operators or unions have been consulted in the COVID-19 measures taken, their level of compliance with these measures, and reasons for limited compliance or noncompliance; and

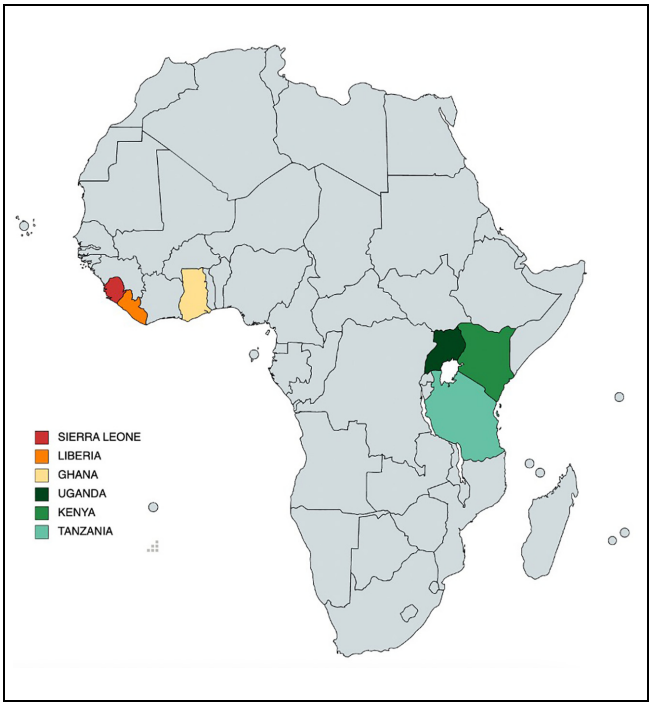

Figure 1. The six study countries. Created with Mapchart.net.

- Social and technological measures and innovations MCT operators have introduced to limit infection by or spread of COVID-19.

Methodology

Data were collected via semi-structured qualitative interviews. The research objectives set out in the section above were operationalized through five open-ended questions that were put to the key informants and key stakeholders. For each study country, approximately 10 to 15 key informants were interviewed by the lead country researchers, all of whom had contributed to the initial study/questionnaire design. Key actors/institutions were identified via country-specific literature reviews of the urban transport and health sector. The full list of key stakeholders interviewed in each country is provided as an appendix. They typically include representatives of transport-related government departments, health sector, police services, MCT and MTT unions, road safety authorities, and market associations, among others. Interviews were conducted in two cities: the capital and a secondary city. The questions asked were:

- What have been the impacts/effects of COVID-19 on urban transport in general and the MCT sector specifically?
- If transport-related restrictions or a lockdown were introduced, what were the specifics of these, to what extent were MCT unions and/or operators consulted in this, and to what extent have MCT operators complied with these?
- Are there any social or technological innovations or adaptations MCT operators can make (or have made) to reduce exposure and limit the spread of COVID-19?
- Have experiences with and responses to previous outbreaks/pandemics been used when addressing the current COVID-19 outbreak?
- If MCT transport, from all the modes of public transport, poses the lowest risk of COVID-19 transmission, should MCT transport be promoted then?

Data findings were discussed during country-level focus group discussions (FGDs) between the country researchers and the key stakeholders previously interviewed (not part of this paper), resulting in country-specific policy briefs. Because of ongoing COVID-19 restrictions in the study countries, typically the number of participants in these FGDs had to be limited to comply with regulations or the discussions were moved to an online medium. Findings from the country studies and FGDs were presented at a webinar on April 16, 2021. The webinar participants included the various country researchers and key stakeholders. A website and online open-access sharing platform have been developed (www.africawheels.org) on which the study's findings are shown. In addition, MCT operator survey questions were designed to provide quantitative data on these five topics. The detailed aggregated and disaggregated findings of these surveys (about 400 in total) are discussed in a different paper (Jenkins et al. (35). However, the qualitative and quantitative data, plus the literature reviews and key-stakeholder FGDs, allowed the researchers to undertake triangulation of data to assess the validity of claims and findings.

Results: Perspectives of Key Stakeholders on COVID-19 and the Motorcycle Taxi Sector

Here the data collected via the key-stakeholder and key-informant interviews are presented. The chapter is organized according to the five key questions that were asked to the informants.

Impact of COVID-19 on Urban Transport

The effects of COVID-19 on the urban transport sector were noted by most stakeholders. Informants typically indicated that the causal relation of the impact was a lowered demand for transport services because of fewer socioeconomic activities—for example through the temporary closure of businesses and part-closure of markets, which resulted in a lower demand for public transport services rather than the other way around (that is, rather than restrictions on public transport services having a detrimental effect on socioeconomic activities). This is illustrated by the below comment of a representative of a market association in Kumasi, Ghana:

> "The number of trips we used to make to central market as market women has reduced because we don't get as many sales as before so it is the same with the drivers since we are their immediate customers."—Aboabo Market Association spokesperson, Ghana.

That is not to say that the transport restrictions introduced, particularly during lockdowns, did not have a direct and detrimental effect on the livelihoods of transport providers. This MCT union representative in Kenya summed it up as follows:

> "Many people could work from home, but we cannot. The boda-boda needs to carry someone to get money. So when others were working from home, we lost work."—MCT union representative, Kenya.

Restrictions varied from place to place and from country to country. With the introduction of curfews, which typically took place during the early evening and during the nighttime, those who would normally do night shifts on a motorcycle would find themselves out of jobs. Naturally, operators complained about the lack of government support, with no financial compensation made available for those who lost out on income:

> "Less riding and low incomes, this makes our family suffer, because the government don't care at all for the drivers like us."—MTT operators' spokesperson, Liberia.

An increase in demand for courier services was noted during lockdowns, with MCTs particularly suited to fulfill this demand. Perhaps a positive consequence of the economic hardship wrought by the restrictions on the sector was the MCT operators' realization of the value of diversifying livelihoods. For instance, operators belonging to SMART Boda-Boda Cooperative (SBBC) in Uganda began to sell and deliver eggs to customers.

Transport providers frequently increased their fares to compensate for the seats that had to be left empty as a result of physical distancing, and, in an effort to further recoup some of the lost income, fares were not always lowered to pre-intervention levels after restrictions were eased. Furthermore, according to an informant in Kenya, MCT operators sometimes did good business during the lockdown, if they were willing to risk arrest:

> "Some boda-boda operators made more money, assisting people to avoid police roadblocks."—Market traders association representative, Kenya.

With no official lockdown or ban introduced, in Tanzania the MCT sector seems to have financially benefited from the COVID-19 epidemic, at the cost of other forms of public transport. According to a government town planner in Morogoro:

> "Most people were avoiding public buses because of higher risk of infections. MCTs made a lot of trips, they get many passengers who resorted to MCTs since it was the only alternative that was deemed safe."—Government town planning representative, Tanzania.

Concerns of people over contracting COVID-19 resulted in many opting for on-demand private transport, if they could afford it. The mobility-on-demand services saw their popularity increase:

> "The ride hailing services—Bolt and Uber—to some extent have taken over our customers as they [passengers] feel safe using them compared to us. The okada [MCT] have also collapsed our business in the COVID-19 era. I do not take okada seriously compared to the Bolt and Uber which offer customers lower prices while transporting them from their homes. The okada only flourished under heavy traffic congestion and in the slum areas."—Car taxi union representative, Ghana.

The above comments illustrate the flexibility of the transport services sector, further increased by the recent arrival of mobility-on-demand services. The same car taxi union representative draws attention to another "unfair" disadvantage the conventional public transport providers have: because they are unionized, regulated, and controlled, they have to adhere to the regulations put in place by the government and union, while this is not true for Ghana's MCTs.

Finally, with urban economic activities grinding to a halt or at least being significantly reduced, many of the MCT and MTT operators saw their incomes drop or completely disappear and they returned to their villages:

> "Even those who ride can no longer meet the demands of the family. So, a number of them had to go to the villages because cost of living was high. You have to go to the village where there is food and you don't have to spend money."—Kampala Capital City Authority representative, Uganda.

This urban–rural flight subsequently led to loss of revenue by MCT cooperatives because of non-repayment of motorcycle loans.

Impact of Transport-Related Measures and Consultations of the Sector

With regard to the transport sector, most countries responded to the COVID-19 epidemic through a series of measures aimed at reducing the chance of virus transmission. Key measures included restricting the number of services on offer by canceling certain routes or imposing curfews, for instance; promoting physical distancing, by limiting, for instance, the number of passengers for a particular type of transport; and introducing hygiene measures to limit the virus' spread, for instance by making the wearing of face masks or use of alcohol-based hand sanitizers compulsory. A key exception was Tanzania, which had limited measures in place and for a much shorter duration than neighboring countries or countries in the region. According to a transport engineer based in Dar es Salaam:

> "There were no lockdowns or transport restrictions on MCT operations. The general safety measures for the public such as the use of face masks, washing hands, and social distancing were to be followed by everybody including MCT riders and many of them complied."—Transport engineer, Tanzania.

However, this was somewhat nuanced by a traffic police officer, who remarked that traffic was reduced significantly, despite there not being an official lockdown:

> "Roads were empty, you can hardly see cars on roads. There were no people riding on bikes or taxis as people rarely left their homes. Even motorcycles lost income since passengers were few."—Traffic police representative, Tanzania.

Something similar—a variation in the degree of implementation of and adherence to the restrictions—was also noted in Uganda. The majority of MCT drivers in Mbarara seem to have complied longer than those of Kampala. Despite lacking a citywide union or association, MCT drivers in Mbarara are more organized at division and stage levels than those of Kampala where the sector is larger and more fragmented. Therefore, there was easier communication flow and self-policing through these structures. Commenting on compliance among MCT drivers, a Mbarara City commercial officer observed:

> "We make sure on a daily basis that everyone who comes to the stage must have a mask and sanitizer. If they don't have them, they must not work. They will lock his motorcycle for the whole day at a particular stage."—City commercial officer, Uganda.

Few, if any, informants stated that MCT union representatives or the operators themselves were consulted before the introduction of sometimes rather draconian measures. The large number of motorcycles impounded at Kampala's Central Police Station in mid-2020, as shown in Figure 2, suggests that a significant number of MCT operators had been penalized for infractions during this period. Generally, key informants argued that this was not and could not have been done because of the rapid spread of the virus and the urgency required. In Kenya, the relevant authorities communicated with the MCT union representatives, who then passed it on to their members, which did not always go smoothly, as illustrated by the following quote:

> "The county commissioner communicated to our leaders on the restrictions. And we were warned that if we violated them, particularly the requirement to carry only one passenger, the boda-bodas will be banned. Our leaders therefore started enforcing this, and this brought conflict that turned violent and some people even died."—MCT union representative, Kenya.

While the "emergency" nature of the measures ruled out long consultation processes, some of the unforeseen effects and low-compliance issues could perhaps have been prevented if the government had indeed consulted with the relevant sector representatives. However, limited compliance was often driven by more mundane factors, such as the need and demand of people to use transport services and operators' need to generate an income. Compliance with rules was also noticeably higher at the start of the epidemic than later on. Additionally, in Tanzania, the government changed position and suggested that the disease was beaten:

Figure 2 Impounded motorcycles at the Central Police Station during the height of the COVID-19 pandemic, Kampala, Uganda.
Source: Authors, 2020.

> "At the beginning of the pandemic, most riders complied but later on many stopped. This is because people thought that the disease was gone because the government said so."—MCT user representative, Tanzania.

Again, compliance with certain restrictions, particularly those that banned operating, could be limited, not because of a disregard for the rules but out of sheer necessity:

> "Being at home with children but having nothing to eat, not anticipating anything as if you are a dog. He decides to risk with a chance that he would be caught and be fed in prison. Not simply because they wanted to be lawless."—MCT union representative, Uganda.

> "Our livelihoods have been seriously disrupted and we are concerned that this will harm our progress very negatively. Some of us are senior secondary school graduates who basically try to raise money to go to colleges or university."—MCT operator, Sierra Leone.

Social or Technological Adaptations Made by Motorcycle Taxi Operators

In addition to several regulatory measures to limit the spread of COVID-19, there have been some social and technical adaptations made by the MCT and MTT operators and by some passengers. These were mainly limited to wearing face masks (as shown in Figure 3), providing hand sanitizers attached to the motorcycle or motor-tricycle, or cleaning the inside of the helmet with sanitizer before handing it to the next passenger:

Figure 3. A motor-tricycle taxi (MTT) operator wearing a face mask in Kumasi, Ghana.
Source: Authors, 2020.

> "The okada riders usually hang mobile hand sanitizers on the bike or [keep them in their] pockets while operating."—Police service representative, Ghana.

In Tanzania, the MCT operators made some extra money by selling face masks or headcovers to passengers:

> "Some MCT riders sold face masks to passengers, which you have to buy before starting a journey. Some MCT riders provided disposable headcovers (to be worn underneath the helmet)."—Health Ministry, Tanzania.

In Sierra Leone, the government announced that for the duration of the epidemic, they would be more relaxed in enforcing the wearing of crash helmets for passengers, to reduce the risk of transmission from one passenger to another:

> "We are very grateful to the Sierra Leone government for granting our passengers the permission to ride on our bikes without helmets as this was disturbing our work and could have led to loss of revenue as most passengers refused to wear the helmets for fear of catching COVID-19."—MCT union representative, Sierra Leone.

MCT operators in Uganda pioneered using (plexi)glass shields to separate the driver from the passenger. The government rejected this innovation, stating that it would harbor the virus instead of protecting the passenger from the driver. However, recent research by Hetherington et al. (*36*) shows that the Ugandan MCT operators may have been onto something. Furthermore, it was argued by the government that the glass shield would be disastrous during accidents.

Keeping physical distance between operators and passengers is nearly impossible for MCT transport, but that does not mean that the operators did not keep any physical distance at all:

> "What we did was to maintain physical distancing among ourselves here at the base while waiting for passengers. We were being careful with the passengers to make sure we are not exposed to the disease."—MCT union representative, Tanzania.

A nice example of MCT unions taking the lead in introducing measures comes from Uganda, where the union representative explains how he lobbied with commercial partners (TVS, a manufacturer of motorcycles) for personal protective equipment:

> "They [TVS] gave me over 500 masks that I distributed among boda-boda riders on the ground as we trained them."—MCT cooperative representative, Uganda.

MCT operators also innovated socially—for example, through forced livelihood diversification, including starting a new business or profession, and abandoning MCT driving completely. For many drivers, COVID-19 taught them to work, save, and avoid relying on one income stream. Some leaders estimated that 15% to 30% of drivers took new informal sector jobs.

MCT operators embraced e-commerce wherever possible, often using mobile money services to avoid direct financial transactions and to expand their clientele. Many MCT operators who had their clients' telephone numbers relied heavily on mobile money banking during the lockdown. During the lockdown in Kampala, the United Nations Capital Development Fund (UNCDF) partnered with SafeBoda in Kampala to promote the use of the SafeBoda app for online shopping by modifying it to include e-commerce capability. Besides this, MCT drivers with smart phones used online platforms like WhatsApp and Facebook to maintain business during the lockdown.

Useful Lessons from Previous Health Crises

Sierra Leone and Liberia were only recently at the epicenter of the worst Ebola crisis in history, and it is therefore no surprise to see several similarities in responses and behavior to the current COVID-19 crisis in these countries. Uganda has experienced much smaller Ebola outbreaks or, better put, Ebola cases, in its territories bordering the Democratic Republic of Congo. In addition, Ebola is not the only highly infectious disease from which lessons could have been learned and protocols put in place:

> "Safety restrictions and hygiene protocols in cholera outbreaks are similar and can be translated to the COVID protocols, except that COVID is airborne and cholera is waterborne."—National Road Safety Authority representative, Ghana.

The following statements confirm that experiences in dealing with cholera have been useful in dealing with COVID-19, but the interviewee brings up an additional aspect, namely the challenge posed by COVID-19 with regards to social practices:

> "COVID-19 did not shock us too much. In terms of cholera, the handwashing, eating warm food, not buying food from unhygienic places. However, the cultural shock that came with COVID-19 was [not giving] the handshake. This was so engrained within our culture and very difficult for us all."—Police services representative, Ghana.

During the West African 2015/16 Ebola crisis, SSA countries either (temporarily) closed their borders to travelers from the affected countries or introduced stringent health monitoring measures. This may have informed similar measures during the initial COVID-19 wave. Based on earlier experiences with the Ebola virus epidemic, the president of Sierra Leone acted swiftly following the first case of COVID-19 in the country on March 31, 2020, immediately quarantining the infected person and operationalizing the tracking and surveillance of primary and secondary contacts (*37*). He immediately put mechanisms in place to tackle the pandemic—starting with the creation of an Emergency Operations Centre (EOC) and putting together a team of experts (both local and international) of well experienced virologists and microbiologists. Within the outreach teams of the Ministry of Health and Sanitation, there were nurses who had already undergone training in handling viral diseases, as well as burial teams and other auxiliary staff (e.g., ambulance staff) who too had undergone training during the Ebola crisis. According to the chief medical officer (CMO):

> "These officials and specialists came in with a wealth of experience gained during the Ebola crisis and so the team took off from an experiential point of view and with requisite confidence to bring the [COVID-19] pandemic under control or at least stabilize the situation so that it does not spread and kill people indiscriminately."—CMO, Sierra Leone.

Motorcycle Taxis as a Low-Risk Means of Transport?

There are several factors that can make the likelihood of COVID-19 transmission lower for MCT and MTT transport, as compared with more conventional modes of public transport, such as mini and midi buses and shared taxis. Both modes of intermediate transport carry fewer passengers per trip and both modes typically have considerable fresh-air flows around the operator and passenger(s). On the other hand, wearing of helmets for MCT transport can be a potential source of virus transmission, particularly if it is integral rather than an open face helmet. An increasing number of regular MCT passengers do, however, use their own helmets. So, do the interviewees think that MCTs and tricycles pose a lower risk, and if so, should their use be promoted?

Quite a few of the respondents challenged the notion that the intermediate forms of transport pose lower risk, mainly because of limited compliance of the operator with measures put in place:

> "If only they [MTT operators] would observe the protocols, it can be promoted. (…) I don't believe it poses the lowest risk, but I also don't agree that government should ban their operations"—Aboabo Market Association spokesperson, Ghana.

Obviously, the very close contact between a passenger and the operator is further cause for concern, as argued by the following interviewee:

> "I don't think MCT poses lower risk, the risk is the same for all transport means. It is even higher for motorcycles because there is no physical distance between a rider and a passenger. Also, the fact that all passengers touch the same place for support is even riskier. A private motorcycle is safe, MCT taxi I am not sure"—Transport engineer, Tanzania.

It should perhaps not come as a surprise that motorcycle and motor-tricycle representatives take a different perspective on this:

> "The COVID-19 spreads faster in an enclosed area due to the exhaled air circulating among the people. But with the *pragiya* [MTTs], there is free circulation of air making the risk of COVID-19 lower. Hence, the service of pragiya should be promoted in the COVID-19 era to reduce the risk of COVID-19 spread."—MCT and MTT union representative, Ghana.

Another MCT sector representative wholeheartedly agreed:

> "Yes, okada should be promoted during the COVID-19 [epidemic]. Most of the MCT passengers do not touch the bike which makes the MCTs pose lower risk of COVID-19 transmission unlike the conventional transport services where passengers have to touch the doors and seats which make them prone to the [virus] spread."—MCT and MTT union representative, Ghana.

Discussion

Most study countries recorded relatively few COVID-19 cases and reported only a limited number of COVID-19

deaths in 2020, with no country experiencing a clear "second wave" in 2020. The countries responded to the pandemic with a series of measures and restrictions: (partial) lockdowns, curfews, closures of schools, offices, and shops, and so forth. However, the duration and severity of the measures varied significantly from country to country, with Uganda having one of the strictest sets of regulations and Tanzania having one of the most relaxed sets. For the public transport sector, governments responded with a series of restrictions and measures, such as physical distancing and/or restricting the number of passengers, bans on traveling and/or restricting nonessential travel, and prescribing the use of hand sanitizer and face masks.

The health, psychosocial, and economic impact of COVID-19 and the measures taken to limit its impact were significant, putting a strain on the lives and livelihoods of millions of people, including MCT and MTT operators. In most cases measures were formulated by governments in a non-consultative manner, revealing the political marginalization and vulnerability of the MCT sector in the countries concerned. In the majority of countries, those in positions of authority continued to overlook the views and opinions of operators and their representatives when formulating policies affecting their sector. Even before the outbreak of COVID-19, MCT operators were commonly seen as rule-breakers or even nuisances, for example in Ghana, where MCTs were banned throughout the country but continued to operate illegally. Liberian respondents suggested that the authorities, who they felt had never really cared for their welfare in the first place, did not seem to be concerned about the plight of riders during periods of lockdowns. For many stakeholders interviewed across the majority of our study countries, the non-consultation of MCT riders and their representatives on the public health measures that would affect them was not surprising and could be considered to be a continuation of the type of hostility that has been shown to the sector over several years. Interestingly, in Sierra Leone the government did consult the transport sector, including MCT unions. This consultation appears to have led to the formulation of a set of rules and regulations that were acceptable to both the authorities and the MCT sector in Sierra Leone. For example, the lifting of the usual requirement for passengers to wear crash helmets for the duration of the pandemic to reduce the risk of COVID-19 transmission was viewed by stakeholders as an example of a positive step, as the continued requirement to wear (shared) crash helmets could have led to loss of revenue as most passengers refused to wear the helmets for fear of catching the virus.

In contrast, in Uganda, restrictions on the MCT sector were deemed by stakeholders to be punitive as they were stricter and lasted longer than those imposed on other modes of public transport. Non-consultation likely exacerbated concerns that restrictions were unnecessarily persecutory, especially given commonly held doubts that MCTs spread COVID-19 more rapidly than other modes of transport. Reasons given by stakeholders for these doubts included that MCTs have a lower carrying capacity and are open to the free flow of air. Given these relatively commonly held viewpoints that restrictions were unnecessarily punitive, it is perhaps unsurprising that several stakeholders across the majority of our study countries felt that relatively few MCT operators adhered fully to the policies put in place to mitigate the spread of the virus within their sector. Interestingly, road safety stakeholders in Sierra Leone reported that MCT operators had to a very large extent complied with the regulations, which is likely a positive outcome of consultation of the sector in the country, with restrictions deemed to be acceptable and proportionate by operators. Thus, more engagement with the sector and its representatives during normal times would have allowed for rapid inclusion of the sector's perspectives in times of a (health) emergency.

Furthermore, key stakeholders indicated that the communication of COVID-19 restrictions by the governments to the MCT/MTT operators was not always sufficiently clear. Again, closer collaboration with the MCT/MTT unions and further use of a wide range of media and social media means would likely have reduced confusion over the COVID-19 regulations and restrictions.

Key stakeholders in general, and MCT union representatives specifically, indicated that COVID-19 had a negative impact on the income for MCT and MTT operators, as a result of direct restrictions and reduced demand, although some key informants reported an increase in activity because of the MCT's ability to bypass police and army controls. The restrictions on MCTs also underscored the importance of livelihood diversification for sustainable livelihoods, something that was clearly reported for Uganda. Many drivers diversified into trading activities, agriculture, and construction to augment low earnings from MCTs. The destruction of MCT livelihoods triggered reverse—that is urban to rural—migration, which resulted in MCT cooperatives or unions losing revenue through non-repayment of MCT loans and lost membership fees.

There were varied degrees of compliance with COVID-19 restrictions over time, ranging from high levels of compliance in the initial phases to limited or more symbolic compliance later on. But it was widely acknowledged and understood that limited or noncompliance often resulted from necessity, because of lost livelihoods and limited capacity to absorb financial shocks, rather than from an unwillingness to abide by the rules. Providing a financial safety net for MCT/MTT

operators, or at least postponing some of their financial obligations such as road tax and operator license fees, would likely result in higher compliance with COVID-19 measures.

Innovations by the MCT operators were limited, and mainly restricted to simply attaching a bottle of hand sanitizer to the motorcycle or spraying the inside of passenger helmets with disinfectants. However, the use of mobile-phone-based apps to pay fees and to book transport-on-demand services increased in most places. The degree to which these technologies were used typically reflected the level of rollout of internet technology in the country more generally, and it was therefore no surprise to see relatively limited use in Liberia. Thus, to realize the potential of online app technologies for the motorcycle and MTT sector, a continued rollout in SSA countries is necessary alongside a simultaneous effort to decrease the cost of data. Governments may investigate supporting this, given that the benefits are not limited to periods of health emergencies. Mobile payments to facilitate access to microcredit loans for operators and ride hailing apps allowing for safety monitoring are just two examples.

To our knowledge, no research has yet established whether the MCT is a lower-risk form of transport—as far as transmission of COVID-19 is concerned—than more conventional forms of public transport. Many of the key informants in the case study countries raised doubts concerning the hypothesis that it is indeed a safer means of public transport. However, assuming that people in need of transport "vote with their feet," it was clear that many transport users perceived the MCT as being safer and it therefore remained a popular means of transport, despite being restricted or banned. This again makes the case for the need for governments and ministries of health to seriously engage and collaborate with the sector and MCT/MTT unions.

Conclusion

In the last 20 to 30 years MCTs have become a fixed marker of the "urbanscape" in almost all SSA cities. More recently they have been joined by MTTs. Both forms of transport see their numbers growing almost exponentially. While typically referred to as an "intermediate" form of transport, it is right to ask how "intermediate" the sector actually is.

At the beginning of our research project we set out to establish whether and how the COVID-19 pandemic affected urban MCT services in our six study countries. Our findings have shown that the African MCT sector was put under great strain as a result of the restrictions put in place to combat the spread of COVID-19. Given the track record of nonengagement or ineffective engagement of the MCT sector by African governments, we also set out to understand the level and nature of consultation of the MCT sector on the restrictions put in place in each country. In most cases restrictions were put in place without the prior consultation of MCT operators or their union representatives, whose livelihoods were seriously damaged during the period in which these restrictions were in place.

While consultation is always likely to be somewhat difficult in a pandemic situation where swift action is imperative, this non-consultation of the MCT sector on the measures imposed on it is a continuation of a pattern of reluctance of governments to formally engage with the sector despite its importance for the mobility of millions of Africans. Engagement with the sector by governments remains limited and is often still dominated by road safety concerns and a general dislike of MCTs, with their operators often perceived as unruly and troublesome transport providers. Lacking a clear handle into the sector and/or a record of purposeful engagement partly explains why governments—when faced with a health crisis—struggled to get the operators and unions fully on board. A longer history of engagement with the sector would have made it easier for timely consultation to take place, with the case of Sierra Leone proving that consultation was possible.

The final objective of our study was to identify any social and technological measures introduced by MCT operators in an effort to reduce transmission of COVID-19. It was found that innovations were limited. However, there appears to be significant potential within the sector for further adoption of digital technologies such as mobile-phone-based apps, which have been more widely used in some countries during the pandemic to facilitate fee payments and ride hailing, for example. Further adoption depends to a large degree on the technological infrastructure available locally—which remains limited in Liberia, for example—and which could be supported by governments to bring continued benefits to the sector beyond a period of health emergency.

This study aimed to understand the impact of the COVID-19 outbreak—including the measures and restrictions put in place to reduce its spread—on the urban motorcycle and MTT sector in six SSA countries. While most of the region managed to navigate the first wave of COVID-19 relatively unscathed, this cannot be said about the second and in particular the third wave. It is hoped that some of the lessons learned—brought up in this report—can help to reduce the impact of subsequent waves and outbreaks.

Author Contributions

The authors confirm contribution to the paper as follows: study conception and design: Krijn Peters, Jack Jenkins, Patrick

Hayombe; data collection: James Vincent, Ted Johnson, Rosemarie Santos, Simon Ntramah, Marion Mugisha, Paul Opiyo, Fredrick Owino, Reginald Chetto; analysis and interpretation of results: Krijn Peters, Jack Jenkins, James Vincent, Ted Johnson, Rosemarie Santos, Simon Ntramah, Marion Mugisha, Paul Opiyo, Fredrick Owino, Reginald Chetto; draft manuscript preparation: Jack Jenkins, Krijn Peters. All authors reviewed the results and approved the final version of the manuscript.

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