REPORT: COVID-19 impact on transport and mobility in Africa - A review of policy and practice in seven African countries

COVID-19 Response & Recovery Transport Research Fund

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Abstract	
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FIGURES

ACRONYMS

CAR	Central African Republic
CBD	Central Business District
COVID-19	Corona Virus Disease 2019 (Novel Coronavirus 2019)
CSO	Civil Society Organisation
FCDO	Foreign, Commonwealth & Development Office
FGD	Focus Group Discussion
GKMA	Greater Kampala Metropolitan Area
gTKP	Global Transport Knowledge Practice
HIC	High-income country
HVT	High Volume Transport Applied Research Programme
IMC	IMC Worldwide Ltd
IRF	International Road Federation
KCCA	Kampala Capital City Authority
KII	Key Informant Interview
LIC	Low-income country
LMIC	Low- and middle-income country
NGO	Non-Governmental Organisation
PCR	Polymerase Chain Reaction
PSV	Public Service Vehicle
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus Type 2
SOP	Standard Operating Procedure
VRU	Vulnerable Road Users
WHO	World Health Organization

EXECUTIVE SUMMARY

This report assesses the COVID-19 response in seven low- and lower middle-income countries in Africa (Cameroon, Kenya, Morocco, Mozambique, Senegal, Tanzania, Uganda) and the virus' impact on transport and mobility of people and goods. It analyses specific COVID-19 response measures taken by these countries and how these measures are impacting mobility and transport policy, operations, and overall wellbeing of people and communities. The work incorporates civil society and grassroots community perspectives to assess how the measures have impacted community access to transport services and mobility needs as individuals adapt to the new normal. Particular attention was assigned to physical distancing and capacity restrictions in formal and informal public transport.

Understanding the context and dynamics in these seven African countries, by documenting and assessing responses and their impacts, provides a solid base from which to inform future economic, social, and environmental action in Africa and elsewhere. This analysis helps support the call for more sustainable mobility which encourages public transport, active mobility, and equitable access. Public spaces, land use, and transport systems must be built around people. To ensure that the stimulus packages and massive investments that will be deployed in the short and medium term embrace this human-centric vision, this report support arguments with clear, effective, and well-documented evidence.

To do so, an in-depth desk review of the responses in the targeted countries was conducted, a context-specific questionnaire was administered to relevant stakeholders to fill identified gaps, and interviews were held with key stakeholders, including lead road safety agencies, traffic police departments and public transport authorities to obtain further insights. Qualitative data to support the findings from the desk review and key informant interviews was collected through focus group discussions in each country.

The report addresses the COVID-19 measures implemented in the focus countries, providing background and insights into the transport-related restrictions such as those affecting international travel, public transport, and urban and inter-urban travel restrictions. The report assesses the impact of these measures on transport – specifically looking at the impact on individual mobility to various locations such as public transport stations, workplaces, and residential areas, prior to providing insights into the detailed qualitative findings derived from interviews and focus group discussions. Lastly, detailed case studies for all seven countries are put forward, prior to key findings and recommendations being presented.

In response to the COVID-19 pandemic, governments in the seven focus countries applied a wide range of measures spanning from restrictions on public gatherings, curfews, closures of establishments such as restaurants, as well as to significant restrictions on international and national travel and transport more generally. Once first cases were confirmed, all countries eventually imposed the highest level of restrictions for international travel, meaning that international incoming and outgoing flights were banned, and borders were closed. However, the longevity of these measures varied significantly, as well as how countries chose to continue operating thereafter. Importantly, the severity of the restrictions did not always coincide with the rate of virus spread within the countries. Many countries reopened their borders despite rising case numbers for fear of the severe negative impacts on their economy.

Comparing mobility behaviour across all countries and locations between the first and second COVID-19 waves (wave one being defined as March to June 2020; wave two as September to December 2020) it can be observed that the reduction of mobility was generally much larger during the first wave than during the second. When comparing the seven countries, the findings exemplify how the restrictions and regulations put in place by government strongly impacted the extent to which mobility in the individual countries was reduced and shaped during the initial months of the pandemic.

A strong opinion from the community was, that although capacity restrictions and physical distancing caused some inconvenience, daily commute and travel was generally more comfortable and safer due to reduction in the number of passengers. It was suggested that this, alongside other measures which made public transport more reliable, safe, and organised, should be integrated more permanently into the transport system.

The report findings constitute the emergent best practices, aggregated based on the data collected and analysed using both top-down and bottom-up approaches to policy formulation, implementation process and community behaviour in the seven countries. The report findings centre around the importance of:

- **Creating a national taskforce** with regular consultations and follow-up meetings to allow time-sensitive and extensive collaboration among the various actors.

- **Integrating representatives of the informal transportation sector**, such as boda boda associations, in the design and implementation process of measures against the spread of the virus as this facilitates more practical and effective measures and Standard Operating Procedures (SOPs).

- **Fostering dialogue and harmonising cross-border SOPs**, such as for testing strategies at land borders, which can mitigate the complications for cross-border traffic.

- **Enforcing and implementing a thorough M&E process** at all levels is essential to ensure the effectiveness of measures being applied and to ensure compliance to the SOPs while at the same time safeguarding traffic and road safety rules.

- **Improving coordination within the transport sector**, for example through trainings, can reduce any reluctance to particular measures and heighten the sense of responsibility of jointly acting against the virus. Grassroots level NGOs can provide valuable support for these efforts and adapt to local contexts and needs, for example overcoming language barriers.

- **Encouraging a more rapid and effective development of user-friendly and safe transport infrastructure environments** (e.g. separate bicycle lanes and sidewalks) can assist preventing the spread of a pandemic while also ameliorating the road safety situation for vulnerable road users.

- **Implementing stable pricing policies to maintain public transport affordable** for the general public. Laws and financial penalties regarding maximum public transport pricing can ensure stable ticket prices for consumers.

The report concludes by drawing out four key policy recommendations for transport stakeholders that can provide a way forward during the "new normal", as well as to counteract any potential future waves of the current or future pandemics in low- and lower middle-income countries.

- **A holistic approach to Policy Formulation** should be applied by policy- and decision-makers in order to seize the opportunity to tackle engrained problems alongside those caused by the pandemic and to ensure that the stimulus packages and significant investments being deployed in the short and medium term embrace a human-centric vision of the transport system.

- **Investing in Research and Data** is of paramount importance to provide a solid data and evidence-driven base for economic, social, and environmental action. The pandemic highlighted the importance of research and data to allow an in-depth understanding of the context and dynamics within which decisions and actions are formulated.

- **Inclusion and Community Participation** are essential when formulating SOPs and responses, including actors such as informal transport operators and civil society to support pandemic counteractive measures to improve safety and access to sustainable mobility for all.

- **Strategic Collaboration** is key to interrupt the often-found silo culture to create common ground and understanding. It is only through the power of partnerships and cooperation that policies and measures reach their full potential. This applies on a national, regional, and international level – especially when combatting a challenge at hand such as a pandemic which knows no borders.

1. Introduction

The Corona Virus Disease 2019 (COVID-19) global pandemic has altered many aspects of our lives in recent months, including the way we move. Facing this unprecedented situation, public authorities and transport operators have quickly implemented creative, sometimes bold, measures and management tools to keep essential workers moving, provide safe access to grocery stores and other essential businesses, and to ensure that people have safe space for physical distancing while going outside.

The International Road Federation (IRF) and the Global Alliance of NGOs for Road Safety (the Alliance) leveraged their respective networks in Cameroon, Kenya, Morocco, Mozambique, Senegal, Tanzania, and Uganda, to draw a first analysis of the situation on the African continent, to aggregate and synthesise emerging practices, and facilitate the uptake of good practices that enhance sustainable transport, while also protecting health and safety. This analysis provides evidence-based suggestions that policy makers in Africa should consider when defining responses to potential future waves of COVID-19, as well as recovery measures.

1.1 Project aims and objectives

COVID-19 is presenting many new issues for mobility, road safety, and transport. It is also highlighting old issues and is offering an opportunity to tackle ingrained problems alongside those caused by the pandemic.

In high-, middle-, and low-income countries alike, the need for physical distancing is forcing local and national governments to put in place policies and solutions to promote safe, hygienic mobility and enable individuals to maintain a suitable distance from each other. In many places, road users' confidence in public transport has decreased due to fear of infection. At the same time, lockdowns and other restrictions have reduced traffic and the number of individuals choosing to use healthier modes of travel, in particular walking and cycling, has increased.

These various issues are magnified in Africa where shortage of transport supply, limited financial livelihood assets, and challenges within the regulatory framework, present issues for the implementation of physical distancing, hygiene, and capacity restrictions within transport and road systems during the COVID-19 pandemic.

Little research currently exists to specifically document and assess the situation in Africa – what is working, why and how to scale it up. This research aims to fill this gap between policy design and implementation and impact. It does so through a first analysis of the COVID-19 response on the African continent and its impact on transport and mobility of people and goods. Its premise is to aggregate and synthesise emerging practices, facilitate the uptake of good practices that enhance sustainable transport while protecting health and safety, and provide evidence-based suggestions that policy makers in Africa should consider when defining responses to potential future waves of COVID-19 and recovery measures.

1.2 Transport challenge being addressed during COVID-19

The project assessed the COVID-19 response in seven low- and lower middle-income countries in Africa (low-income: Mozambique, Uganda; lower middle-income: Cameroon, Kenya, Morocco, Senegal, Tanzania (1)) and the virus' impact on transport and mobility of people and goods. It analysed specific COVID-19 response measures taken by these seven African countries and how these measures are impacting mobility and transport policy, operations, and overall wellbeing of people and communities. The work incorporates civil society and grassroots community perspectives to assess how the measures have impacted community access to transport services and mobility needs as individuals adapt to the new normal. Particular attention was assigned to physical distancing and capacity restrictions in public transport (formal and informal).

Understanding the context and dynamics in these seven African countries, by documenting and assessing responses and their impacts, provides a solid base from which to inform economic, social, and environmental action. The analysis helps support the call for more sustainable mobility which encourages public transport, active mobility, and equitable access. Public spaces, land use, and transport systems must be built around people. To ensure that the stimulus packages and massive investments that will be deployed in the short and

medium term embrace this human-centric vision, we need to be able to support arguments with clear, effective, and well-documented evidence.

1.3 Alignment with the HVT research themes, priorities, and programme objectives

The project assesses the selected countries against the HVT programme's objective to update vital transport research that reduces poverty and develops economies. It does this by assessing the impact of transport-related COVID-19 restrictions put in place in selected African LMICs, the challenges encountered during implementation, the impacts that occurred as a result, and addresses how this has impacted the road safety situation in some of the countries under review.

By doing so, and by identifying key learnings that can be scaled up and replicated, it helps communities advocate for and implement actions that improve safety and access to sustainable mobility. A recent World Bank study found that a 15 to 22 percent increase in GDP per capita over 24 years - can be achieved through substantial reduction in road traffic injuries in line with the current UN targets (2). Therefore, there is a clear link between road safety and reducing poverty and advancing the economy. Furthermore, public transport is an enabler for equality and poverty reduction. For many people, it is a necessity for access to work and education. Distancing and hygiene restrictions, alongside passengers' fears of catching the virus on trains and buses, are negatively affecting public transport systems. Without sufficient support and attention, vital routes and services could be lost.

The project provides valuable evidence-based knowledge which can be utilised to inform transport-related policy development and action. Furthermore, it presents an approach and solutions that the project team believes can be replicated across other cities, countries, or contexts.

1.4 Alignment with FCDO priorities

The research project was carried out in seven LMICs in Africa with reported COVID-19 cases and consequent transport-related restrictions. This scope falls under the jurisdiction of FCDO regional interest, with COVID-19 research and global health security further constituting a key focus area for FCDO.

The project addressed how COVID-19 is affecting an already challenging transport, and especially public transport, situation in African countries. The project aimed to bridge the information gap between policy design, implementation, and impact by analysing the COVID-19 response in Africa and understanding the challenges encountered in roll-out, and particularly the impact on transport and mobility of people and goods. By producing evidence-based knowledge, the project findings and recommendations can help inform policy decisions and development and can be applied during future waves of this or other pandemics on a national, regional, or international level.

2. Methodology

The project assessed the COVID-19 response in seven low- and lower middle-income countries in Africa (low income: Mozambique & Uganda; lower middle income: Cameroon, Kenya, Morocco, Senegal & Tanzania (1)) throughout the year 2020 and the pandemic impact on transport and mobility of people and goods. It specifically analysed COVID-19 response measures taken by these seven African countries and how these measures are impacting mobility and transport policy, operations, and overall wellbeing of people and communities. The work incorporates civil society and grassroots community perspectives to assess how the measures have impacted community access to transport services and mobility needs as individuals adapt to the "new normal". Particular attention was given to physical distancing and capacity restrictions in public transport, which for the purpose of this report refers to both, formal and informal transport.

This section provides an overview of the methodology applied to investigate how the current COVID-19 pandemic has influenced the transport sector in the selected African countries.

2.1 Summary of approach

The project used a combination of a desk review, an online questionnaire for relevant transport institutions, key informant interviews (KIIs), and community-level focus group discussions (FGDs) to establish the COVID-19 transport-related measures implemented by governments in each of the selected countries at the institutional level as well as the mobility impact of these measures on communities. More detail about the methods used for each activity are described below.

The qualitative and quantitative data collected were used to identify areas with potential for greater dialogue and collaboration between public authorities and civil society, aiming to dissolve the silo culture by creating common ground and understanding.

2.2 Methodology and implementation

The research consisted of three main stages. Firstly, the policy and regulatory responses to COVID-19 affecting transport and mobility were assessed. This was to establish the extent to which policy makers have domiciled WHO guidelines on managing COVID-19 and to what extent these measures have affected transport and mobility. This addressed key research questions such as: Which measures are being put in place, how, and for how long? Is quantitative data available? Are these measures temporary to tide over COVID-19 or are African governments considering how to integrate measures into long term policy?

To do so, an in-depth desk review of the responses in the targeted countries was conducted. The desk review was accompanied by an online, context-specific questionnaire administered to relevant stakeholders to fill identified gaps. Where relevant and possible, interviews were conducted with key stakeholders, including road safety lead agencies, traffic police departments, public transport agencies and companies, and urban road authorities to obtain further insights. Quantitative as well as qualitative research on policy and regulatory responses to COVID-19 were collected and utilised to assess similarities and differences among the individual country approaches. The research aims to shed light on how policy or regulatory responses to COVID-19 are affecting the formal and informal public transport sectors, freight transport and corridors, as well as the overall impact on mobility.

Additional qualitative data to support the findings from the desk review and KIIs was collected through FGDs in the seven countries. Participants from target community segments for the FGDs included: formal or informal public transport drivers; formal or informal public transport passengers; motorised 2- or 3-wheeler riders; motorised 2- or 3- wheeler passengers; private vehicle drivers; pedestrians; cyclists and long-distance truck drivers. The project partners' NGO networks in the seven African countries were engaged and trained to support the data collection.

Lastly, to disseminate the results, two webinars were developed and promoted through IRF and Global Alliance communication channels. One focussed on the approach, methodology and preliminary findings of this study; whilst the second one covered the final findings, key learnings, and recommendations. Both webinars were aimed at governments, authorities, and key transport stakeholders to promote in-country and

regional collaboration, discussion, and engagement. Further, the civil society participated in acknowledgement of its valuable role in promoting community buy-in and acceptance for policies.

The webinars and this report are available on the global Transport Knowledge Partnership (gTKP) to keep knowledge alive (future updates, case studies) and to disseminate the findings through gTKP's network, which specifically addresses Low- and middle-income countries (LMICs).

2.3 Innovation

At the time of writing, little research had been conducted on African countries regarding the COVID-19 regulations enforced at the institutional level and the consequent impacts on mobility. Analysis of effective solutions can have a significant benefit for African countries and cities. Using the research partners' extensive networks in the individual countries, this research provides a valuable ground-level perspective and allows to map out the situation in a comprehensive way, dissolving the silo culture by creating common ground and understanding among the different components of what should be a unique transport community.

This project aims to add additional value to the data collection and analysis procedure by using modern technology data like mobile telemetric data. Data such as the Google Analytics data have previously been used to draw conclusions on transport at a continent level, however, this has not been conducted at a country level for the selected African countries.

2.4 Assumptions

It is important to keep in mind the limitations and biases applying to the collected and analysed data. Mobile phone users, for example, may not provide an accurate portrayal of the average citizen, especially in developing countries. Furthermore, frequenting certain locations by individuals, such as public transport stations, does not provide clarity on whether an individual ended up taking public transport. Similarly, a lot of data primarily refers to official public transit stations, with informal means of transport being sparsely reflected, thus potentially skewing the impact witnessed in LICs in particular. Hence, there are specific biases inherent to analysing data such as smart phone mobility data and drawing conclusions to transport-related behaviour. Similarly, data derived through KIIs and FGDs provide inherent biases based on the selection of interview partners or focus groups. However, for lack of more advanced datasets, it is assumed that these provide a somewhat representative picture as well as valuable insights, both on a quantitative and qualitative basis.

3. COVID-19 country measures implemented

3.1 Background

Since the onset of the pandemic, which was officially declared as such by the World Health Organization (WHO) on 11th March 2020, researchers were quick to react and to try to capture the effect national lockdowns were having on mobility and the economy. Depending on the restrictions in each country, it was found that overall traffic declined between 30% and 85% during the first instalment of restrictions, with the use of public transport also having significantly reduced due to the higher level of infection risk (3). Based on Google Mobility data, the public transport reduction was found to be 60% to 80% globally (4).

Understandably, the wealth of transport-related data on the incurred impact of the restrictions was much greater in developed nations compared to LICs. In Europe, as national borders tightened restrictions, websites to show the live status of borders and waiting times were quickly released, for example based on location tracking devices in the fleets of some of Europe's largest shipping companies (5). In some cases, countries were quick to develop dedicated websites for truck drivers to enable them to know where they would still be able to rest and refuel. The wealth of data in turn allowed policy makers to shape and adapt their transport-related COVID-19 policies as required to support the sector based on hard evidence. Dedicated guidance and advice for the transport sector in LICs on the other hand are found to be lagging. Dalkmann and Turner were among the first to list opportunities for policy makers in Africa, specifically regarding the informal sector (6). While Peden and Kobusingye addressed the intersections between transport and health to identify areas that require additional research or policy and regulation development (7).

While some progress has been made, research and information, especially of quantitative nature, quickly becomes sparse for Africa. Some papers, for example that of SLOCAT, have benchmarked the global regions using Google Mobility data to understand the commonalities and differences of smart phone user behaviour because of the pandemic (4). Africa, they noted, presented the lowest change of mobility to public transport stations, while for driving it showed the strongest regional impact. However, a more detailed continent-focussed analysis is currently missing. Some observations have been made that informal transport operators in many LICs are facing a complete revenue loss (3). But so far qualitative assessments using available online sources such as articles, blogs and eyewitness accounts conducted for some countries are more common than specific data points, though attempts have been made to bridge this gap, for example through specific webinars focussing on the impact of COVID-19 in Southern Africa, for example the challenges faced by freight and logistics as a result (8).

Ultimately, while the general negative implications on mobility are known, little exists on the specific transport-related COVID-19 regulations imposed per country, how these were implemented and what impact these had at the grassroot level. This research aims to bridge this gap by focussing on seven selected countries as case studies and comparison. This allows to extrapolate actionable evidence-based policy recommendations.

3.1.1 COVID-19 cases in the seven focus countries

The first official COVID-19 case on the African continent was confirmed on 14th February 2020 in Egypt. On 28th February 2020, Nigeria confirmed the first case in sub-Saharan Africa. Of the seven focus countries, Morocco and Senegal were the first to confirm a case on 2nd March 2020, followed by Cameroon four days later, Kenya, Tanzania, and Uganda the following week, and lastly Mozambique on 22nd March 2020. Assessing the officially reported positive Polymerase Chain Reaction (PCR) test cases per 100,000 population in each country over time, it becomes evident that Morocco encounters the highest rate of cases, with 439,193 total cases since the beginning of the pandemic (as of 31st December 2020). However, on a global level, Morocco has a relatively low cumulative number, when compared to other countries. It cannot be said with certainty if the African continent is less impacted by the health crisis or if this is primarily a reporting issue. For example, data for Tanzania were not available after early May 2020 (**Figure 1**).

Figure 1: Evolution of confirmed positive PCR cases
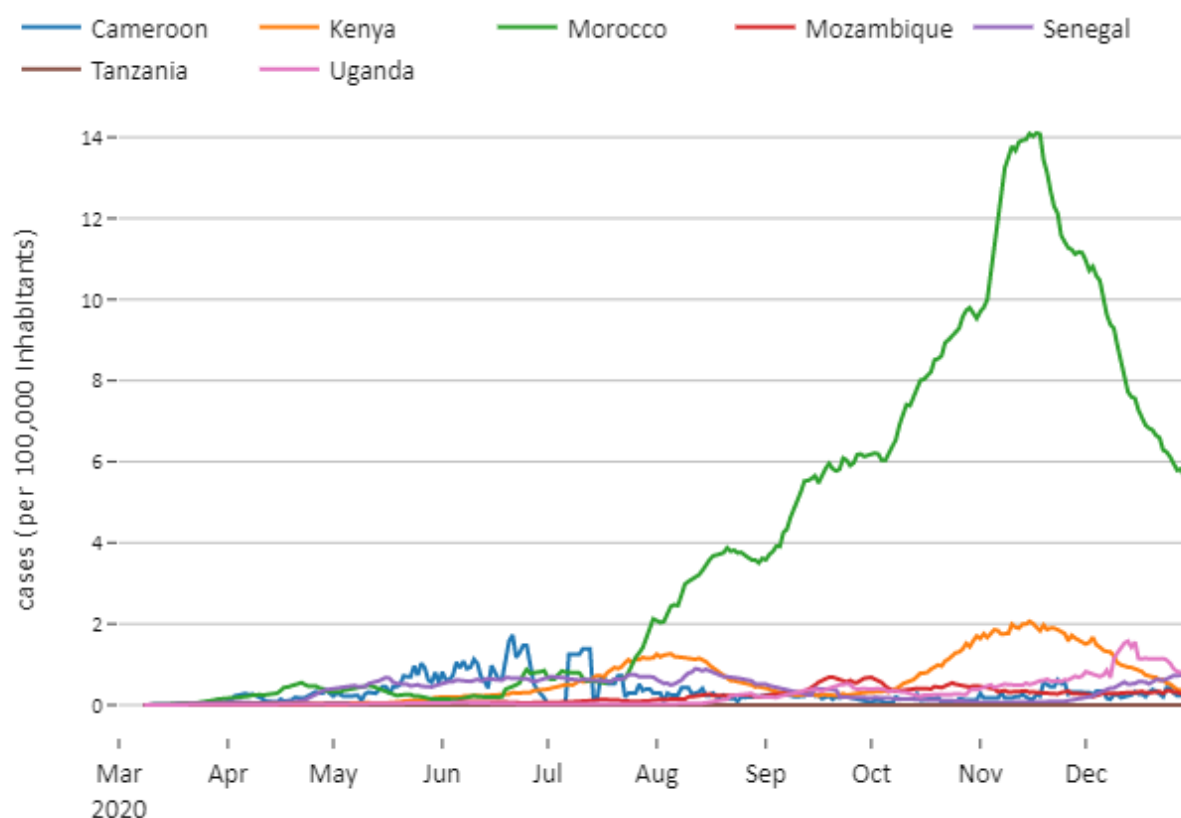
Daily reported absolute case numbers per 100,000 inhabitants (7-day smoothing average) are shown from March – December 2020.

Source: Johns Hopkins University

3.1.2 COVID-19 restrictions imposed

While the onset and evolution of reported cases varies by country, all governments took some precautionary measures to avoid the spread of the virus. These spanned from restrictions on public gatherings, curfews, closures of establishments such as restaurants, as well as to significant restrictions on international and national travel and transport more generally. Some countries closed their airports, ports, and national borders, while others implemented restrictions on inner- and interurban travel only.

Most COVID-19 restrictions aim at reducing close contact between people by avoiding gatherings. This inevitably impacted mobility as well. Below (**Figure 2**) various transport-related COVID-19 measures are mapped out based on who initiated them, and what impact they have on mobility. Government measures restricting the opening hours of shops, restaurants and institutions significantly reduce the daily demand for mobility, similarly to curfews and work from home orders. Restrictions on public gatherings and travelling similarly affect the mobility demand side. On the supply side, restrictions regarding occupancy rates, public transport closures or restrictions, caused significant reductions.

In response to the COVID-19 pandemic, governments in the seven focus countries applied a wide range of these measures. The Oxford COVID-19 Government Response Tracker compares policy responses among countries (9). Mapping the data of the focus countries using the tracker as a heat map to show which measures affecting the transportation sector were implemented when and with what severity, one can analyse which countries took what measure and how these compare over time.

Figure 2: Mapping of transport-related COVID-19 measures
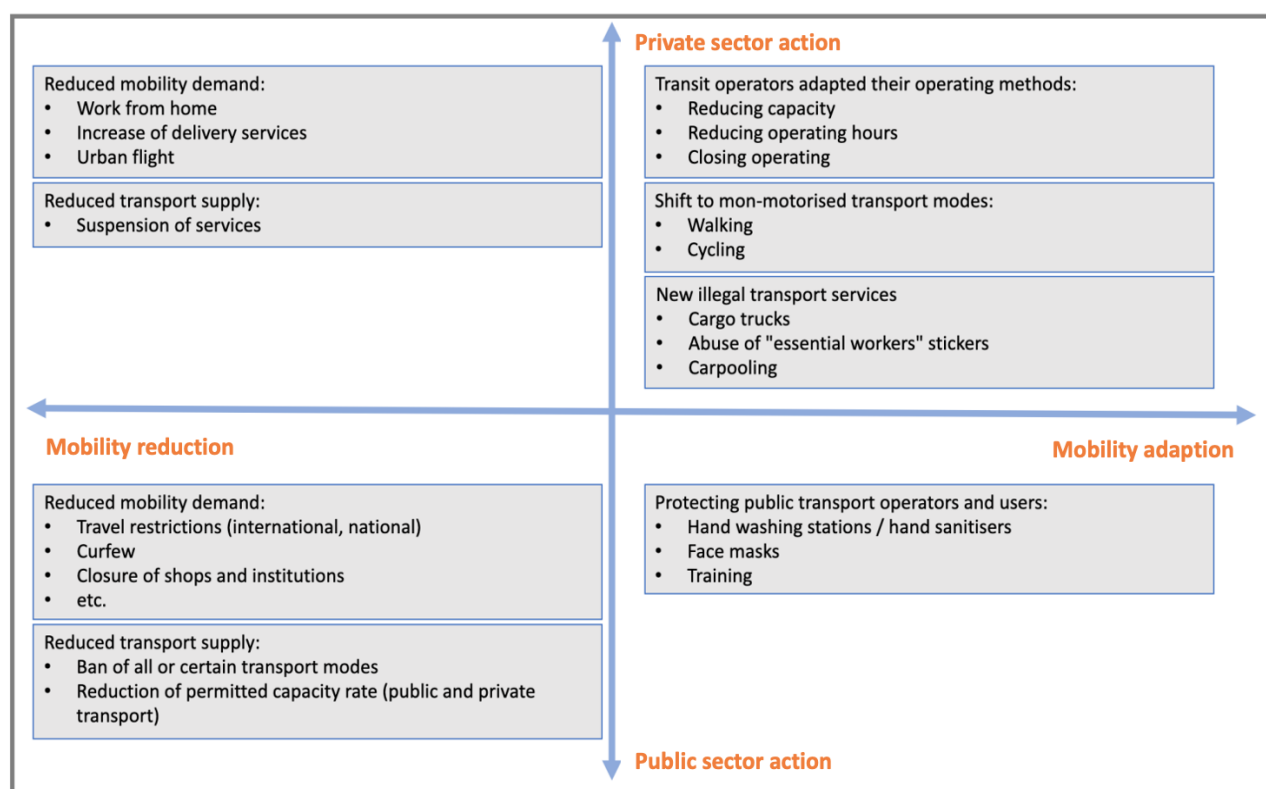
Source: IRF, adapted from CODATU (10)

3.2 Restrictions affecting international travel

With the onset of the pandemic, all focus countries introduced screening of international arrivals at borders, primarily focussing on body temperature (**Figure 3**). In most cases this was implemented prior to the first case being confirmed within their respective countries. Once first cases were confirmed, all countries eventually imposed the highest level of restrictions for international travel, meaning that international incoming and outgoing flights were banned, and borders were closed. However, the longevity of these measures varied significantly, as well as how countries chose to continue operating thereafter.

Morocco and Senegal enforced the strictest measures, with a total border closure for a prolonged period, followed by a continuing ban on certain countries. Kenya and Cameroon also had the highest restriction level for a long time, during which road, air and maritime borders were closed, and only cargo, consumer products, essential goods and services could pass. In Kenya, Uganda, and Tanzania truck drivers had to provide a negative PCR test result at certain borders to be granted passage. In Senegal, drivers entering and leaving the country via land borders had to go through temperature screening and required an additional PCR test if the temperature exceeded a certain threshold.

Figure 3: International travel controls containment and closure policies
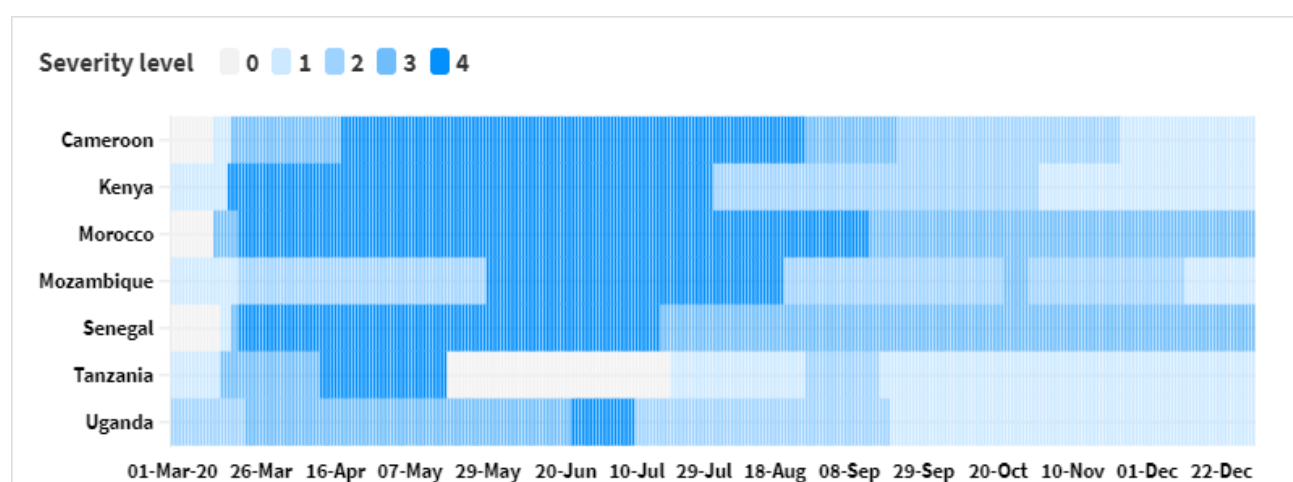
The measure is set in an ordinal scale, with the following coding: 0 - no restrictions, 1 - screening arrivals, 2 - quarantine arrivals from some or all regions, 3 - ban arrivals from some regions, 4 - ban on all regions or total border closure.

Source: Oxford COVID-19 Government Response Tracker

In Cameroon, which serves as a transit country for landlocked neighbours such as Chad and Central African Republic (CAR), movement of freight continued, with drivers and assistant drivers being tested at borders when entering and leaving the country. Per person a test had to be done on both sides of the border and to be validated by both countries before allowing passage. However, a lack of harmonisation in terms of screening measures negatively impacted mobility. For instance, at one of the main Cameroonian borders with the CAR, Garoua-Mboulai, Cameroon had quick antigen tests available providing results in less than an hour, whilst samples on the CAR side were taken and sent to the capital Bangui to be analysed. The whole process could take up to three weeks until results came back. Long waiting times created long truck queues at the Cameroon side of the border that reached 500 trucks at some point, increasing risk of COVID-19 infection, especially when considering that each truck carried five people on average. To counteract the situation, the two countries met to harmonise the testing and to accelerate the process by accepting proof of negativity to COVID-19 from tests conducted in either country.

In Kenya, since November 2020, international arrivals who can prove a negative PCR test result can avoid quarantine. In Mozambique, borders were also closed and there was a ban and cancellation of all entry visas, as well as a 14-day quarantine when the borders reopened. Tanzania on the other hand, allowed international flights in and out of the country to resume as of 18th May 2020, and after a temporary requirement for a compulsory negative COVID-19 test result and 14-day quarantine for arrivals from high-risk regions in August/September, temperature screening has been the foremost measure (11). Individuals showing symptoms upon arrival may be required to take a COVID-19 test.

Importantly, the severity of the restrictions did not always coincide with the rate of virus spread within the countries. Many countries reopened their borders despite rising case numbers for fear of the severe negative impacts on their economy. In the case of Morocco, which had low cases between March and May 2020, cases quickly spiked over the summer and then again in November 2020. Yet, airports and borders reopened in September, albeit with strict restrictions and ongoing bans for certain regions.

3.3 Restrictions affecting public transport

When addressing public transport, Uganda and Morocco took the most stringent measures regarding the closure of public transport since March 2020 (**Figure 4**). In Uganda, public transport was closed from 25th March onwards until 1st July 2020. Additionally, at the end of March 2020, restrictions were implemented that only allowed movement to certain areas, which coincided with the national lockdown, which lasted for over three months. Movement during the lockdown was only permitted for essential workers, e.g., doctors, government workers, and by using their private vehicle. It was necessary for them to acquire special stickers from the Ministry of Works and Transport and to place those visibly on their car. A maximum number of three passengers, including the driver, with proper identification was permitted. Other people moved by walking or

cycling to buy essential goods during the curfew. These measures were enforced by the police to ensure compliance.

According to the Oxford data, at the end of July 2020, the severe restrictions on public transport in Uganda were softened and at the end of September 2020 all restrictive public transport recommendations were lifted, despite an increase in the number of cases. However, based on discussions with key informants on the ground, restrictions were not lifted – rather enforcement was lessened in preparation for the January 2021 elections. Throughout the remainder of 2020, public transport service providers were continuously supposed to operate at half capacity, drivers were instructed to enforce hand washing or sanitising at the beginning and end of each trip and wearing face masks remained mandatory. However, these regulations were often not followed, and the boda boda motorcycle industry in particular, was impossible to regulate following the reopening due it being a predominantly unregulated market.

Morocco, on the other hand, which had closed public transport ahead of Uganda, lifted these restrictions entirely mid-June 2020, and later made recommendations to close it again at the end of October 2020.

Figure 4: Public transportation containment and closure policies
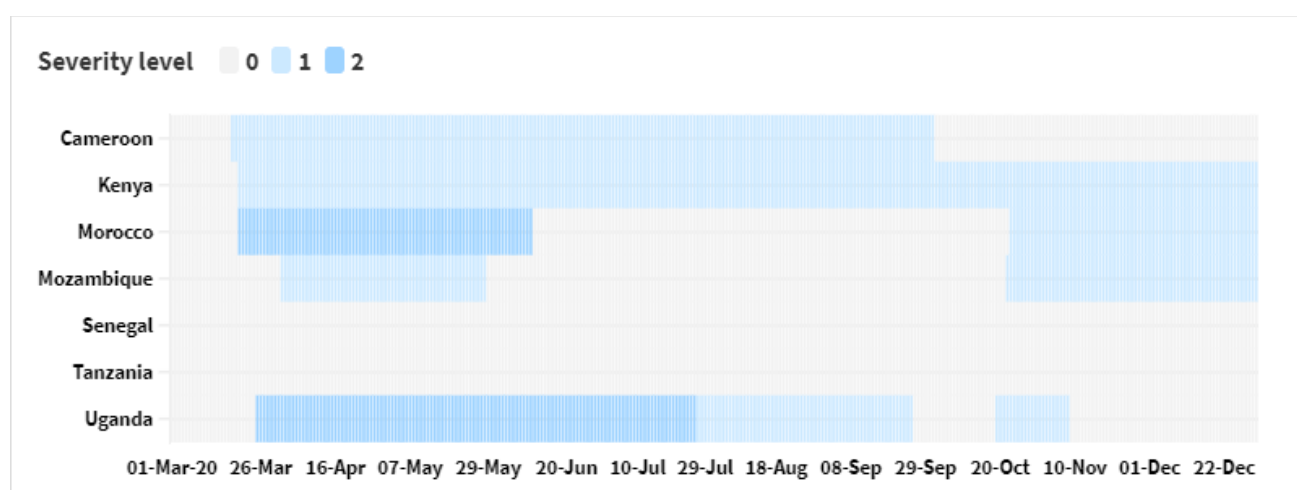
The measure is set in an ordinal scale, with the following coding: 0 - no measures, 1 - recommend closing (or significantly reduce volume/route/means of transport available), 2 - require closing (or prohibit most citizens from using it).

Source: Oxford COVID-19 Government Response Tracker

Tanzania reported no significant measures concerning public transport, while Kenya, Cameroon and Mozambique recommended closing or significant reducing the volume, route or means of transport available for significant amounts of time. In Senegal, the maximum capacity for public transport was reduced to one third during the lockdown period. In Kenya, motorcycle taxis (boda boda) were forbidden to carry more than one passenger and in Cameroon a ban on overloading taxis and public transportation was introduced. In Mozambique, after initial restrictions had been lifted for a few months, a rise of positive cases informed the government to recommend a renewed closure.

3.4 Restrictions affecting urban and inter-urban travel restrictions

All countries, apart from Tanzania, implemented some sort of containment and closure policies in the form of restrictions on internal movement between cities and regions (**Figure 5**). Of the six countries that applied restrictions, Cameroon applied the softest approach, issuing solely recommendations not to travel between regions and cities and to do so only in absolute emergencies. All others put in place strict internal movement restrictions. Morocco and Uganda have been strictest with this approach, followed by Kenya, where authorities temporarily eased restrictions, but then reinstated them.

Figure 5: Internal movement containment and closure policies
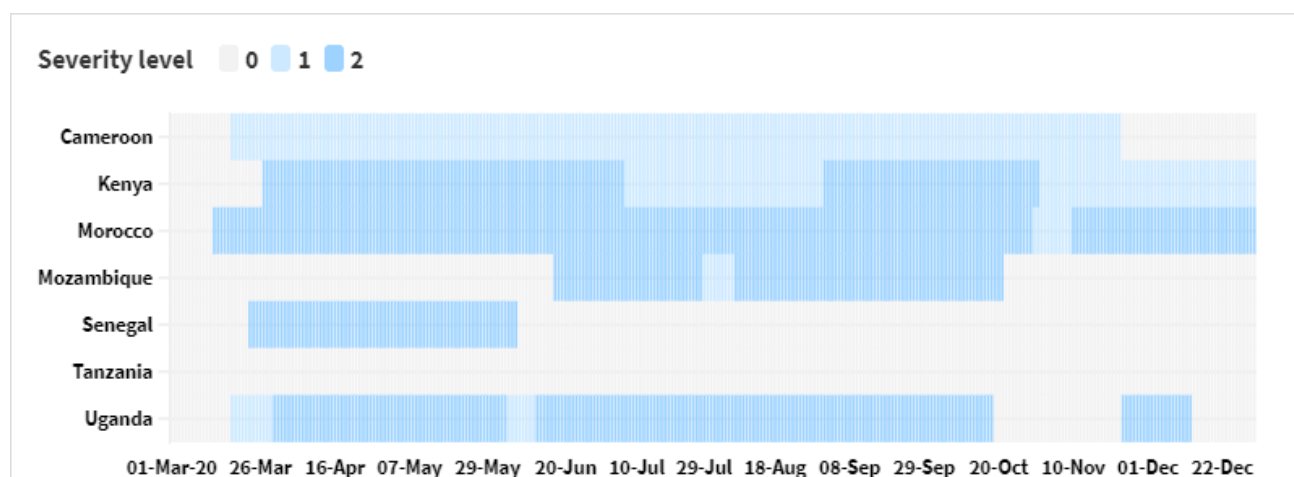
The measure is set in an ordinal scale, with the following coding: 0 - no measures, 1 - recommend not to travel between regions/cities, 2 - internal movement restrictions in place.

Source: Oxford COVID-19 Government Response Tracker

In Uganda, a national lockdown and stay-at-home orders came into effect at the end of March 2020 for all but essential trips, and movement was only allowed to certain areas. This meant that only vehicles carrying essential personnel and goods were permitted to move, with a maximum capacity of three individuals per vehicle, and these vehicles were given stickers to ease identification. In the case of an emergency, to obtain permission to use a private car to drive someone to a hospital, permission was required from the Office of the Resident District Commissioner.

Senegal initially introduced strong restrictions, under which for example permits allowing the right to circulate on the national territory were required but lifted these entirely after a two-month period.

In Kenya, all road and rail travel were banned in and out of the Nairobi metropolitan area as well as the Mombasa, Kilifi and Kwale counties for 21 days, and this restriction was later extended for another 21 days. In certain cases, roadblocks were installed, ensuing that farmers, for example, could no longer go to local markets. To ensure compliance with the restrictions they implemented, the Kenyan government issued a warning on 18th April 2020, stating that truck and motorcycle taxi drivers and others, who flout travel restrictions will be reprimanded by a fine up to KES 20,000 (GBP 133) or 6 months imprisonment (or both) (12).

4. Impact of COVID-19 measures on transport

The impact of COVID-19 measures was felt by most individuals across the globe. For the majority, the year 2020 started off with restrictions severely hampering their mobility. Comparing the development of travel to public transit stations using Google Mobility data from 2020 versus baseline data, it is evident that March through June 2020 represented a huge decline versus previous behaviour. This pattern is evident across geographic regions (**Figure 6**), as well as across income groups (**Figure 7**).

Google uses aggregated, anonymised data from products such as Google Maps to provide insights into movement patterns. The data shows movement trends over time by geography, across different categories of places. For the purpose of this report, the first pandemic wave is defined as March through June 2020, whilst the second wave is defined as September through December 2020, as these are the periods throughout which cases started to rise, and most preventive measures were implemented.

Since the beginning of March 2020, there has been a steep decline in the number of people travelling to public transit stations across all regions. By mid-April, the global percentage of trips to transit stations was more than half of the baseline for most of the geographic regions. Only countries in Sub Saharan Africa (minimum -25%) and the Middle East (minimum -30%) showed a less drastic decrease compared to the remaining regions. After this initial steep decline, reported behaviour steadily converged back towards the baseline from May to September 2020. Many countries experienced the second wave of the pandemic thereafter. Most regions remained at mobility levels below the baseline, however the convergence towards previous values continued.

Figure 6: Mobility to public transit stations by geographic area
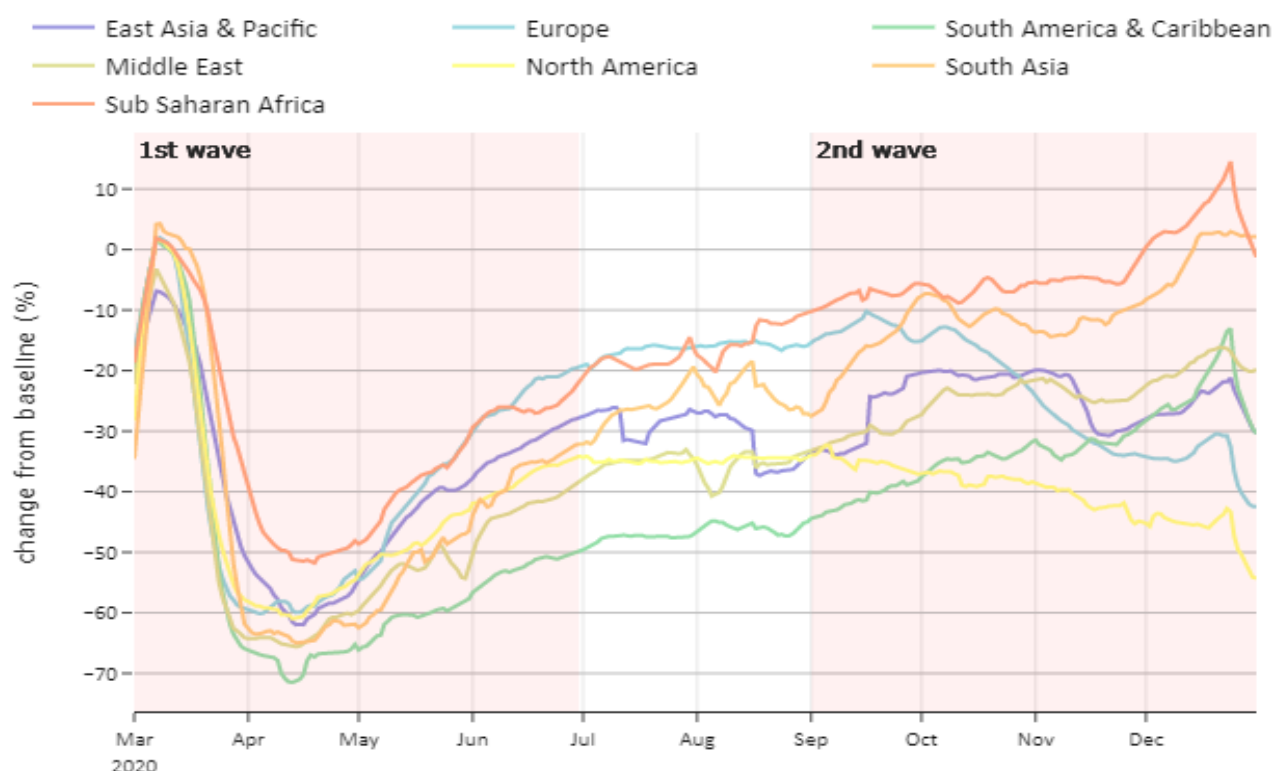
For global regions, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

Only South Asia and Sub-Saharan Africa showed an increase over time compared to the baseline, corresponding to a positive increase in LMICs. On average, countries in all income groups showed a decrease in mobility to transit stations after mid-December 2020. A likely reason for this is the holiday season at the end of the year celebrated by many, accompanied by the further implementation of travel and movement restrictions in many of the countries at this period. In general, movement data demonstrates a lag in the

impact on trips to transit stations in HICs, and lower- and upper-middle-income countries, with a higher negative impact than in LICs.

It should be noted that the data refers to *official* transit stations, e.g., subway stations; seaports, taxi stands; highway rest stops; car rental agencies, and that more informal means of transport are sparsely reflected in this data, thus potentially skewing the impact witnessed in LICs.

What both graphs depict is the negative impact that the COVID-19 measures had on mobility of individuals across the globe and across income groups. Zooming in on the seven focus countries of this report, a more detailed analysis of the impact of the COVID-19 transport-related restrictions in Africa is portrayed.

Figure 7: Mobility to public transit stations by income group
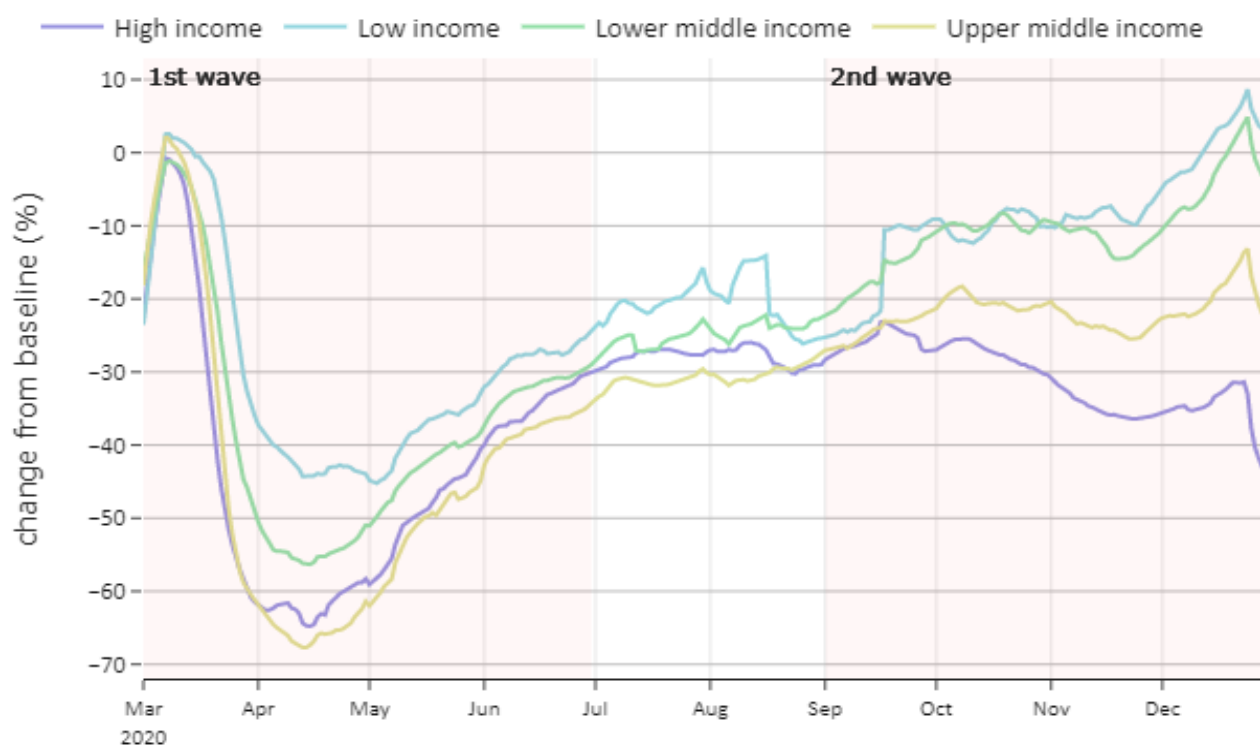
For the World Banks' countries income levels, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March– June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1 Overview of the impact on mobility behaviour in the selected countries – a comparative analysis

A detailed assessment of mobility within the seven focus countries reveals significant drops for each of them throughout the course of the year 2020 across all locations, apart from time spent in residential buildings where proportionally more time was spent consequently to the decline in all other locations (**Figure 8**).

4.1.1 Impact on individual mobility to retail and recreation

The most significant reduction of mobility to retail and recreation facilities was encountered in Uganda, where throughout April and May 2020, a reduction of up to 70% versus the baseline was identified. Senegal had the second most severe reduction of between 40% and 50%. As the initial lockdowns were eased, as of May 2020, the return towards the baseline is evident, with countries such as Tanzania reaching pre-COVID levels again as of the end of June. As the second wave descended, a higher reduction was witnessed again as of October, though with the temporary exception of Tanzania during the Presidential election at the end of October, no country had as great an impact as during the first set of restrictive measures, with all countries remaining much closer to the baseline.

12

Figure 8: Difference in mobility pattern to retail and recreation stores compared to baseline
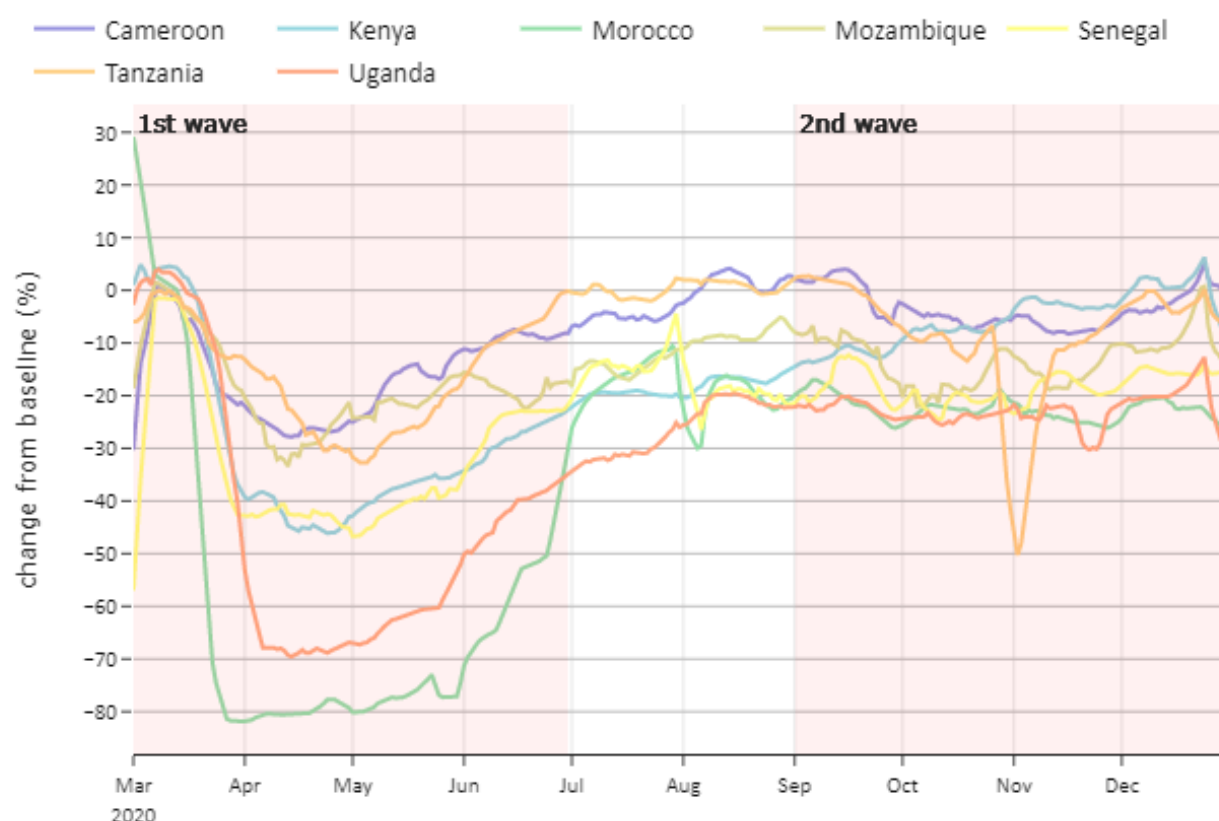
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1.2 Impact on individual mobility to parks

Over the entire analysed period, the values for park visits remained consistently below the baseline level in all seven countries studied (**Figure 9**). On average, visits were around 25% below baseline levels, with a range of -25% to -55% in the first wave and 0% to -25% from July 2020 onwards. Only Morocco showed a significantly stronger decline during the first wave to up to -60% compared to the baseline. This value remained constant until July 2020, with a potential reason for this being the normally high share of holidaymakers in public parks. This almost came to a complete halt after tough measures were taken regarding international travel and public facilities were closed.

Figure 9: Difference in mobility pattern to parks compared to baseline
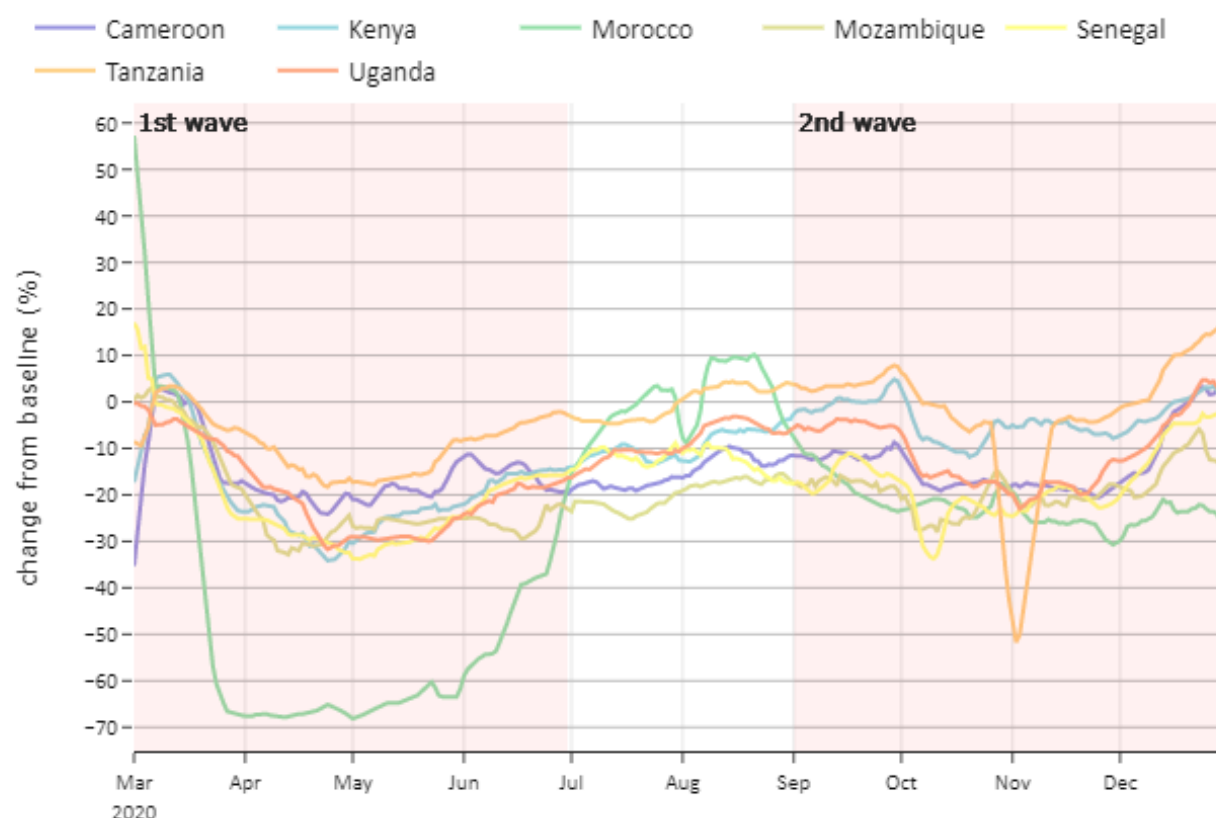
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1.3 Impact on individual mobility to grocery and pharmacy stores

A similar movement pattern can be seen for the frequency of visits to grocery shops and pharmacies (**Figure 10**). Here, the values of all seven countries dropped sharply compared to the baseline from the beginning of March 2020 and most reached their minima between April to May 2020. Comparing the countries, Morocco and Uganda showed the decline (by over 50%). At the end of the first wave, the values stabilised at a relatively constant negative level in the range of 0% to -25% for all countries. Surprisingly, in the following months, and consequently also during the second wave, the growth rates show an increasing effect and reach positive values for some countries such as Morocco or Kenya.

Figure 10: Difference in mobility pattern to grocery and pharmacy stores compared to baseline
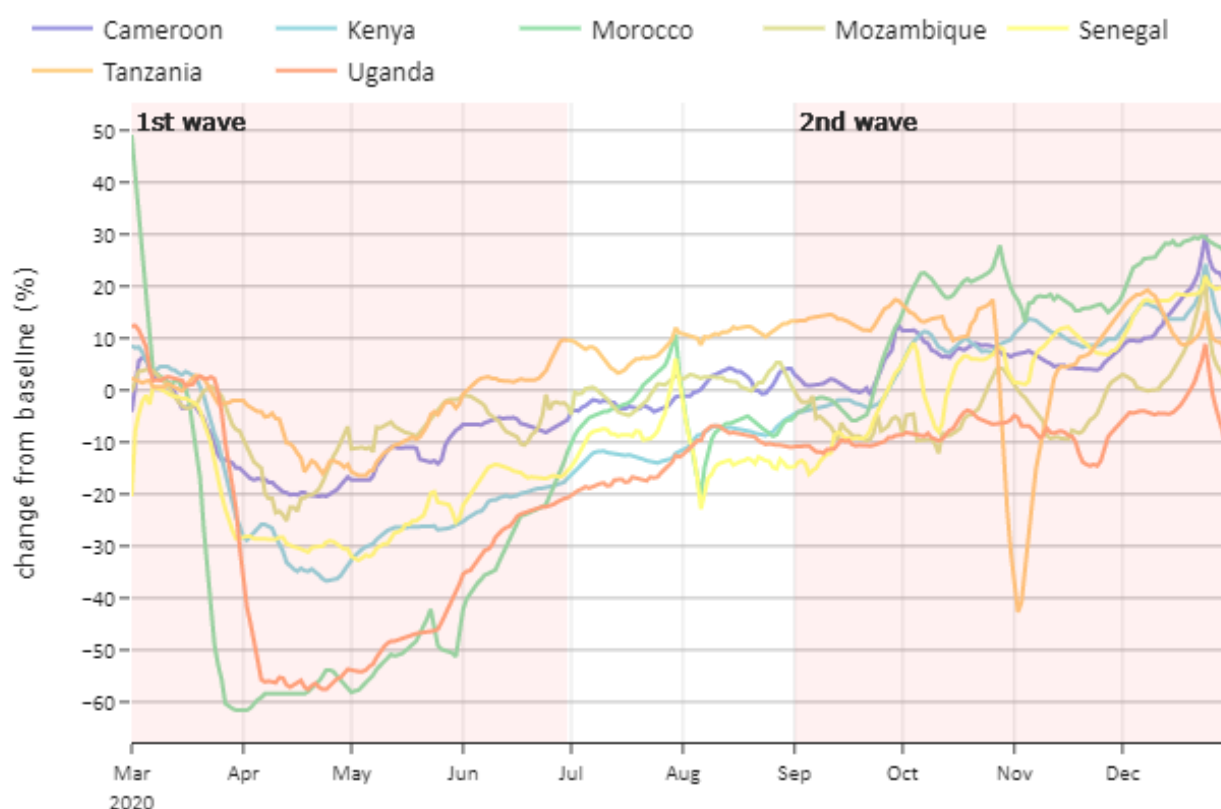
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1.4 Impact on individual mobility to public transport

Following the assessment presented at the beginning of this chapter, the mobility to public transit stations for the seven key countries shows a similar pattern to the global regions and countries of all income levels (**Figure 11**). A sharp drop over the period of the first wave is followed by a modest increase over the following months. This trend continues until the end of 2020.

As already observed regarding the frequentation of parks, Morocco and Uganda show a significantly stronger initial mobility drop than the remaining five countries, up to -70%, and also remained the slowest to recover back towards the baseline. The percentage rates of change remain negative for most countries until the end of the reporting period. Cameroon shows a deviating behaviour from the end of the first wave onwards, with a higher frequency of transit stations than in the baseline period. This also applies to Kenya from mid-October 2020 and Tanzania from around December 2020.

Figure 11: Difference in mobility pattern to public transport stations compared to baseline
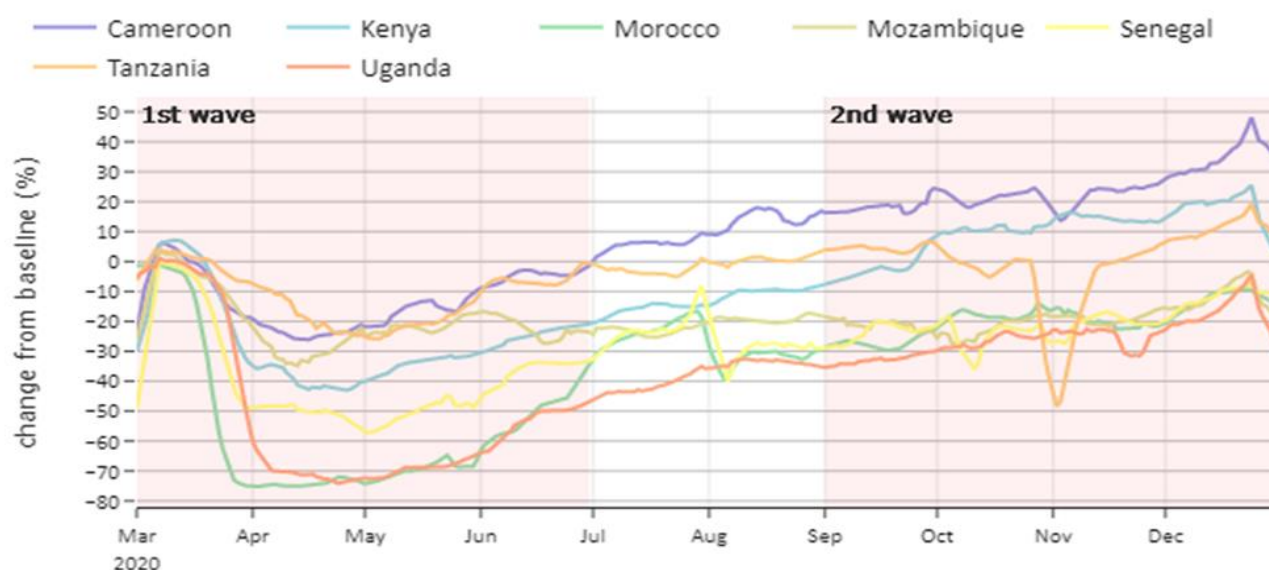
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1.5 Impact on individual mobility to residential areas

The amount of time the sample population of each country spent in their homes was well above the baseline values throughout the entire analysed period, from March to December 2020 (**Figure 12**). Further, the trajectory of each country is highly correlated to the evolution of the measures implemented by the countries' governments. As soon as work from home measures or closures of stores, public transport restrictions or curfews were imposed, this translated into hampered mobility for individuals and greater time spent at home.

During the first wave, time spent at home rose quickly for all countries, reaching a maximum of around 15% to 25% more time at home than before. After that initial peak, behaviour slowly converged back closer towards the baseline, remaining almost constant after July 2020 until the end of the year.

Figure 12: Difference in mobility pattern to residential places compared to baseline
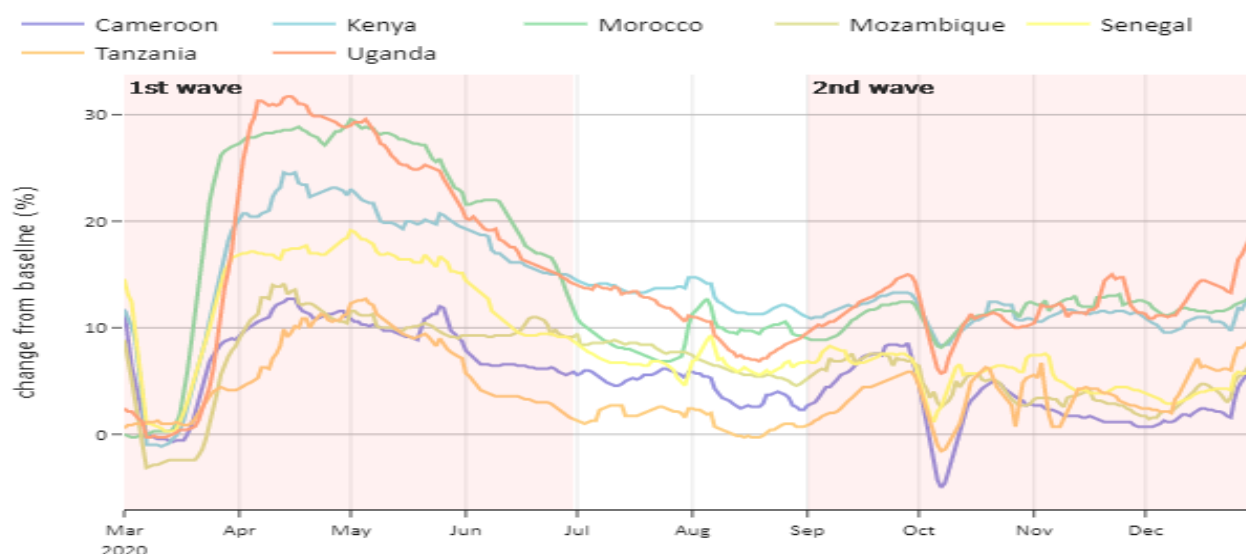
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.1.6 Impact on individual mobility to workplaces

Due to the measures applied against the spread of the pandemic, individual mobility to workplaces dropped significantly for all countries, reaching its minimal period in wave 1 (**Figure 13**). However, there was significant variation in the amount that this declined. Morocco and Uganda experienced the strongest drop of over 50% less movement to workplaces, whilst the other countries ranged between -15% to -30% in the same period, oftentimes coinciding with the severity of the measures applied in the country.

For the remaining year, and over time, the visiting frequencies to workplaces converged back towards the baseline, however never reaching a positive change. As of July, and until the end of the year, the values remained rather constant, with certain drops in some countries during a specific period, likely linked to factors such as public holidays, elections, vacation time, and so on. This is seen for example in Morocco, Tanzania and Senegal.

Figure 13: Difference in mobility pattern to workplaces compared to baseline
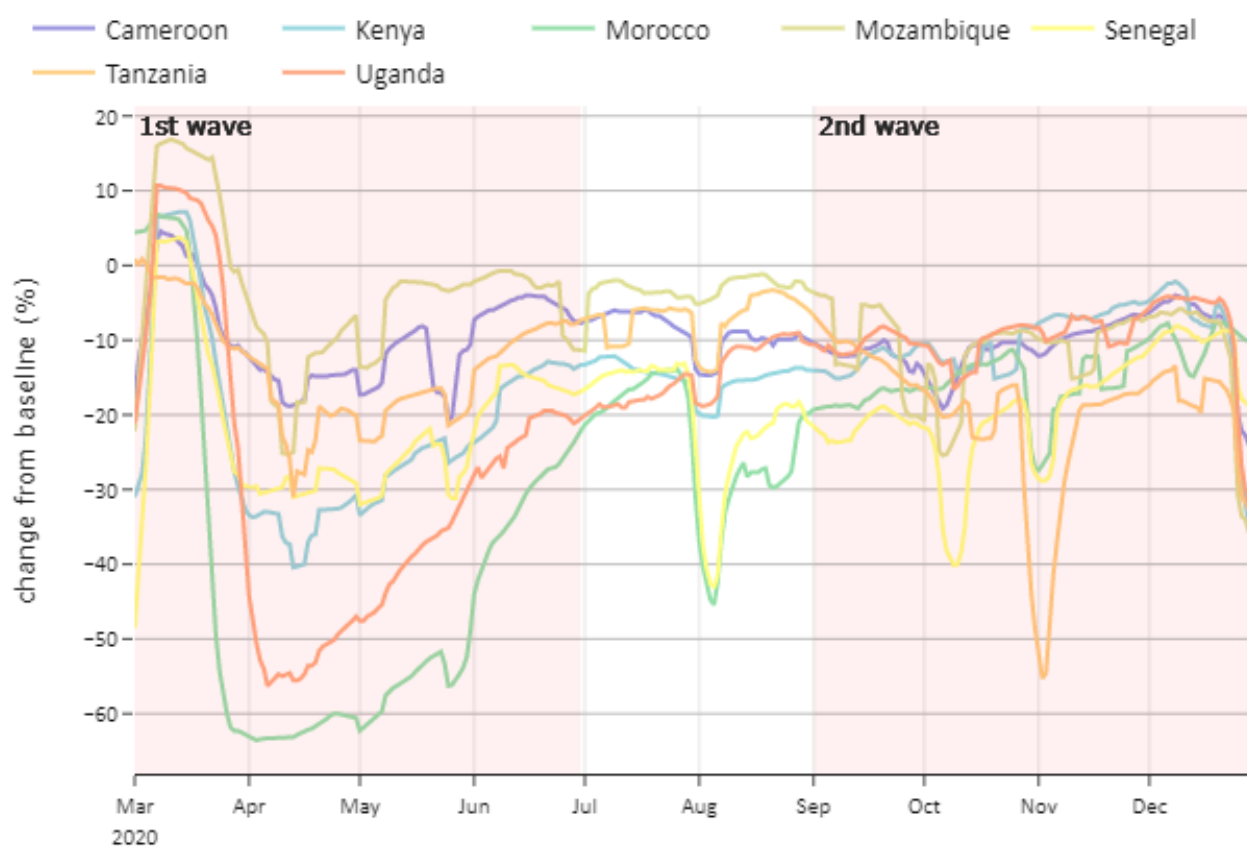
For seven key countries, the 7-day smoothed average activity pattern compared to the median baseline day of 7th – 15th January 2020 are shown. Additionally, an approximation for high numbers of COVID-19 confirmed PCR test results is shown ("1st wave": March – June 2020, and "2nd wave": September – December 2020).

Source: Google COVID-19 Community Mobility Reports

4.2 Comparison of the cumulative mobility impact

Radar charts can be used to plot the mobility changes (in percentages) versus the baseline data (represented by 0) across the various location categories, such as public transport stations and residential areas. By layering the mean values for the first and second COVID-19 wave on top of each other per country, comparisons over time for that country can be drawn. Similarly, international comparisons on mobility patterns are feasible by comparing the radar charts of different countries (**Figure 14**).

Comparing mobility behaviour across all countries and locations between the first and second waves, it can be observed that the reduction of mobility was generally much larger during the first wave, than during the second, where activity moved closer towards the baseline (depicted by 0). Any inward movement from the

baseline for the individual locations depicts a reduction versus baseline mobility, with the blue-shaded area outlining wave 1 and the orange area depicting wave 2.

The example of Uganda (**Figure 14**) shows that during the first wave, the average mobility, except for to the residential sector (which increased by around 20%), significantly decreased. For example, the frequency of visits to shops and pharmacies decreased by about 34%. Visits to public transport stations were down by around 55% according to the data. During the second wave, the values for Uganda still show a decline for most areas versus the baseline, however, compared to the values of the first wave, a clear increase in frequency can be seen. The average value for grocery shops and pharmacies rises by about 25% and for visits in parks there is an increase of almost ten percent. For transit stations, it is still below the baseline value by around 30%, however showing an increase versus wave one by 25%.

Comparing the seven countries, Morocco shows the most significant increase in average mobility during the second wave compared to wave one, depicted by the significantly larger orange area in **Figure 14** below. Senegal, Uganda, Kenya, and Cameroon also encountered significant increases, whilst Tanzania and Mozambique, which witnessed less restrictions and lower initial declines in mobility, remained much closer to their initial wave one levels. Most countries continued to witness mobility at lower levels than the baseline values, with the exception of anomalies such as Cameroon public transport station visits (which was up by 25% vs. the baseline).

Overall, these graphs exemplify how the restrictions and regulations put in place by governments strongly impacted the extent to which mobility in the individual countries was reduced and shaped during the initial months of the pandemic. Countries with stricter measures typically encountered higher declines in mobility, and over time, as measures became reduced or enforcement more lax, a convergence towards baseline values was witnessed across the board. However, generally speaking, mobility was negatively impacted by the pandemic throughout the entire reporting period, even in countries were fewer restrictions were implemented. The trends and patterns identified in this chapter can help inform the detailed country case studies and lend themselves to inform key learnings and findings.

Importantly, the example of Uganda above further highlights the necessity of complementing this quantitative data with qualitative insights gathered during interviews and focus group discussions for a holistic picture. Based on KII discussions, the true decrease of visits to grocery and pharmacies for example was potentially much greater than the depicted 34%, as people used a single trip to stock up for as long as possible. Similarly, public transport was reportedly "only" down by 55% according to Google Mobility data, whilst public transport was in fact entirely shut from the end of March until the end of June 2020 and should be down by 100%. This depicts limitations in the data to the extent that the visiting frequency of a location does not indicate that public transportation was necessarily used. During this time, there was no movement by public transport, with only trucks, private and company vehicles and privately hired minibuses moving. Qualitative data must thus also be incorporated in the detailed analyses of the African situation.

Figure 14: Changes in average mobility patterns during the 1st wave (blue) and 2nd wave (orange)
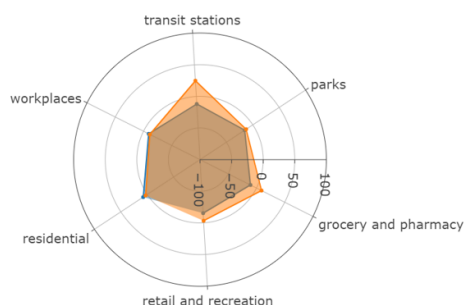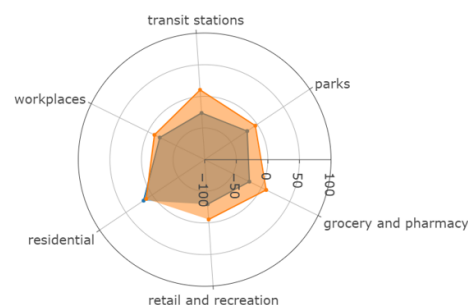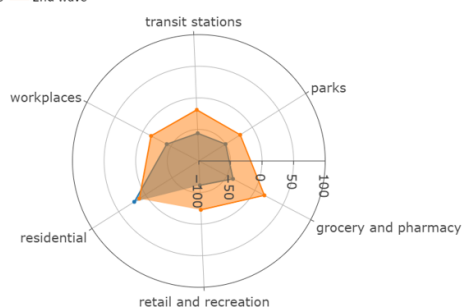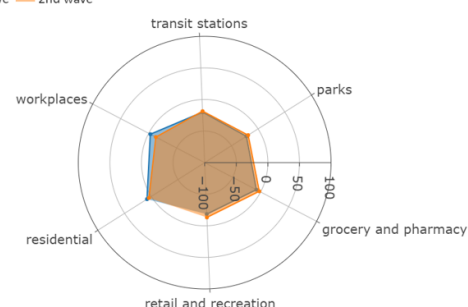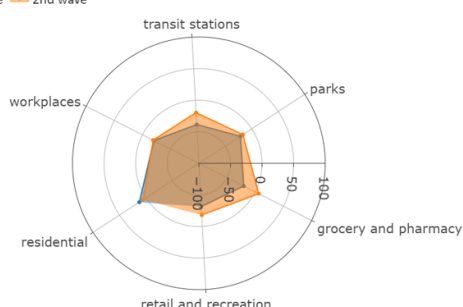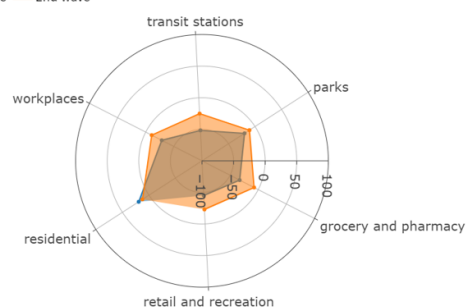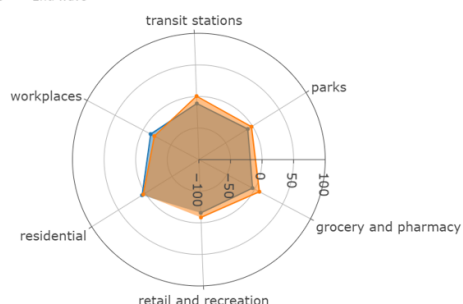
Each subplots' radar chart represents the mobility data for one key country, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

4.3 Qualitative findings

This section highlights the general trends and patterns of community perceptions and behaviour in response to the COVID-19 measures regarding capacity restrictions and physical distancing in public transport. The findings are derived from community FGDs with individuals who experienced public transport during the period of the study. While there were many commonalities in the views across the seven countries as

discussed below, the more country specific findings have synthesised into the case studies of the respective countries (**Section 5**).

4.3.1 General response and compliance

General perception depicted that at the beginning of the COVID-19 pandemic, there was mostly a positive response to the restrictions being put in place and relatively high levels of compliance. However, over time, this witnessed a gradual deterioration. Whilst the specific timeframe for countries differed, the trend was largely similar across the board. At first, the public perceived that the pandemic would quickly pass, that life would return to normal, and that compliance with restrictions for a limited period would pay off. Although there were a few incidences of breaking curfew rules, compliance was noted, especially with increased enforcement. Over time this cooperative feeling wore off, especially when facing livelihood concerns.

Ensuring compliance to the government-mandated Standard Operating Procedures (SOPs) and measures was challenging due to a variety of constraints in public transport, with overall lack of public education and awareness posing key issues. Although some governments provided daily updates and discussed the measures, there were delays in creating enablers to assist communities to adhere to these. Enforcement was the first line taken by governments to force compliance.

4.3.2 Coping and adapting behaviour

In response to physical distancing and capacity restrictions, communities adopted a range of coping methods, some of which were more desirable than others. For example, a positive by-product was increased walking and cycling. Similarly, transport companies tried to optimise their cargo procedures to remain operational while following the COVID-19 guidelines set by their governments. Where feasible, many companies asked their employees to work from home. On the other hand, some community members expressed their need to opt for undesirable behaviour to provide for their families as the COVID-19 measures started to take a negative effect on household needs and economic situations. Transport operators hiked the cost of bus tickets, and many drivers tended to increase the speed to cover more trips before curfew time. There was an emergence of unconventional modes of transport including hitch-hiking on all kinds of vehicles such as lorries, private cars, and pickup trucks. In addition, lockdown of interurban transport caused some commuters to change their regular routes to by-pass checkpoints.

4.3.3 Community perceptions on road safety

During the onset of the pandemic, a reduction in road crashes was anticipated, however, in several cases fatal crashes appeared to increase, mostly due to speeding associated with curfew hours and capacity restrictions on buses as well as drivers escaping from police as they disobeyed capacity and/or the obligation to wear a mask. Increased use of motorcycles in Kenya and Uganda was observed, as well a higher amount of associated motorcycle crashes. Interestingly, in Uganda, reduction of night riding seemed to reduce crime associated with motorcycle transport. Other views and perceptions on road safety included:

- Less attention on road safety, as the focus was diverted to COVID-19;
- Emptier roads created temptation to go faster for drivers, riders & cyclists;
- Better enforcement, although focussed on COVID-19, provided some gains for road safety (increased controls/checkpoints);
- Walking facilities largely unsafe, less developed than for other modes;
- Delays in first response and decreased access to post-crash hospital care attention, as well as fear of contracting COVID-19;
- Congestion of vehicles at checkpoints increased air pollution;
- Safer cycling on the car-free roads;
- Reduced driver fatigue as drivers got more rest than usual where curfews were put in place.

4.3.4 Overall experiences

A strong opinion from the community was, that although capacity restrictions and physical distancing caused some inconvenience, daily commute and travel was more comfortable and safer due to reduction in the

number of passengers. For pedestrians and cyclist, the measures brought positive experiences. There was more space to move for pedestrians and cyclists because of reduced vehicular traffic and removal of vendors on cities' streets. This was further evidenced by the observation of a noticeable shift to other modes of travel especially walking for longer distances than usual as well as increased cycling.

On the enforcement side, there was a mixed feeling from the community. There was heightened enforcement in public transport and mobility versus before. However, the enforcement was targeted more towards COVID-19 measures. It was noted in several instances, that the police were ignoring other traffic violations like drunk driving and speeding and rather focussed on capacity restrictions and wearing of masks. Over time, the enforcement was relaxed, but was reportedly used by both the police and the public as an avenue for bribery and corruption. Cross-border drivers for example could pay for a fake COVID-19 test certificate to avoid long waiting times at the border.

Other experiences and observations gathered from the community included reduced crashes at the beginning of lockdowns, with many drivers admitting that thanks to curfews, they had more resting time than usual. Similarly, cross border and long-distance commute drivers said there was less fatigue as opposed to the pre-COVID-19 period. However, in some countries this effect was short-lived as increased traffic crashes started to be reported alongside daily COVID-19 updates.

Interestingly, the measures encouraged many transport companies to better plan their service schedules and organise the transit stations in a way that would reduce transmission. Hand washing and sanitising points had to be erected and crowding of passengers at the stations was often controlled, however this was often less successful during rush hour to beat curfew and avoid arrest.

4.3.5 Community suggestions for improvement

Based on the experience, perception and behaviour adaptations, the community discussions also sought suggestions for improving public transport and mobility needs. There was a strong feeling that restrictions on passenger capacity was good practice to discourage the culture of exceeding the carrying capacity on buses and even motorcycles. It was suggested that this, alongside other measures, made public transport more reliable, safe, and organised, and should be integrated permanently in the transport system. Another suggestion focussed on ensuring that drastic price increases for formal and informal public transport should be prevented. In many cases, governments discouraged public transport fare increases. However, their control was limited, especially for informal public transport which is often owned and operated by private companies seeking to generate sufficient profits. Further key suggestions from the community, which also informed the case studies and report findings, included:

- Promoting walkways and cycling lanes, separate pedestrian walkways from motorcycles;
- Ensuring enforcement continues to focus on all aspects of unlawful or unsafe behaviour;
- Greater investment in education and awareness campaigns to empower the community to support governments' efforts;
- Improve technology for more efficient transport service such as apps, cashless payment.

5. Case studies

This chapter outlines the transport-related measures taken in response to the COVID-19 pandemic in each of the seven focus countries, their implementation and enforcement, and the resulting challenges and impacts on mobility. Each country case study concludes with a section of key transport-related learnings. Drawing on the in-depth challenges and learnings from the individual countries allows a better understanding of the African situation and permits a synthesis of best practices to help inform the key findings and recommendations (**Section 7**) of this report.

5.1 Uganda

In Uganda, the first case of COVID-19 was reported on 21st March 2020. Until May 2020, cases were mostly imported from abroad, and the government response was aimed at the prevention and containment of imported cases. As of 6th January 2021, Uganda had conducted over 762,862 tests and had a cumulative total of 36,407 COVID-19 cases, 12,387 (34%) recoveries and 290 (0.8%) deaths. **Figure 15** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Figure 15: SARS-CoV-2 virus in Uganda
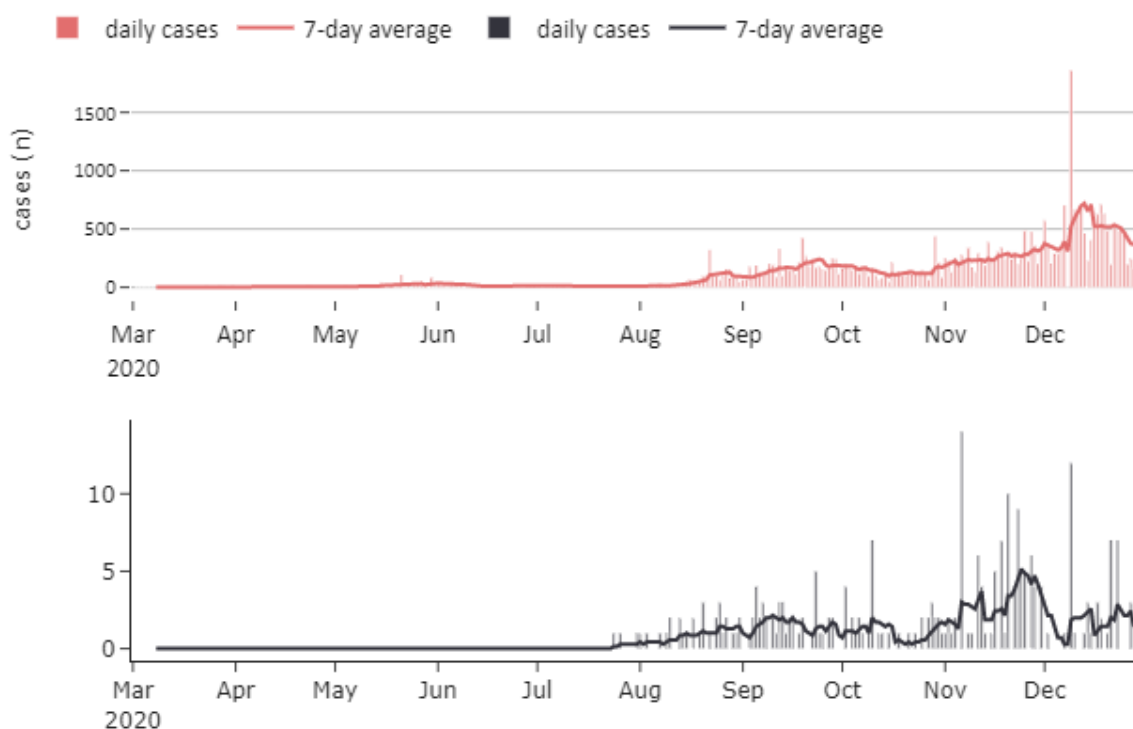
Source: Johns Hopkins University

Creation of a National Taskforce and Sub-Committees

In March 2020, the Ugandan President constituted a National Taskforce and Sub-Committees to lead Uganda's response to the pandemic (**Figure 16**). The role of the National Taskforce was to coordinate the preparations and harmonisation of measures by every sector to deal with the COVID-19 outbreak and its implications; to track and monitor the progress made; to ensure business sustainability during and after the pandemic and to report to and advise the President on the pandemic, among others.

The National Taskforce has several sub-committees including Health, Finance and Resource Mobilisation, Trade and Transport and Media, information dissemination and communication, among others. For example, the Inter-Agency Technical Taskforce makes recommendations in terms of measures and their impacts to the National Task Force which then advises the President. The National Taskforce involved the various Ministries, National Police, Kampala Capital City Authority (KCCA) and many other actors and enabled time-sensitive decision-making and roll-out of Standard Operating Procedures (SOPs).

Figure 16: Hierarchical organisation diagram
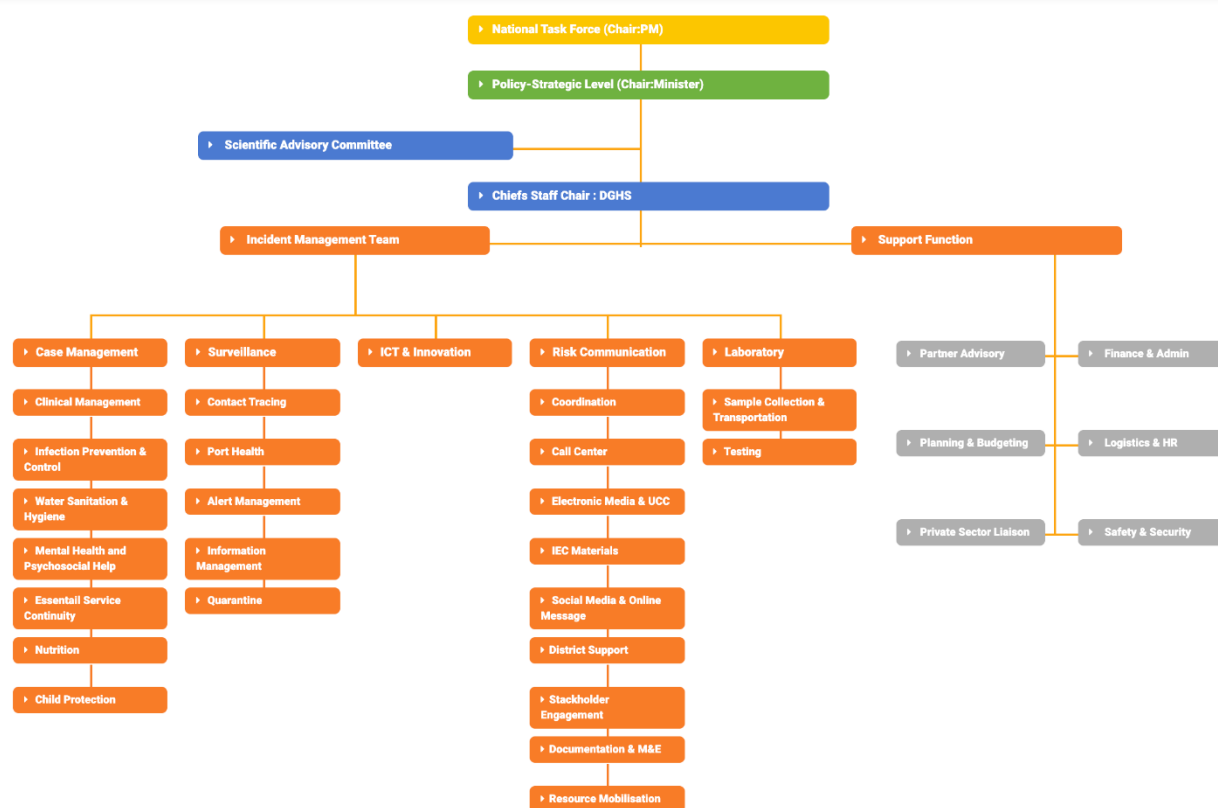
Source: Republic of Uganda, COVID-19 Response Info Hub (13)

Transport-related measures taken by the government to control COVID-19

There were several measures undertaken by government to curb the spread of COVID-19 virus (**Figure 17**). These were done in a phased manner with the initial measures aimed at preventing the importation of the virus into the country while the later restrictions aimed at containing the community spread of the virus within the country.

As of end-January 2020, temperature screening was implemented at the airports and any travellers suspected of being ill was restricted from moving. In early February it was decided that arrivals from high-risk countries would need to quarantine. As of 18th March 2020, all passengers arriving in the country were required to quarantine for 14 days. On 21st March 2020, all international borders (entry and exit) by air, land, rail or water were closed. This affected international passenger flights to Entebbe International Airport, as well as all other crossings. Only cargo planes and cargo vehicles could continue crossing international borders. A few days later, on 25th March 2020, all public transport including the 14-seater taxis (matatus), buses, passenger trains and commercial motorcycles (boda bodas) was suspended. Private vehicles were restricted to carry only 3 people including the driver and were only allowed to move if an identification sticker indicating that the driver and passengers are essential workers was placed visibly on the vehicle. On 30th March 2020, a suspension of all movements including those travelling by private vehicles followed. Apart from cargo planes, cargo trains, cargo trucks and commercial motorcycles (for deliveries), everything came to a standstill. Further, a curfew was declared between 19:00 and 05:30 for all movements. The curfew for motorcycles was set earlier, from 14:00 to 05:30. This curfew did not apply to cargo vehicles, cargo trains and cargo planes.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 17: Uganda containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available); 2 - require closing (or prohibit most citizens from using it);
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities; 2 - internal movement restrictions in place.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures; 1 - recommend not leaving house; 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips; 3 - require not leaving house with minimal exceptions (e.g., allowed to leave once a week, or only one person can leave at a time, etc); Blank - no data.
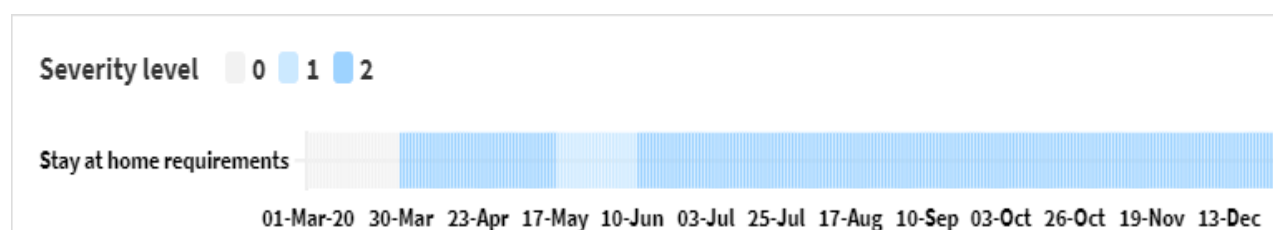
Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - recommend closing (or recommend work from home); 2 - require closing (or work from home) for some sectors or categories of workers; 3 - require closing (or work from home) for all-but-essential workplaces (e.g., grocery stores, doctors).
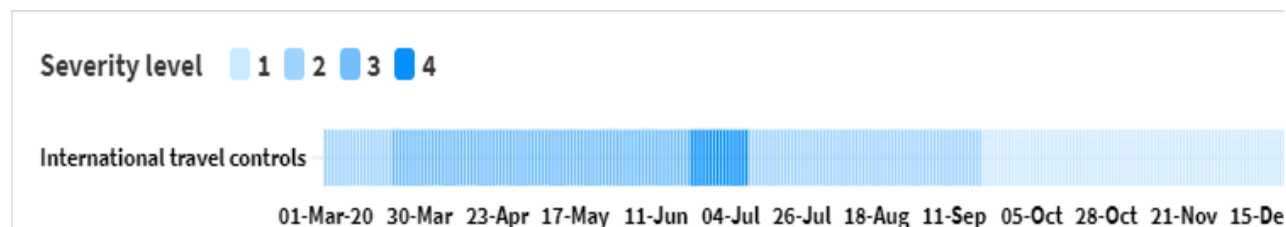
Source: Oxford COVID-19 Government Response Tracker

Further, the Ministry of Works and Transport issued car stickers for workers providing essential services during the lockdown period. For example, these went to employees of government agencies, health facilities, utility companies, manufacturing, media, logistics, food and produce and so on. The Resident District Commissioners and Resident City Commissioners were also authorised to issue special permission to persons that needed to move for medical reasons or to attend burials. On 10th April 2020, mandatory testing of truck drivers at borders began, and wearing face masks in public became mandatory.

For cargo transporters, especially those crossing from Kenya, which the Ugandan economy heavily relies upon, land border rules developed over time as well. Temperature screening was required from the beginning, whilst PCR testing gradually became the norm. At first drivers could continue their journey provisional they could be contacted once their result was ready, however it was later decided they would have to wait for their result at the border. This resulted in some issues with the Kenyan government - where on both sides of the border there were queues for kilometres and truck drivers had to wait for days in certain cases. There were issues surrounding hygiene and stigmatisation of people who pay potentially have the disease (i.e. locals may not want to provide food / water).

A phased approach for the lifting of the lockdown

On 26th May 2020, private cars could move with a maximum of three passengers. On 4th July 2020, public transport could resume with strict SOPs which are still in place as of January 2021. These mandated for example that public service vehicles including matatus and buses could only carry up to 50% of their licensed capacity, and that all passengers must wear masks. Boda bodas could resume carrying one passenger per bike on 27th July 2020. Their SOPs mandated the use of masks by the rider and passenger, hand washing/ sanitising and a requirement to keep passenger manifests (name, national ID number etc.). The curfew implemented in March remains in place.

On 1st October 2020, Uganda reopened its international borders and international flights resumed. All persons entering or leaving the country are required to have a negative COVID-19 result issued within 120 hours of travel. The Rwandan border briefly reopened, however is now closed again except for cargo.

Challenges in implementing the COVID-19 transport-related restrictions

Based on the KIIs and FGDs conducted during this study, various challenges were identified during the implementation stage of the restrictions:

- Complacency of the public, underestimating the gravity of the pandemic. Misinformation of COVID-19 as being a "white man's disease" and only affecting the old, especially in the beginning;

- Limited sensitisation and mobilisation, also due to limited public funding for training, for example of public transport operators. Some private sector companies provided CSR are funding, but the reach was limited;

- Over time, with restrictions in place for over eight months, the public became lax regarding certain restrictions (e.g., curfew times, mandatory mask wearing and hand washing);

- Resistance against certain measures such as COVID-19 testing of all truck drivers at the borders which significantly increased clearance times for truckers. This led to demonstrations by truck drivers especially at Busia and Malaba border posts between Uganda and Kenya;

- The informal nature of the public transport made some of the SOPs impractical and ineffective. For example, the required passenger manifests for boda bodas. Many passengers were unwilling to provide their details for privacy and safety concerns, as boda bodas are regularly involved in crime and robbery. Furthermore, many drivers are illiterate and could not capture individuals' details;

- Inadequate resources and personnel to enforce the measures. For instance, many matatus have returned to carrying their full licensed capacity, disregarding the SOPs. Similarly, some of the stickers identifying essential workers were stolen or used by others, and trucks were illegally transporting passengers during the initial lockdown period. Bribery has further been cited as an issue hampering enforcement;

- Lack of PPEs such as face masks and hand sanitisers and high cost thereof. Whilst at the main taxi stands in Kampala sanitation points were set up (mostly paid by the taxi management, matatu owners or charities), many of these ran out of hand sanitiser after 4-6 weeks. Many boda boda drivers could not afford hand sanitiser to follow SOP guidelines, similarly, face masks remain expensive for the average person at around UGX 3'000 (GBP 0.60);

- The presidential election in January 2021 posed a significant challenge. There were mass gatherings and little respect for the SOPs;

- The community reported a perceived loss of community ownership, for example in cases where passenger operators found it safer and more profitable to ferry goods instead of people.

Impact of the transport-related COVID-19 restrictions

Uganda reported a negative impact on trade, both internally and cross-border, due to the restrictions on people's movements. Overall, the productivity in the country was adversely affected as apart from essential workers, employees could not reach their workplaces, and the effect was also felt on revenue collection such as taxes. Significant delays in road construction works including road works and repair of bridges was also noted. On the other hand, the lockdown and severe restrictions on mobility had certain advantages. Notably, Uganda reported reduced crime due to enforcement of the curfew, as most of the crime, especially that involving boda bodas, happens during night hours.

Waiting times at Borders

Waiting times at the borders increased significantly as PCR samples were taken and as results were getting processed to allow drivers to continue. Prior to COVID-19, the average turnaround time for customers procedures was three minutes, and as this increased to 15 minutes, this led the truck queues to grow to around 28km already. Once drivers were denied entry before obtaining a negative COVID-19 certificate, the average border clearance time increased beyond twelve hours and the queues grew to over 65km. This escalated even further during a drivers' strike, during which the queues stretched for over 90km, and the average border clearance time increased to 24 hours. There were reports of drivers being stuck at the Ugandan-Kenyan border for as long as seven days, losing out on one or two trips.

The significant delays at borders for goods vehicles to pass due to the prolonged clearance process of drivers led to blockages in supply chains and shortages, with areas reliant on water transport such as boats and ferries were partially cut off entirely due to the restrictions. In general, the cost of doing business rose due to higher transport costs.

Movement of goods

The impact of COVID-19 restrictions in Uganda peaked during the lockdown period of March to June 2020. Although goods vehicles continued to operate throughout the lockdown period, the SOPs imposed on the operations affected the movement of goods. For example, the total traffic Inflow on the main entry points of Malaba and Busia, both bordering Kenya, declined by 14.69% from 147,397 units during March – June 2019 to 125,741 vehicles during March – June 2020. Similarly, the total traffic outflow on Malaba and Busia declined by 6.23% from 128,042 units during March – June 2019 to 120,065 vehicles during March – June 2020.

Road safety

The number of recorded road accidents reduced due to the reduction in movements as well as the enforced curfew. The number of road traffic accidents handled by Mulago Hospital in Kampala reduced by 29%, from 2,483 accidents between March to June 2019 to 1,764 accidents during March – June 2020 and by 29% from 5,924 accidents during March – December 2019 to 4,647 accidents during March – December 2020. At one point it was reported that the boda boda ward in Mulago was empty, freeing resources for other uses.

On a national level, there was a 4.7 % reduction in the number of crashes reported in 2020 compared to 2019 (7). Minor crashes reduced by 8%, serious crashes by 3%, and fatal accidents by 4%. Correlated to the measures against the pandemic, over the whole year 2020, the months April, May, and June showed the smallest number of crashes (**Figure 18**). Towards the end of the year, total numbers were rising rather continuously. Compared to 2019, 2020 road accident fatalities showed a high increase of pedal cyclists (+36%) and passengers in medium omnibuses (+25%). However, it must be taken into consideration, that the total number of fatalities in 2019 in this bus category was only eight persons, whereas the number of fatalities in heavy omnibuses decreased from 27 individuals in 2019 to 12 individuals in 2020. A similar pattern applies for seriously injured persons, where the number of passengers injured in accidents in medium omnibuses decreased by 63% to 49 fatalities in 2020. In addition, in 2020, 81 seriously injured persons in heavy buses were reported, compared to 271 persons injured in 2019.

Despite these positive trends in the official figures, the perception at the community level was that vehicle speeds significantly increased due to emptier roads and that the greater number of VRUs on the roads heightened the chance of serious injuries. Further, it was perceived that the increase in police enforcement primarily focussed on COVID-19 restrictions compliance and neglected road safety issues.

Figure 18: Uganda 2020 monthly total amount of crashes, and fatalities
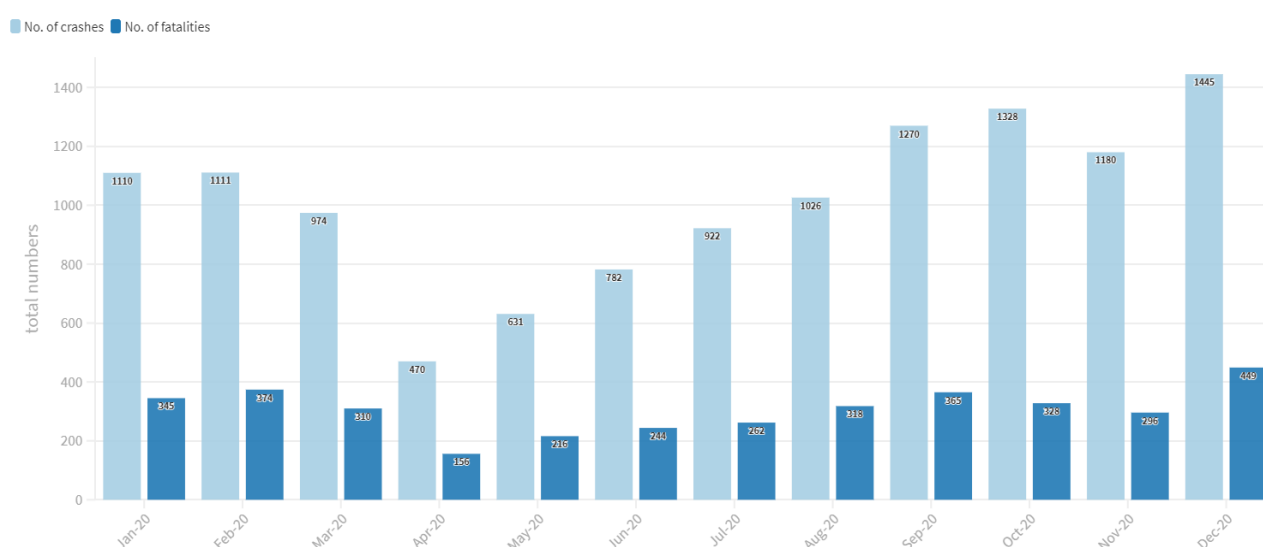
Source: Annual Crime Report (Uganda)

Air Transport

The impact on air transport was also significant. International passenger numbers reduced by 69% from 1.8 million in 2019 to 565,000 in 2020. Domestic passengers reduced by 78% from 27,300 in 2019 to 6,000 in 2020. Overall, aircraft movements reduced by 56% from 32,700 in 2019 to 14,400 in 2020 and exports by air reduced by 13% from 42,000 tonnes in 2019 to 36,600 tonnes in 2020.

Public transport

Following the easing of the lockdown and resumption of public transport as of June 2020, passenger figures were significantly lower than prior to the start of the pandemic. Apart from during the festive season, the number of passengers travelling by bus drastically reduced. Bus companies were operating only 20% of their fleets, and even then, were struggling to fill the 50% allowed capacity. Passenger traffic on the passenger train dropped from 4,000 passengers per day to between 700 and 1,000 passengers per day after resumption of passenger train services in December 2020.

Because of the limitation regarding the number of passengers a public service vehicle could travel, and due to the limited means of transport available, transport fares rose significantly – doubling in many cases – thus exacerbating the access barrier for many. With boda bodas remaining the cheapest option, many matatu or bus users switched their mode of transport.

Similarly, many jobs in the private and informal sectors were lost. For instance, a bus generally employs about seven people including a driver, conductor, turn man, guide, inspector, mechanic and the owner. These were very difficult to sustained during the lockdown. The lockdown had also meant that people with certain chronic diseases were adversely affected as they could not get their periodic check-ups and medication.

Whilst the lockdown and closure of public transport resulted in several challenges, it did allow the Ministry of Transport to accelerate the implementation of certain planned measures for reorganising the operations of matatus and boda bodas. Specifically, the following measures could be implemented:

- Registration of all taxis operating in Kampala and the Greater Kampala Metropolitan Area (GKMA);
- Assigning all taxis to operate on specific routes and from specific taxi parks;
- Taxis are required to have specific branding that includes a route number and route details. Taxis operating in GKMA will also have different branding from those operating outside the GKMA;
- Demarcating a boda boda free zone within Kampala Capital City where boda bodas are not allowed to operate to curb air pollution and congestion.

To do so, the matatu and boda boda governing bodies were informed of the SOPs, for example by KCCA, and asked to roll them out internally. For example, they were asked to inform their matatu drivers which centre they should go to register and train themselves, based on their route. Drivers were also asked to record who was travelling from where to where to allow COVID-19 tracking.

It was also noted that there was Increased compliance with statutory requirements such as having licences and driving permits. This was partly due to the re-organisation exercise. Further, certain measures taken previously, such as renovating taxi park entries so that there would only be three or four entry points, rather than them being entirely open, facilitated temperature checks etc.

Non-motorised means of transport

There was a general trend towards the use of non-motorised means of transport such as walking and cycling as an alternative to matatus and boda bodas. This was especially the case within the Central Business District, where KCCA consequently also accelerated their efforts to improve walkways. Overall, there was a noticeable decongestion of Kampala which resulted in reduced travel time and increased mobility for those still on the road. Similarly, the reduction of traffic and vehicles on the road led to cleaner air due to reduced emissions.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

From the Google mobility data, it is evident that individual (smartphone user) mobility was significantly more reduced during the initial wave, loosely defined as March to June 2020, than during the second wave, September to December 2020, when comparing versus the baseline data (**Figure 19** and **20**). In wave one, when Uganda began implementing its hard lockdown, time spent at transit stations was down by over 50%, whilst during wave two this was only down by 30%. Similarly, time spent at work was 30% down in wave 1, vs. 15% in wave 2. Time at residential which was 20% higher in wave 1, was only 10% higher in wave 2. This reflects the lower severity in restrictions, as well as the increased need for people to resume work to earn their livelihoods.

Figure 19: Uganda mobility development to public transit stations wave 1 vs wave 2
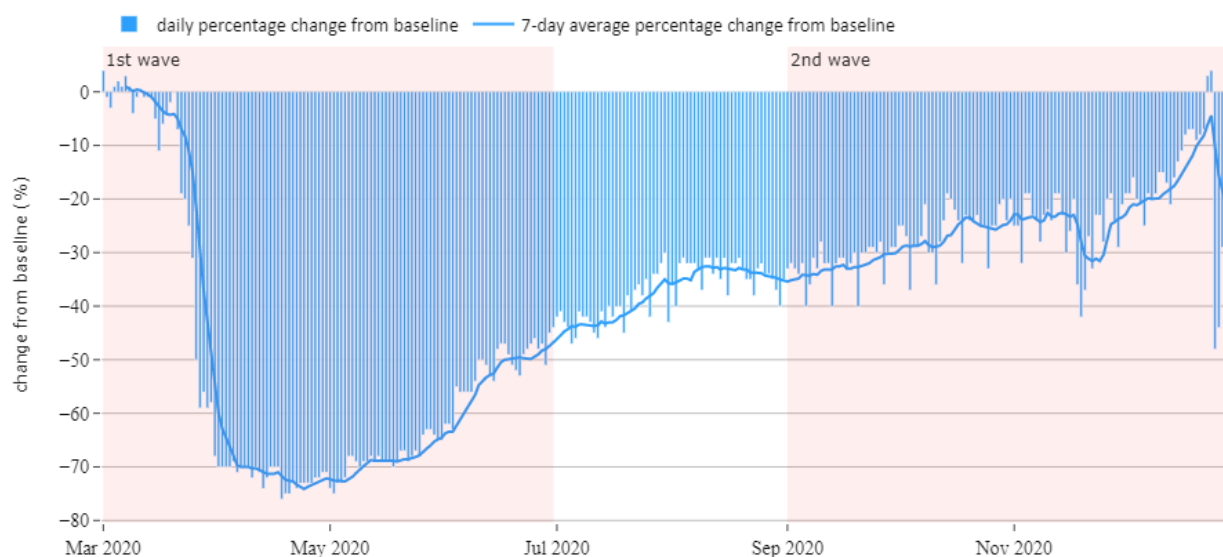
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 20: Uganda mobility development to specific locations during wave 1 vs wave 2
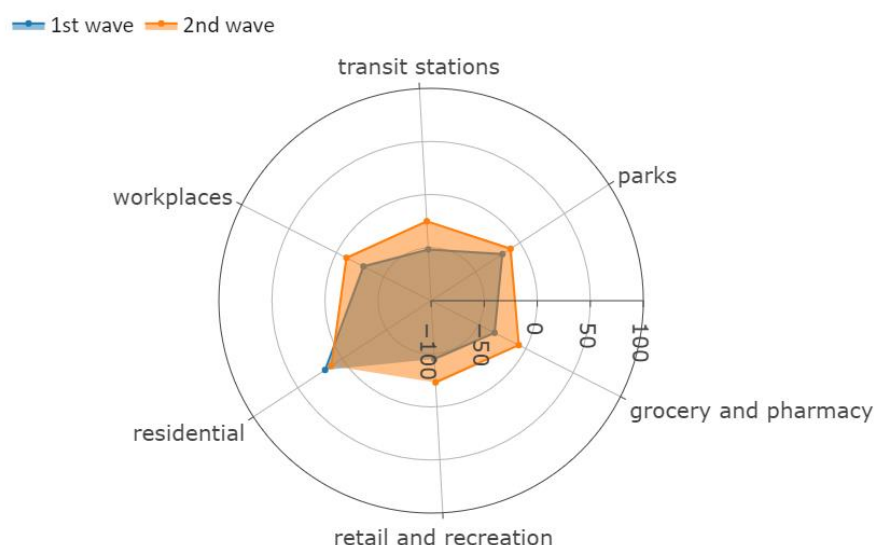
The radar chart represents the mobility data for Uganda, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

Key learnings from the COVID-19 Uganda case study

- Creating a National Taskforce with regular consultations and follow-up meetings allowed time-sensitive and extensive collaboration among the various Ministries, the National Police, KCCA, etc. and enabled fast results.

- Greater consultation and involvement of public transport operators could have heightened their understanding of the situation and may have led to even more practical and effective measures. For example, some of the SOPs for boda boda drivers such as passenger manifests were ineffective and impractical.

- Increased training of public transport operators and truck drivers on the COVID-19 pandemic and counter action measures could have reduced the reluctance to certain measures.

- COVID-19 accelerated and facilitated certain efforts that were already planned to improve public transport and could consequently be used for COVID-19 counter-acting measures as well, e.g. matatus allocated to routes and route numbers, to record who was travelling from where to where.

- Comprehensive enforcement is required to ensure compliance to the SOPs while at the same time safeguarding traffic and road safety rules.

- Enforcement is a key aspect in all transport initiatives as such a reduction in enforcement led to abuse of the proposed good SOPs and hence a spike in the pandemic cases in Uganda.

5.2 Kenya

The first case of COVID-19 was reported in Kenya on 14th March 2020. As of 31st December 2020, Kenya had a cumulative total of 96,458 positive COVID-19 cases, and 1,670 (1.7%) deaths. **Figure 21** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Creation of a National Taskforce and Sub-Committees

A COVID-19 task force with various sub-committees was swiftly put together in March 2020, in which the various ministries, such as the Ministry of Health and Ministry of Transport collaborated closely to take decisions on the necessary SOPs and roll-out thereof. Measures were communicated across public channels to ensure broad and timely dissemination and to facilitate law enforcement in ensuring these were adhered to.

Figure 21: SARS-CoV-2 virus in Kenya
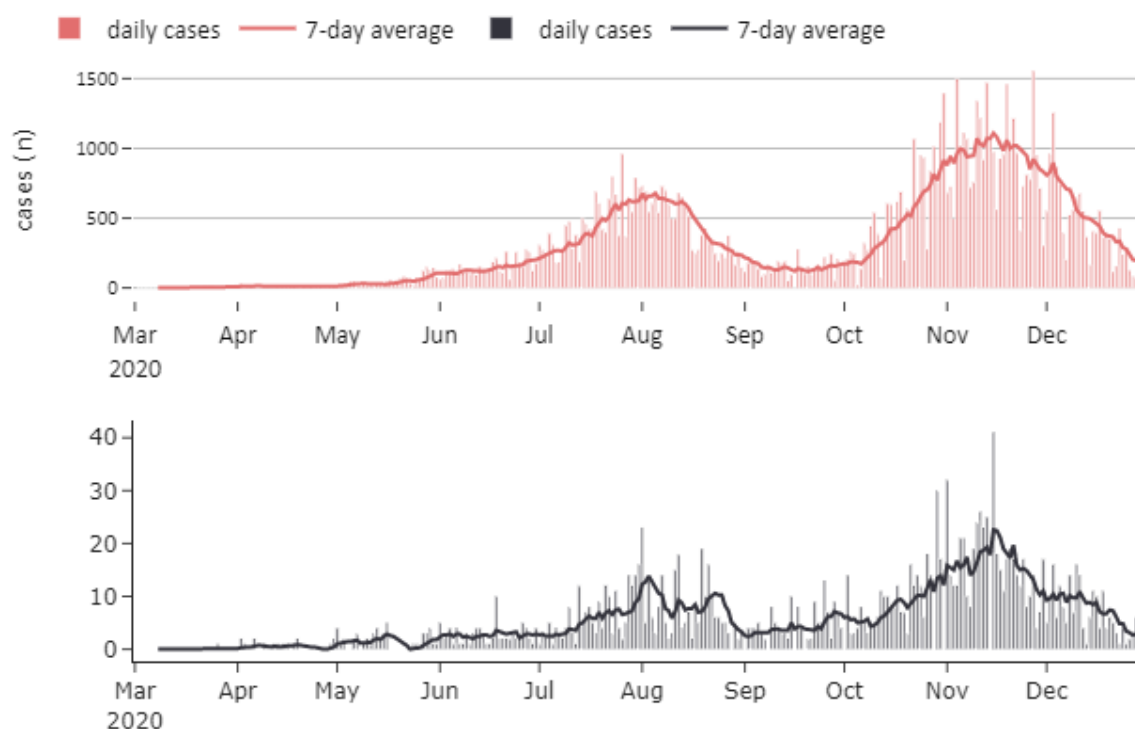
Source: Johns Hopkins University

Transport was handled under the Risk Communication category. There were daily updates, and the committees would provide advice for the Ministry and Cabinet to discuss. Certain public transport operators, such as the boda boda association were consulted in detail and formed part of the sub-committee of the COVID-19 task force. Other operators, namely matatus, and civil society organisations were less involved.

Specifically, for the boda boda sub-committee consultations, the intent of engaging the chairman of the boda boda association was to sensitise key stakeholders to the problem at hand and to encourage donations of hand sanitisers for example. They were further asked to talk to and sensitise the riders.

Transport-related measures taken by the government to control COVID-19

As of 20th January 2020, temperature screening had been implemented for international travellers, and mid-March some restrictions for arrivals from certain regions were imposed (**Figure 22**). Following the first confirmed case of the disease in the country there was a public outcry when flights from China were still resuming. Consequently, on 25th March 2020, international flights were halted. When the airports reopened on 15th July for domestic flights and on 1st August 2020 for international flights, temperature screening was widely implemented and there was mandatory quarantine for most arrivals. All international arrivals need to provide a negative PCR test result, failure to which they are required to quarantine for two weeks. As of 8th January 2021, a barcode / QR test result is required, which is seen as safer than paper forms for surface COVID-19 transmission, as well as forgery.

As of 6th April 2020, a curfew from 19:00 to 05:00 was implemented for the entire country. On 20th April 2020, the government directed that anyone breaching curfew would be forced into a 14-day quarantine at their own expense, though it is unclear if this has been implemented in practice. Over the months, the curfew hours were adjusted several times, and as of January 2021, the hours were 22:00 to 04:00. It is known that these hours are less adhered to in rural areas.

Land borders were initially closed, and only cargo could pass, with truck drivers having to pass temperature screening checks. Eventually, truck drivers had to provide negative PCR test results to enter the country which were less than 72 hours old. At ports, public health officers were also stationed to conduct temperature screening.

For certain urban areas with high COVID-19 rates, most prominently Nairobi, Mombasa, Kilifi and Kwale, movement in and out of the cities was restricted for six weeks from 6th April 2020, except for essential service

providers and workers. To be granted exemption from these measures, individuals could carry official documents stating the nature of their travelling, for example these were available for essential workers or to attend funerals. These certificates were administrated by local police offices, or in some cases directly by the employers. Some misuse of certificates was reported, for example travelling to areas for non-work-related reasons. These inter-urban travel restrictions were lifted in June 2020.

Public transport was never closed; however, it was heavily impacted by the curfew as well as by the revised capacity limits. For example, for boda bodas it was mandated that they could carry maximum one passenger, whereas matatus typically carrying 14 could now only carry seven people. Generally, restrictions of maximum 50% capacity were implemented. Further, mask-wearing and hand sanitising became compulsory. On 18th April 2020, the government issued a warning that drivers disregarding the restrictions would be fined up to KES 20,000 (GBP 133), or face six-months imprisonment, or both. For long distance buses, restrictions between regions meant they could no longer operate freely.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 22: Kenya containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available); 2 - require closing (or prohibit most citizens from using it).
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities; 2 - internal movement restrictions in place.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures; 1 - recommend not leaving house; 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips; 3 - require not leaving house with minimal exceptions (e.g., allowed to leave once a week, or only one person can leave at a time, etc).

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.

Source: Oxford COVID-19 Government Response Tracker

Challenges in implementing the COVID-19 transport-related restrictions

Based on the KIIs conducted during this study, various challenges were identified during the implementation stage of the restrictions:

- Lack of testing capacities. At the start of the pandemic, all samples had to go to Nairobi to be tested, which severely delayed the response rate, especially at border points;

- There was insufficient consultation between the Ministries relaying the SOPs and the privately run transport organisations such as matatus. This led to some reluctance in the implementation as it was seen as a health initiative imposed from above without taking the transport sector into appropriate consideration;

- Civil society was insufficiently involved in the design and roll-out of measures. "Train the trainers" efforts to inform public transport operators on the needs and priorities facing them regarding the pandemic could have been expanded upon;

- There was insufficient manpower to properly enforce all regulations put in place, e.g. monitoring the exact number of passengers embarking or disembarking at public transport stops. Rather, roadside stops were used to conduct spot checks on passenger numbers. Urban areas were more tightly controlled than rural areas. Boda bodas were known to still carry more than one passenger and were also used to avoid inter-urban travel restrictions, by avoiding checkpoints. To avoid inter-urban travel restrictions, people would alight from matatus on one side and get back on transport on the other side. The penalty for mask-wearing was rarely enforced as people would put up their mask just before a checkpoint;

- Inter-urban restrictions on travel and movement were not accompanied by internal control of people within quarantine/ separated areas, e.g. Nairobi and Mombasa. Thus, this did little to prevent the spread within the cities;

- There were insufficient resources, e.g. sanitisers, hand-washing stations, masks and PPEs;

- There was some confusion regarding the regulations in neighbouring countries at land borders and dismay over the handling. For example, Kenyans were disgruntled that in Uganda testing was free, whereas in Kenya they had to pay.

Impact of the transport-related COVID-19 restrictions

Movement of goods

The impact of COVID-19 restrictions was felt significantly in Kenya. For the Port of Mombasa, imports, exports, and transhipment cargo fell by 4.5%, 1.3% and 18.3%, respectively. Similarly, the number of import trucks declined for the one stop border posts of Malaba and Busia by 51.1% and 49.7%, while export trucks declined by 58.8% and 52.1%, respectively, compared to the same period in 2019.

Several truck drivers reported police harassment and extortion on the road despite carrying a letter authorising their travel. The problem was further compounded by them encountering difficulties in finding accommodation, due to the stigma that truck drivers were spreading COVID-19.

Waiting times at Borders

Waiting times at the borders increased significantly as PCR samples were taken and as results were getting processed to allow drivers to continue. In many cases, this resulted in drivers waiting at the borders for several days to be granted passage. At Malaba, transit times increased by 60% in April 2020 as compared to April 2019.

Road Safety

Despite significant mobility restrictions, overall road crash figures increased in 2020 compared to 2019. Whilst the full analysis of this is still pending, it is expected that this is related to the fact that people drove faster to complete the same number of trips per day ahead of the onset of the daily curfews, as well as to get home quickly to avoid penalties when breaking curfew. Further, many people switched to boda bodas as the perceived threat of contracting COVID-19 was lower than in a matatu. Boda bodas are generally known to have higher crash rates, were more likely to evade curfews, and with COVID-19 more passengers became

wary of wearing helmets (for fear of contracting the virus through surface transmission), further increasing their vulnerability.

Public transport

The reduced passenger capacity and curfew limitations resulted in significantly lower earnings for many operators, which in some cases resulted in companies removing their vehicles from service for lack of profits. Despite the Civil Society Organisations' (CSOs) request for public transport operators not to increase their prices, this still happened, reducing the accessibility to public transport for various groups.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

In Kenya, similarly to what was seen on a global level, average mobility to public transport stations declined drastically during the first wave (March-June 2020), decreasing by up to 45% in April and May 2020 (**Figure 23 and 24**), thereby coinciding with the onset of restrictive COVID-19 measures aimed at reducing mobility and physical contacts in the country. What is further evident from the below is the gradual return towards the baseline as restrictions were eased and people found it unsustainable to remain immobile, needing to earn their livelihood. By October 2020, average mobility was in fact above the baseline value and continued to increase (with minor exceptions) until the end of the year.

Figure 23: Kenya mobility development to public transit stations during wave 1 vs wave 2
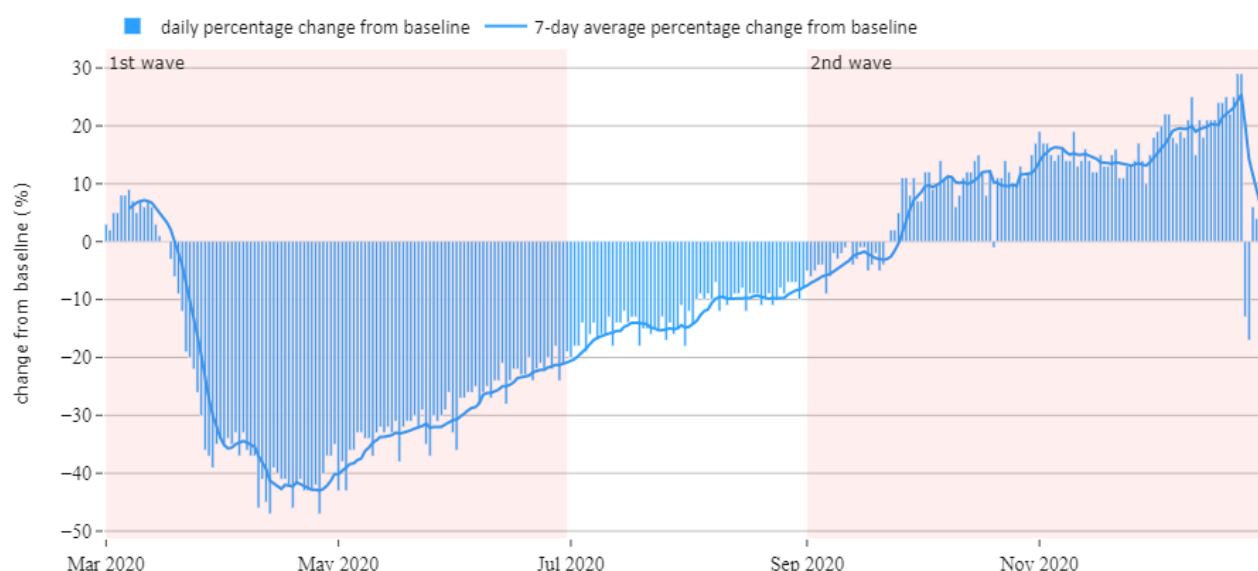
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 24: Kenya mobility development to specific locations during wave 1 vs wave 2
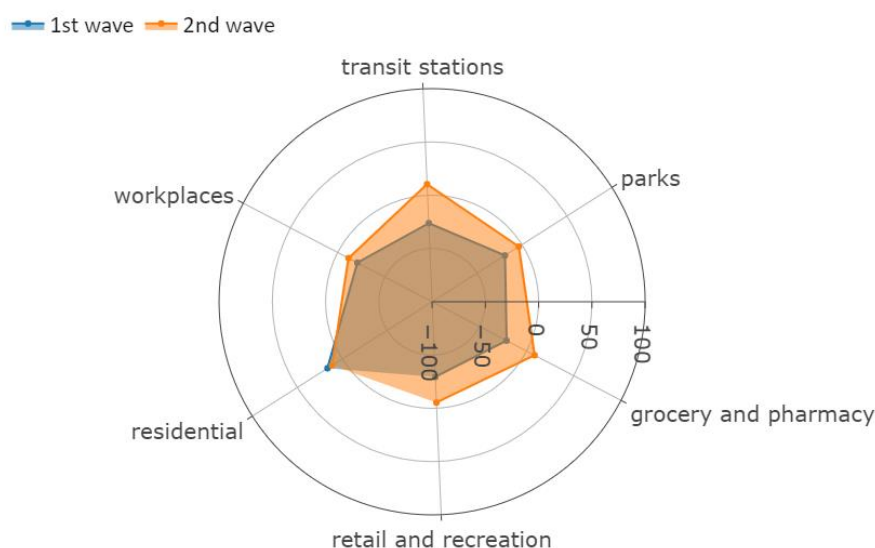
The radar chart represents the mobility data for Uganda, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

Key learnings from the COVID-19 Kenya case study

- Broad public dissemination of SOPs translated into other languages, e.g. Swahili, would enable more timely awareness raising;

- Ensuring civil society involvement in the design and roll-out of SOPs can facilitate trainings to sensitise the population, by mobilising their partners and stakeholders on the ground;

- Greater consultation among neighbouring countries could help avoid confusion at international borders. Especially countries with common treaties, such as the East African Treaties, should align on more common guidelines, e.g. regarding COVID-19;

- Accountability in enforcement of SOPs is necessary to reduce public laxity in following guidelines, for example regarding public transport. Unverifiable claims of bribes to the police for disregarding rules on capacity restrictions were reported;

- Operators, such as the Matatu Owners Association, would welcome lower taxes on fuels to offset higher operational cost per customer, and thereby lessening their need to increase passenger fares.

5.3 Cameroon

In Cameroon, the first case of COVID-19 was reported on 6th March 2020. As of 31st December 2020, Cameroon had a cumulative total of 26,277 positive COVID-19 cases, and 448 (1.7%) deaths. **Figure 25** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Figure 25: SARS-CoV-2 virus in Cameroon
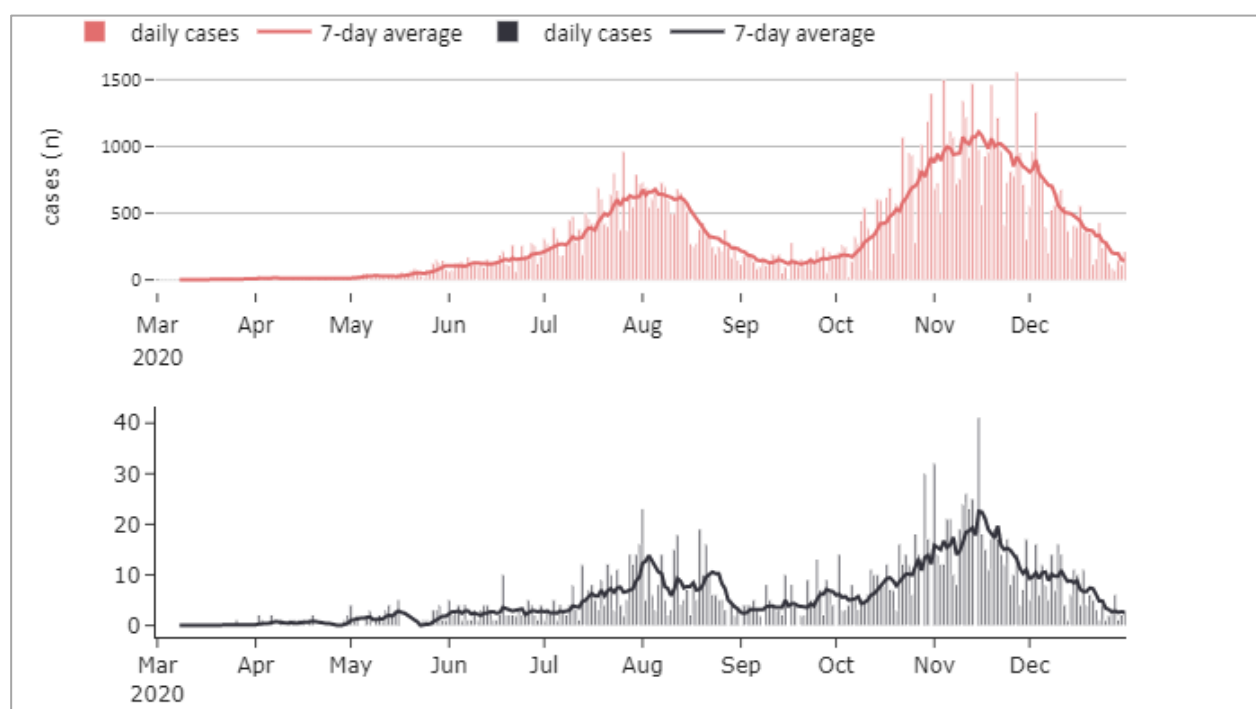
Source: Johns Hopkins University

Creation of a National Strategy

When the first COVID-19 cases in Cameroon were confirmed, there was rapid mobilisation around the head of state to develop a strategy to prevent the virus from spreading. To do so, many learnings from the Ebola crisis were applied which allowed a rather rapid crisis management mode to be set into motion. A set of 13 initial measures were put in place by the head of state, with temperature screening and physical distancing being among the first to be implemented (**Figure 26**). An emergency centre was set up for those people who showed symptoms of infection, and the government counsel held weekly meetings with all ministries concerned with the pandemic. Additionally, the Ministry of Health provided a weekly update on the pandemic evolution worldwide and in Cameroon. Feedback loops have been installed, where every Ministry is required to prepare a report on the COVID-19 handling in their department. Furthermore, a COVID-19 fund was formed to provide financial support. For example, the rail passenger transport sector was subsidised by the state to compensate operators for their financial losses due to lower daily passenger numbers.

Transport-related measures taken by the government to control COVID-19

As of mid-March 2020, the government had taken measures to restrict international travel, internal movement, public transport, and freedom of assembly in public places. From 13th March 2020, foreign travellers were subjected to temperature screening at airports. From 18th March 2020, the measures at international airports were increased and foreign travellers were banned from entering the country from certain regions, and visas were suspended. From 18th April, the measures at international airports were heightened further. Entry from all regions was banned and thus the borders at airports were completely closed.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 26: Cameroon containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available).
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures.

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.
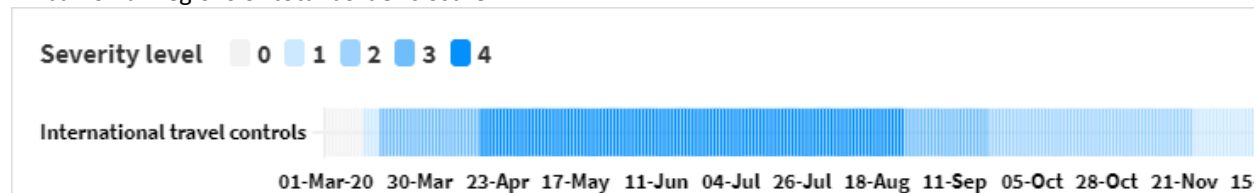
Source: Oxford COVID-19 Government Response Tracker

Similarly, it was recommended to stop travelling within certain regions or cities, and public transport was to be reduced and limited in its maximum capacity. The maximum capacity of public transport was reduced by half, and thus limited to 50 people per bus, 15 people in mini-buses, four people in cars and one person per motorbike. For interurban buses, the government listed all types of vehicles used and based on their usual capacity, decided on a specific decrease in the number of passengers that could be transported.

Buses were disinfected regularly, whilst passengers had to use disinfectants before entering the buses at the terminal and bus stops, and masks became compulsory. For urban taxis, the maximum number of persons was reduced from five, including the driver in pre-pandemic times, to four during the pandemic. Disinfection of vehicles and mask wearing was also required.

Furthermore, rail transport was limited to 40 people per coach, equalling a reduction of 50% versus regular occupancy rates. Additionally, two coaches were required to remain empty in case a passenger appeared to show symptoms of an infection. Disinfectants were provided at the train stations and beds in sleeping and overnight trains were covered with plastic to facilitate cleaning. Moreover, trains were authorised to stop only in stations where adequate screening and hygiene measures could be guaranteed. Whilst some workplaces were further ordered to remain closed from mid-March until the end of April 2020, no curfew was ever implemented.

As of 27th August, the COVID-19 restrictions were eased and international travel resumed, thereafter only banning entry for international travellers from certain regions. From 22 September 2020 onwards, travellers from certain regions had to go into quarantine, whilst from 24th November 2020 until the end of the year, only temperature screening was required for international travellers. As of 2nd October, public transport was fully available again, whilst the restriction on internal movement were lifted on 24th November 2020.

Challenges in implementing the COVID-19 transport-related restrictions

Out of all the challenges the pandemic presented in Cameroon, mobilising finances, and ensuring that measures were respected were identified as the most crucial. Whilst masks that had been provided through donations were distributed on several occasions, this effort was unable to reach everyone. It was further highlighted that a high proportion of transport-sector workers active in the informal sector were difficult to identify and to support.

Impact of the transport-related COVID-19 restrictions

Movement of goods

The closure of the land, air and sea borders was valid for the movement of persons but not for the movement of merchandise and essential goods. Truck drivers, as well as assistant drivers, were tested when entering or leaving the country. For the civil aviation sector, transport of cargo planes continued throughout, however staff had to disinfect thoroughly prior to landing. During the lockdown period, crews had to stay on board when they landed.

Waiting times at borders

Despite the official guidelines that borders were to be closed for all but cargo movements, certain borders, could not be closed entirely, due to the large-scale of daily pedestrian movements. In turn, football stadiums were converted into temporary hospitals for ensuring a more efficient temperature screening in some towns. Whilst main border points eventually had sufficient testing material and equipment for quick tests, significant waiting times until results were shared ensued.

Significant delays in the screening process were further caused by lack of test harmonisation between countries. For example, between Cameroon and the Central African Republic (CAR) passengers had to be tested negative to COVID-19 on both sides of the border. The border where this issue negatively impacted mobility the most was Garoua-Mboulai. Cameroon had quick tests available, while the Central African Republic sent PCR tests back to the capital, the results of which could take up to three weeks to be available. The countries consequently met to harmonise their screening measures to allow trucks to cross the border by being tested on just one side of the border and not in both, as previously required.

Movement of passengers

Further, the government had to find financial resources to return Cameroonians from abroad. Upon their arrival during the lockdown, they had to quarantine in nearby hotels for 15 days, and they had to be tested negatively before being free to leave. As of June 2020, a special protocol was put in place applying to aviation companies, specifying guidelines to be allowed to land in Cameroon. Further, passengers had to provide a negative COVID-19 test and then quarantine for 15 days.

Public transport

The government provided financial support to disinfect public transport terminals with a high number of daily passengers. This measure was not applied to isolated or more peripherical regions with a lower volume of passengers.

As a result of reduced capacity restrictions, urban mass transportation became problematic for the two main bus service providers and others. In many cases, financial losses were offset through higher ticket prices. For example, prices for taxis and other mass transport systems increased by 30% in many instances. Previously implemented upper thresholds for transport fares by the government prevented price increases from increasing further. Whilst the government tried to foster the competition between service providers, several operators, despite increasing their fares, could not afford to keep providing their services given the capacity restrictions and were forced to shut down their businesses.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

The effects of the measures on the transport sector are further evident when assessing Google mobility data (**Figure 27 and 28**). During the first wave, from March to June 2020, the mobility of the population declined sharply. Compared to baseline data, mobility behaviour plummeted from the beginning of March and reached a low point of around -25% in mid-April 2020. From this point onwards, mobility behaviour recovered, and

even exceeded baseline mobility from July 2020 onwards, rising to over 50% of the baseline. The findings correlate with the transport-related COVID-19 measures, such as public transport capacity restrictions, implemented early on the year, and the public perception of the danger posed by the virus. Over time, however, there is limited correlation with the number of COVID-19 cases reported, measures implemented and the recorded mobility pattern. As in many countries, mobility behaviour changes and reductions were greater during wave one than during wave two, with Cameroon however posing a true anomaly with the significant baseline-exceeding mobility to public transport stations throughout the rest of the year.

Figure 27: Cameroon mobility development to public transit stations during wave 1 vs wave 2
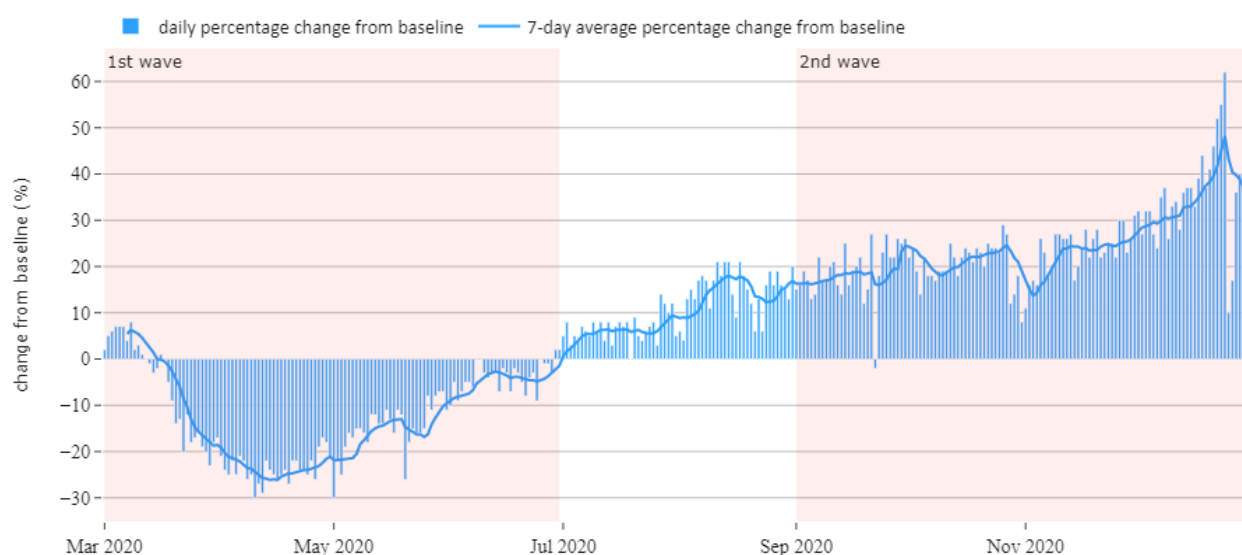
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 28: Cameroon mobility development to specific locations during wave 1 vs wave 2
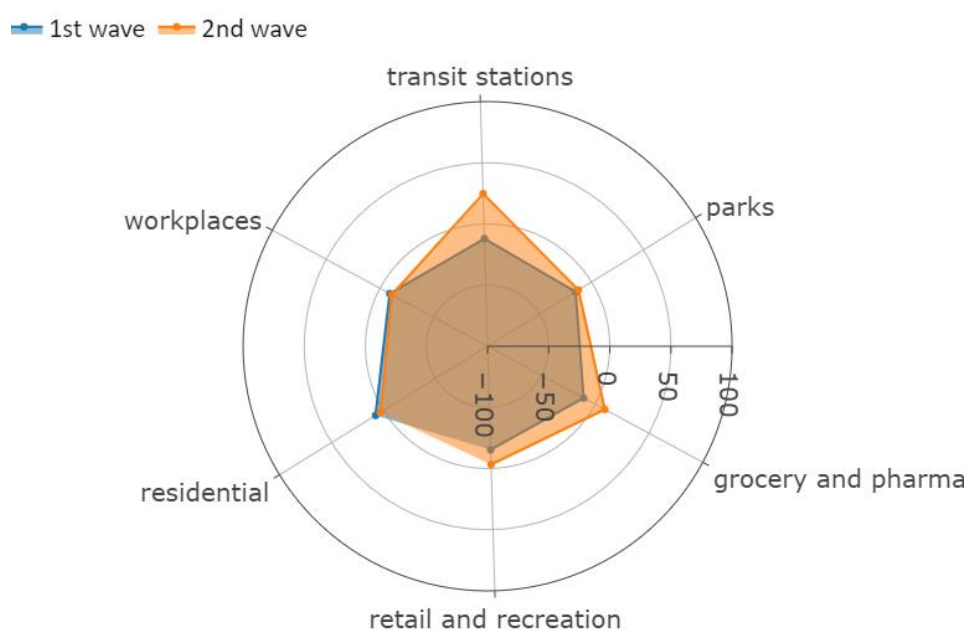
The radar chart represents the mobility data for Cameroon, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

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Over the duration of the second wave, the mobility pattern shows an overall increase in mobility compared to the first wave. This was especially evident for transit stations, where mobility increased by 37 %, from -12% to +25 % on average. Therefore, mobility was higher from September to December 2020 compared to the baseline, despite the presence of the pandemic. The same pattern is true to a lesser extent for retail and recreation, and grocery and pharmacy stores. For parks, workplaces, and residential buildings, the mobility between the two waves was constant, as well as lowered compared to the baseline (with the understandable exception of residential areas).

Key learnings from the COVID-19 Cameroon case study

- Regional cooperation with neighbouring countries to harmonise their screening measures significantly reduced waiting times at borders and facilitated procedures;

- Despite general acceptance of transport-related measures set by the government, implementation and enforcement in public and non-public transport posed significant challenges;

- Capacity restrictions resulted in many public transport providers increasing ticket prices which made rides less affordable for many people (though the upper fare threshold by the government limited this to some extent). Public transport operators argued for the need of financial support to compensate them for their financial losses, as several were forced to cease operations.

- Road safety was negatively impacted, for example by drivers taking advantage of less crowded streets to speed, in order to transport more clients in each period;

- Compliance to capacity restrictions and physical distancing called for more orderly and better organised rides thus minimising conflicts. This was perceived to bring a level of safety and security especially for women, and for all passengers in general;

- Increased cycling highlighted the urgent need to further develop bicycle lanes to prevent cyclists from riding on the roadway and exposing themselves to a higher chance of being involved in road accidents.

5.4 Senegal

In Senegal, the first case of COVID-19 was reported on 2nd March 2020. As of 31st December 2020, Senegal had a cumulative total of 19,140 COVID-19 cases, and 410 (2.1%) deaths. **Figure 29** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

The Dakar area concentrates 72% of the COVID-19 cases, and a rapid expansion of the outbreak revealed that the urbanised areas in the western side of the country were the most impacted.

Figure 29: SARS-CoV-2 virus in Senegal
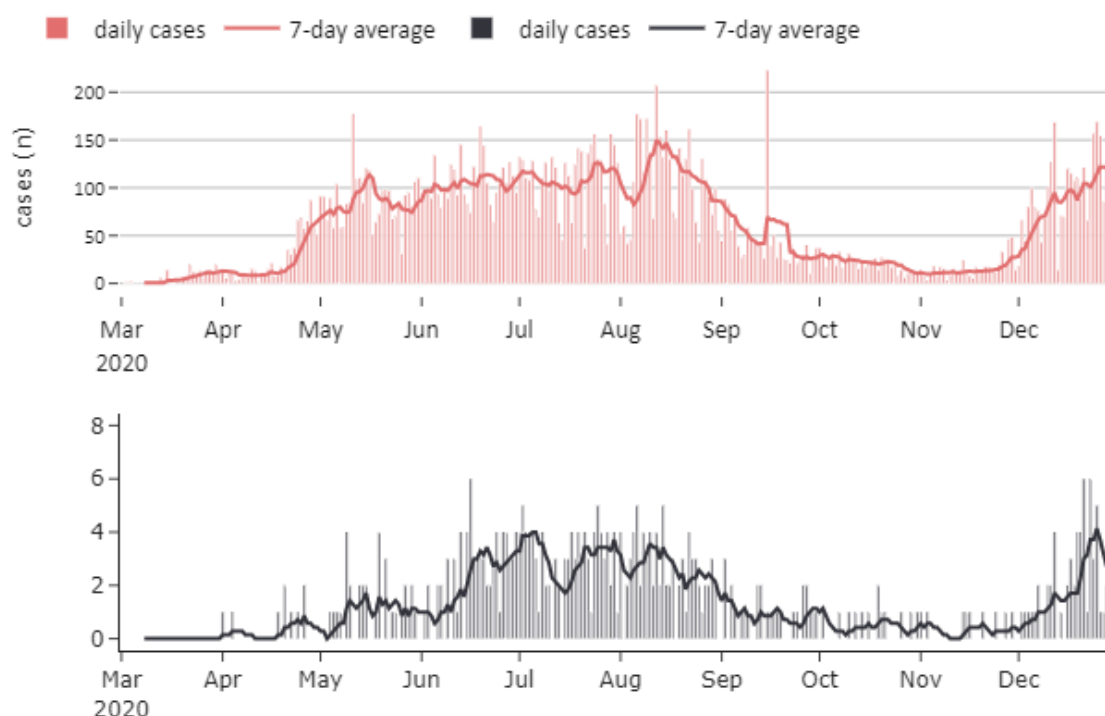
Source: Johns Hopkins University

Creation of National Committees

Shortly after the onset of the pandemic in Senegal, the government set up committees within all relevant Ministries to discuss and coordinate the course of the pandemic and appropriate countermeasures. These committees were headed by the Ministry of Health, which reported directly to the President of the Republic. The recommendations and instructions of these committees were passed on to the county governments for implementation, which were also responsible for overseeing their implementation and compliance.

This was carried out through the deployment of local and urban police forces, as well as the military under the direction of the Ministry of Security and the Interior and legitimised by the declaration of a nationwide state of emergency from March to June 2020. The monitoring of the curfew was one of the main tasks of the security forces.

Transport-related measures taken by the government to control COVID-19

The first set of measures against the spread of SARS-CoV-2 affecting the transport sector came into force in the period of 15th to 23rd March 2020 (**Figure 30**). A curfew was imposed between 25th March and 29th June 2020. People were only allowed to leave their own homes for a valid reason, such as to run essential errands. For the rest of the year, this regulation was lifted entirely. Employees in specific sectors were required to work from home whenever possible from mid-August to 22nd October, and between 10th December until the end of the year. Public transport was not affected by the government's package of measures throughout 2020 and was kept fully operational. However, internal movement was restricted between 23rd March and 6th June 2020.

On 15th March 2020, regulations were issued for international airports. Until 18th March, arriving international travellers had to undergo temperature screening, and in case of elevated temperature, were then required to quarantine. They were isolated in hotels, apartments or medical facilities at government expense. When cases started to surge, the government decided to restrict entrance to the country only for those who could prove they had been tested negative for COVID-19. Once at the airport, additional tests were conducted on suspected cases. After that, an additional entry ban was imposed on international travellers from certain regions until 19th March. By 16th July 2020, the measures at international airports were raised to the highest level. As a result, a complete travel ban was imposed, and the borders were closed for international travellers. Exceptions were made for travellers with special permissions. After that and until the end of the year, this

measure was relaxed by one level and an entry ban was again imposed on travellers from certain regions. Urban taxi drivers were severely impacted by the decrease in the amount of air flights, as most of their income comes from clients travelling to and from airports.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 30: Senegal containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available); 2 - require closing (or prohibit most citizens from using it).
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities; 2 - internal movement restrictions in place.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures; 1 - recommend not leaving house; 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips; 3 - require not leaving house with minimal exceptions (e.g., allowed to leave once a week, or only one person can leave at a time, etc).

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.

Source: Oxford COVID-19 Government Response Tracker

For cargo transports, restrictions were primarily imposed on the number of people inside cargo truck cabins. Barrier measures were also required: masks became compulsory, as well as the use of hydro-alcoholic gels. In addition, temperature screenings were imposed on drivers entering and leaving Senegal via land borders, and when temperatures exceeded a threshold value, a PCR test became compulsory.

Within national borders, restrictions were put in place for three months throughout the state of emergency. Consequently, interurban travel was interrupted and partially banned, where people were restricted from leaving their region. Furthermore, sales activities were forbidden in bus transit stations.

From April 2020 onwards, restrictions were continuously eased. The head of state reduced the measures due to the economic and societal burdens. The number of demonstrations against COVID-19 measures had risen, attended by a growing number of participants, indicating that a large part of the population was disagreeing with the severity of the measures taken. Following the easing, public transport could operate at 50% capacity with passengers allowed to use all seated places, and intercity travel was reopened.

Challenges in implementing the COVID-19 transport-related restrictions

- Internal movement and national border restrictions were often broken by individuals crossing roadblocks or land borders by foot and then continuing using two-wheelers. As a result of these illegal practices, motorcycle transport was prohibited for a while.

- Whilst a curfew was imposed and national travel was heavily restricted, the transport of essential goods was only marginally interrupted. However, the curfew did result in a reduced flow of goods as carriers would typically work during evenings and night shifts;

- Infrastructure companies were impacted, especially due to the reduced construction hours. Furthermore, a drop of almost 1.25 million Euros in motorway operating revenues for specific highways was observed between February and July 2020, compared to the months before and after this period;

- A similar downward trend in the flow of traffic in terms of number of vehicles for the same location and duration can be observed (14). This observation provides an indication for the reduction in private and business travel in between cities and regions, which can be linked to the observed drop in mobility. Despite the state of emergency, authorisation for the transport of construction materials was granted, which made it possible to avoid the stoppage of road works;

- Airlines were heavily impacted due to reduced travel demand. Financial aid to the aviation sector was provided, however the amount was insufficient since the pandemic continued for much longer than expected.

Impact of the transport-related COVID-19 restrictions

Public transport

In the Dakar area, 60% of the public transportation supply is delivered through public (*Dakar Dem Dikk*) and private (*AFTU*) organisations, whereas the remaining 40% are offered by non-organised transportation societies (15). At larger urban bus transit stations, temperature screening and handwashing became compulsory. For each departing vehicle, the drivers had to track personal and travel relevant information about their passengers, to be able to follow up infection chains in the event of an infection.

Regarding inter-urban travel, the authorities banned transport between cities except with special authorisation from the Ministry of the Interior. Without this permission, interurban passenger transport remained closed, and the use of private cars to make inter-urban travels was also prohibited.

To ensure sufficient physical distance between passengers on buses it was prohibited to stand during travel. Consequently, the rate of capacity inside the buses was drastically lowered compared to before the pandemic. During the lockdown, the maximum capacity was further limited to one-third of previous occupancy rates. There were attempts to increase ticket prices, however this was not supported by law, as ticket prices are sealed to a maximum value, with violations resulting in financial penalty or withdrawal of license. This had a negative financial impact on the income side of the operators. Under the assumption, that if the transport sector is not working, no other sector is working, some studies show the impacts on the economy and the budget side. Therefore, the state government provided short-term financial support which was initially valid for 3 months. In total, to support the economy, the state government had set up a financial impacts mitigation plan, which resulted in the "Force Covid-19 Fund". This fund had the goal to build resilience for households and companies. In total, the fund included 2 billion USD, which is equivalent to 24% of Senegal's 2020 budget. This fund was dispatched to various sectors at standstill, including the transport sector, to provide financial support for vehicle owners, drivers, and for the benefit of bus station managers to meet their financial obligations. In total, 15 million USD were allocated to public transport operators.

The private informal transport operators are fully dependent on the fare-box revenue to meet their operational expenditure. However, the government also assisted informal transport operators impacted by the lockdown to help them cover the costs linked to the provision of their services.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

From the Google mobility data, it is evident that individual (smartphone user) mobility was significantly more reduced during the first wave than during the second wave when comparing daily frequency 2020 data of versus the median value of the baseline period (**Figure 31** and **32**). In the first wave, when Senegal began

implementing COVID-19 measures, the frequency spent at transit stations decreased by almost 50% and then recovered slowly throughout rest of the year, however consistently remaining below the baseline. On average, the visiting frequency at transit stations was reduced by about 40%, whilst during wave two this was only down by 20%. Similarly, the frequency of workplace visits was down 20% in wave 1 and remained at that value in wave 2. Time at residential which was 10% higher in wave 1, was 7% higher in wave 2. This reflects the lower severity in restrictions, as well as the increased need for people to resume work to earn their livelihoods.

Figure 31: Senegal mobility development to public transit stations during wave 1 vs wave 2
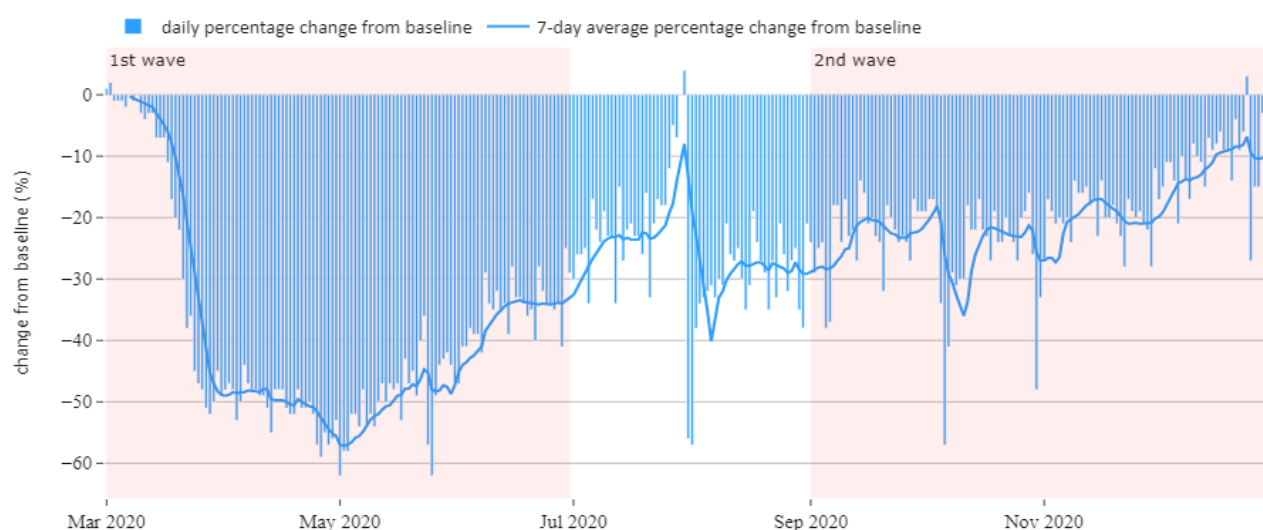
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 32: Senegal mobility development to specific locations during wave 1 vs wave 2
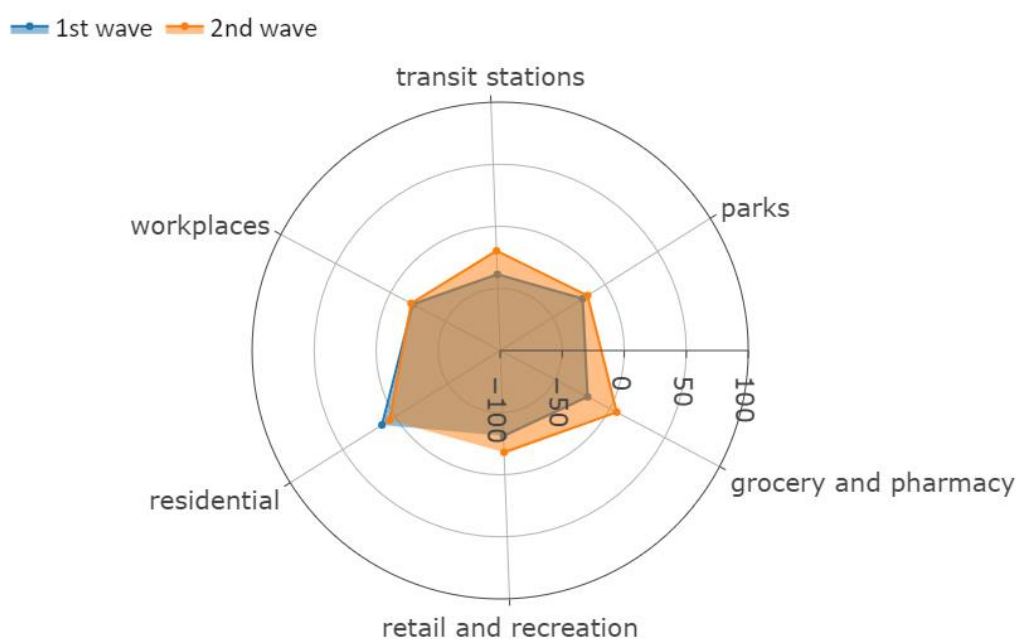
The radar chart represents the mobility data for Senegal, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

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Key learnings from the COVID-19 Senegal case study

- Financial support by the Senegalese government cushioned the negative economic and financial consequences for business organisations and private individuals resulting from the implementation of the COVID-19 measures;

- Night-time curfews resulted in certain professional groups being unable to continue their work resulting in financial losses;

- Laws and financial penalties regarding maximum public transport pricing resulted in stable ticket prices for consumers;

- Reduced conflict with the police enforcement was possible through education and awareness for road users: drivers, passengers, cyclist and pedestrians;

- Capacity restrictions in buses made it possible to prevent the perennial problem of over-loading and carrying more passengers than the recommended bus capacity that was common before COVID-19.

5.5 Morocco

In Morocco, the first case of COVID-19 was reported on 2nd March 2020. As of 31st December 2020, Morocco reported a cumulative total of 439,193 positive COVID-19 cases and 7,388 (1.7%) deaths. **Figure 33** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Figure 33: SARS-CoV-2 virus in Morocco
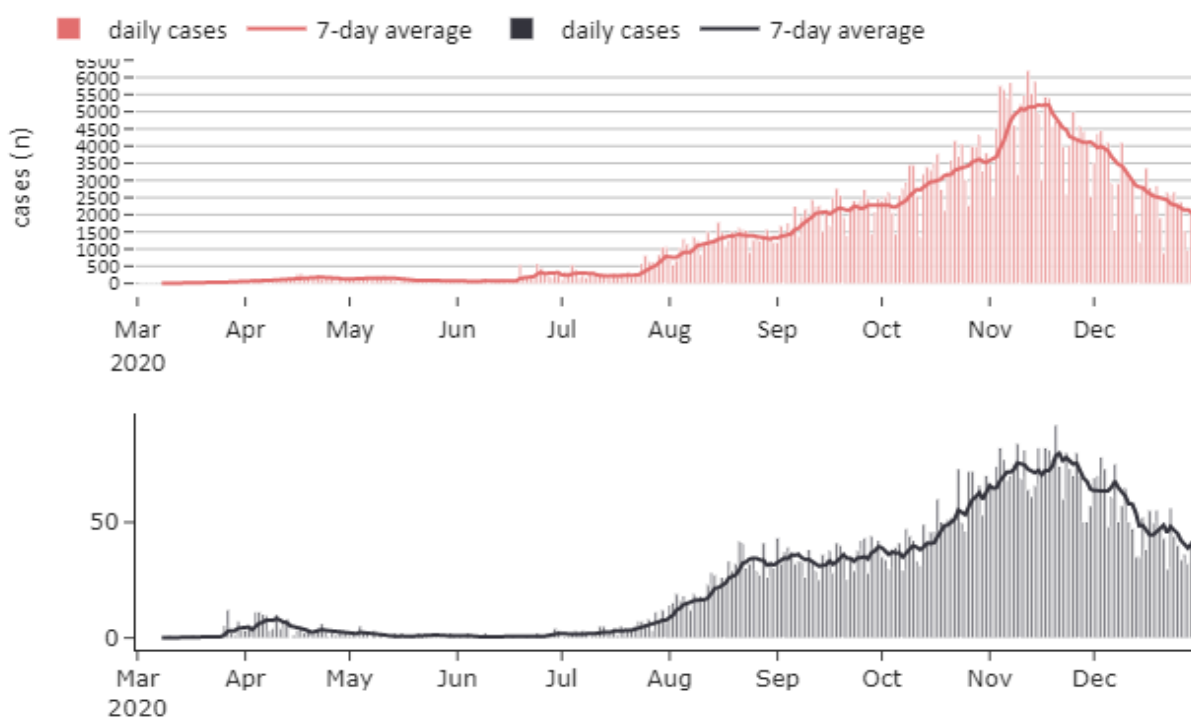
Source: Johns Hopkins University

Transport-related measures taken by the government to control COVID-19

The first set of measures were issued and implemented by the Moroccan government between 13th and 20th March 2020. From March to June 2020, Morocco was under a general lockdown (**Figure 34**).

From 13th March 2020, international travellers of some regions were not allowed to enter the country by plane anymore. In the following weeks, this measure was increased, resulting in a general ban on entry and thus the international air borders were completely closed to international travellers. Exceptions needed official authorisation. This regulation was maintained until 13th September. After that, the ban of only certain countries was reinstated and remained in place until the end of 2020. During this period, passengers at airports had to provide a negative PCR test, taken less than 72 hours ahead of arrival. From June 2020, mainly

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for economic reasons, measures were eased in order to allow movement of people inside the country to encourage tourism. Those travelling for touristic reasons had to have a confirmed reservation in a hotel at their destination.

Throughout this time, land borders were closed. However, corridors for cargo of essential goods and trade remained open. For the movement of goods and cargo on roads, truck drivers were subject to temperature screening at land borders. They further had to provide a negative PCR test, were required to wear a mask, and only one person was allowed in the truck cabin. For maritime borders, those wanting to enter the country for touristic purposes could only embark from two ports: Sète (South of France) and Genoa (North of Italy).

During 2020, there were two periods during which residents were only allowed to leave their homes for valid and essential reasons. The first period began on 20th March and ended on 23rd June 2020. The second period began on 5th August 2020 and was maintained until the end of the year. No curfew measures were taken before or during these periods. However, during the summer months, governors had the faculty to implement additional restrictions for their regions, as necessary. This was applied in major touristic cities such as Tangiers and Marrakesh where gatherings were consequently limited, and commercial activities had to respect specific opening and closing hours.

Between 20th March and 10th June 2020, the government's decisions further led to a complete shutdown of public transport. As of mid-June there were no more restrictions on public transport, until 23rd October, when capacity caps were set that remained valid throughout the remainder of the year. Public transport systems could operate at a maximum capacity of 50% at the beginning, and then capacity was increased to 75%.

Throughout the analysis period, travel between regions and cities was highly regulated. Only for the period from 30th October to 10th November 2020 was it only recommended to refrain from travelling between regions and cities according to individual possibilities.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 34: Morocco containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available); 2 - require closing (or prohibit most citizens from using it).
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities; 2 - internal movement restrictions in place.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures; 1 - recommend not leaving house; 2 - require not leaving house with exceptions for daily exercise, grocery shopping, and 'essential' trips.

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.
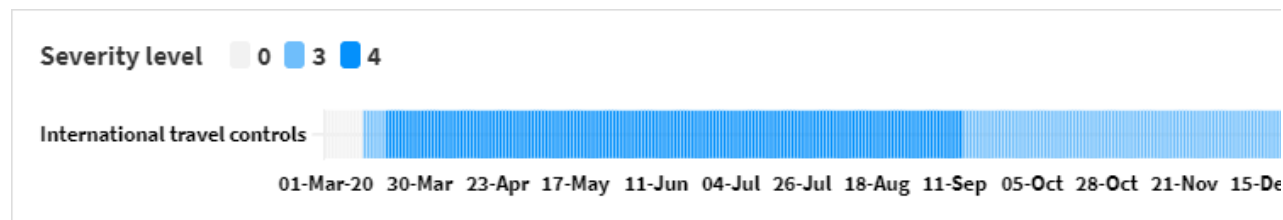
Source: Oxford COVID-19 Government Response Tracker

Challenges in implementing the COVID-19 transport-related restrictions

- Capacity restriction in buses and taxis were difficult to implement during peak hours. There were cases of bus operators demonstrating against the 50% capacity reducing measures.

- To enforce the curfew, roadblocks were installed in many places. However, broader enforcement of the transport-related measures, as in many other countries, posed a significant challenge, and much depended on individuals' behaviour. There were unverifiable claims that some individuals who tested positive did not quarantine, as well as that many who had symptoms did not wear masks or get tested.

- The gradual lifting of containment measures resulted in numerous violations and non-compliance, accompanied by reports from the local community of illegal transport fare increase, sometimes reaching 100%;

- In many disadvantaged neighbourhoods, people suffered due to the travel restrictions and felt significant repercussions on their income. This created tensions between citizens and the police.

Impact of the transport-related COVID-19 restrictions

Road accidents

A month-by-month comparison versus 2019 revealed that the number of road-related deaths and injuries across all modes of transport significantly decreased during the pandemic (**Figure 35**). The average percentage change across 2020 shows a decrease of 17% across all categories.

Especially during the initial stages, from March to June 2020, a significant reduction in deaths and injuries was recorded, with total road accidents down by over 70% in April 2020. This correlates strongly with the stay-at-home requirement measures which were put in place in March 2020, which required people to stay at home, with exceptions only applying for daily exercise, grocery shopping and "essential" trips.

During the remainder of the year, and most evidently during the second wave (September – December 2020), the number of accidents converged towards their 2019 values, despite the re-tightening of certain measures against the spread of the pandemic. The development of traffic accidents over time correlates with the overall mobility of people, which as shown through the Google Mobility data, was severely down in wave one, but gradually returned to pre-pandemic levels during wave two.

Figure 35: Decrease in total road accidents, injuries, and deaths month-by-month 2020 vs baseline (2019)
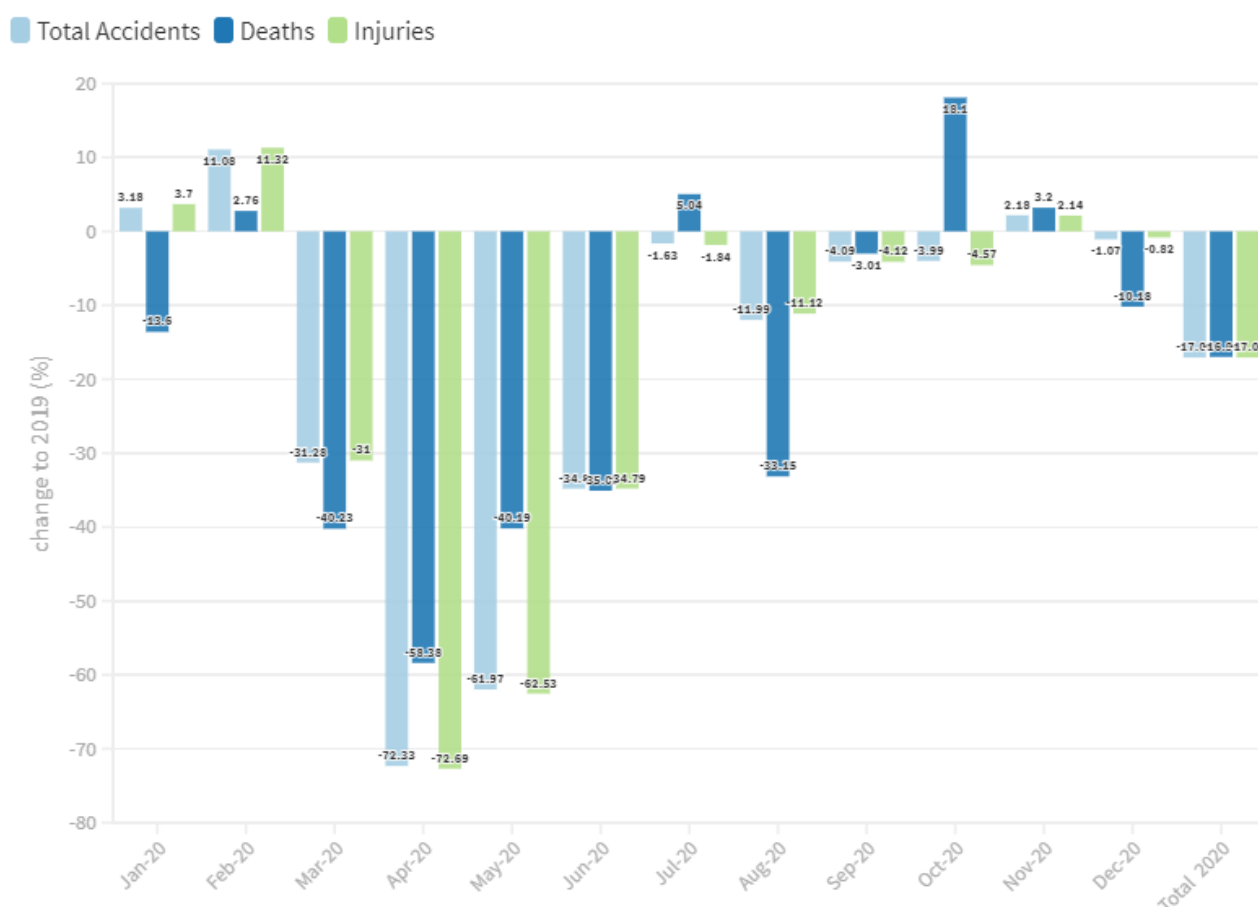
Source: National Road Safety Agency (Morocco)

Modal shift for work commute

The confinement had a significant impact on employment and work habits. Prior to the pandemic, 25% of the working population worked from home on a regular or occasional basis. This correlated to 82% of the urban population in Morocco, 58% of whom used to use the car as their means of transport to work. As a result of the COVID-19 work from home restrictions, all transport modes for the commute from home to work saw a decrease in favour of immobility. Whilst cars and public transport experienced a substantial reduction, walking remained relatively stable and decreased only slightly from being used for about 31% of trips before the confinement, to around 27% during lockdown.

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Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

Morocco witnessed one of the highest reductions in mobility behaviour to public transit stations, with visits down between 70 to 80% from end-March 2020 to mid-May 2020, reflecting the total closure of public transport during this time (and highlighting the imperfection of Google Mobility data as frequenting a public transit station location does not provide proof of travel). Once the closure of public transport was lifted and people resumed moving around, mobility gradually returned closer to the baseline value, however, consistently remained below the baseline until the end of the year.

A similar pattern can be seen across almost all locations in the radar charts below, with mobility gradually converging back to the baseline over time, with visits to grocery and pharmacy stores presenting the only exception, exceeding baseline values. Similarly, residential visits was the only area that reduced in visiting frequency in wave two – corroborating the remaining data showing greater mobility to these other locations. On average, mobility was reduced between 40 to 60% in wave one and between 14 to 22% in wave two (**Figure 36 and 37**).

Figure 36: Morocco mobility development to public transit stations during wave 1 vs wave 2
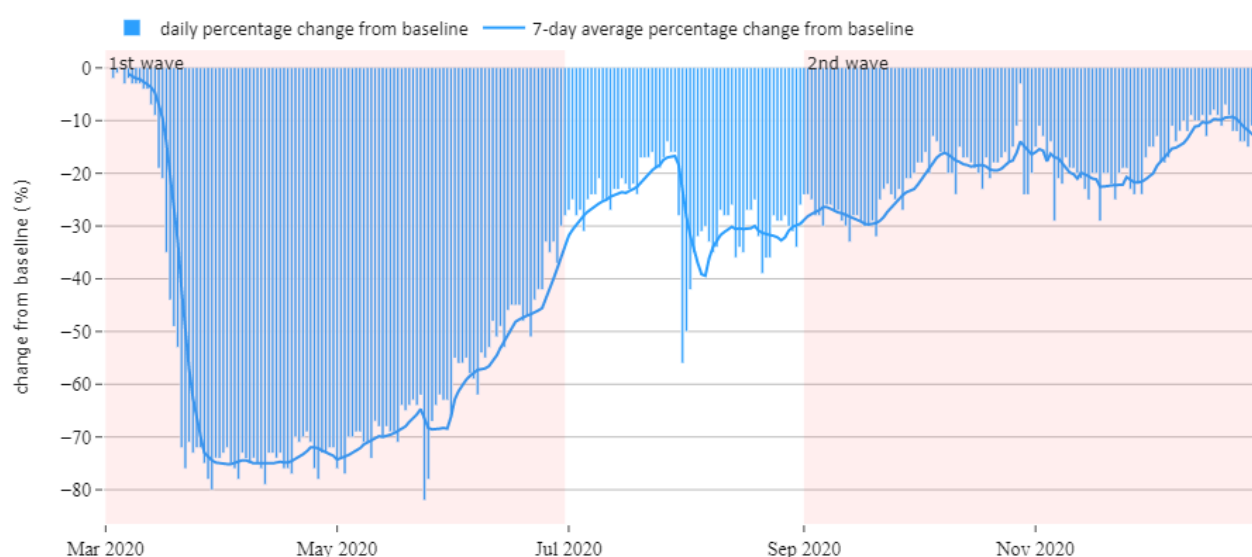
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

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Figure 37: Morocco mobility development to specific locations during wave 1 vs wave 2
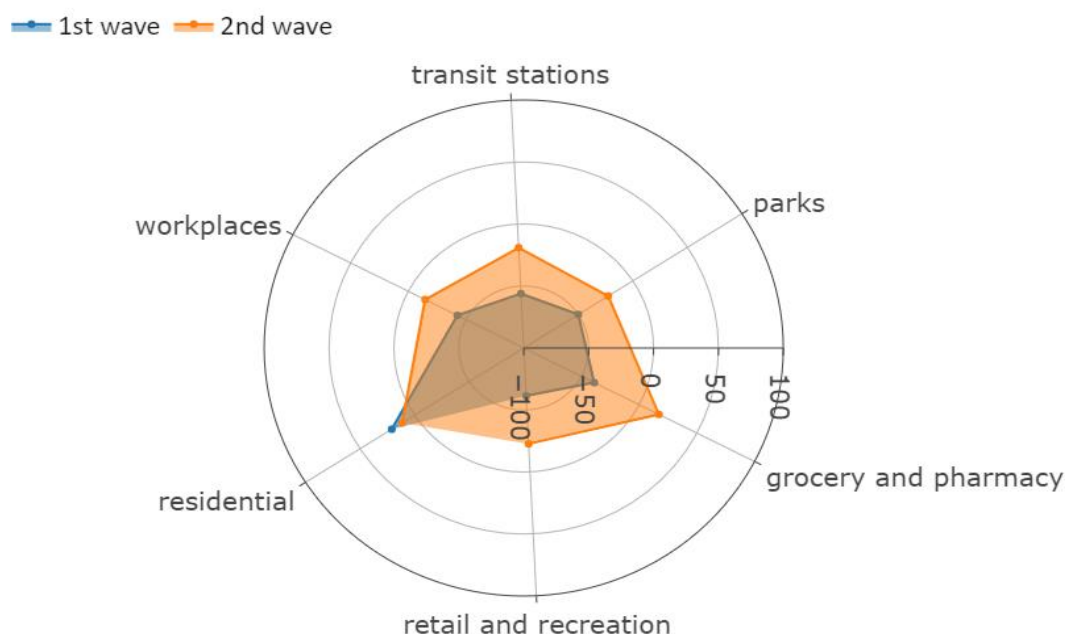
The radar chart represents the mobility data for Morocco, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

Key learnings from the COVID-19 Morocco case study

- Despite a negative impact on speeding behaviour, curfews and lockdown resulted in a reduction of reported road accidents;

- Reduced fleets and capacity restrictions, resulted in a higher usage of more active modes of transport, in particular walking, or sharing means of transport with neighbours for example; but also encouraged people to use higher capacity transport modes such as trams, electric buses, and trains;

- Uncontrolled transport fare increases pose a livelihood threat to individuals relying on affordable means of transport. Stable pricing policies would be beneficial;

- Enforcement resulted in a more systematic adherence to the SOPs.

5.6 Mozambique

In Mozambique, the first case of COVID-19 was reported on 22nd March 2020. As of 31st December 2020, Mozambique reported a cumulative total of 18,642 positive COVID-19 cases and 166 (0.9%) deaths. **Figure 38** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Figure 38: SARS-CoV-2 virus in Mozambique
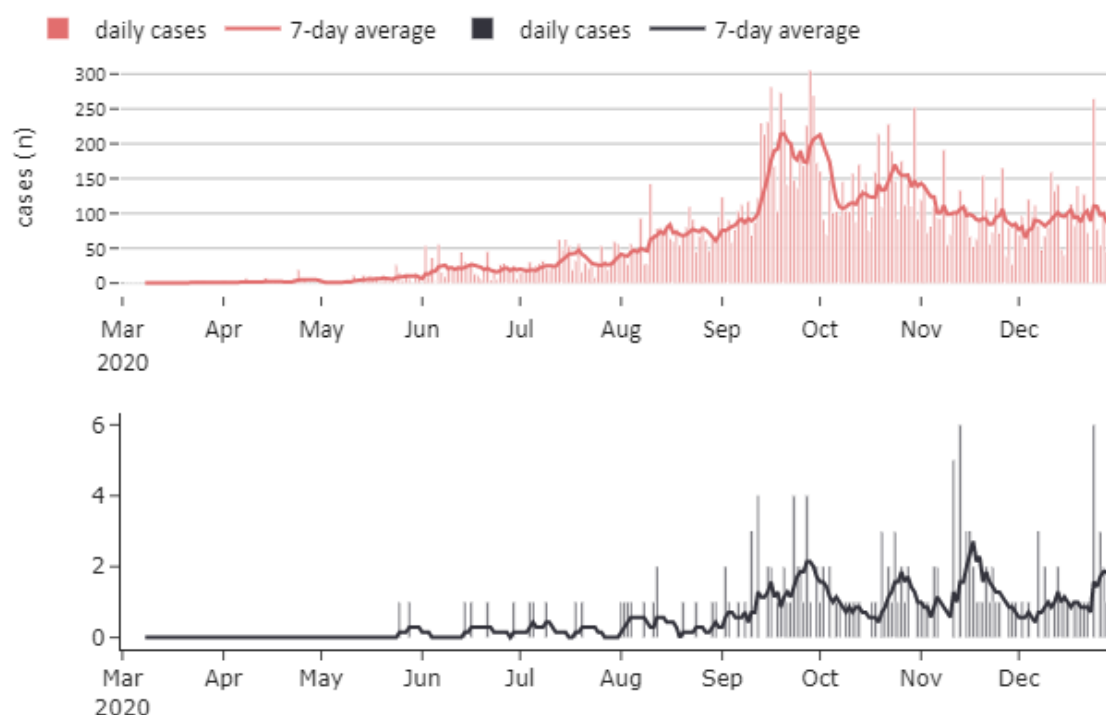
Source: Johns Hopkins University

Creation of a Crisis Team

Following the identification of the first positive worldwide COVID-19 cases in early March 2020, a crisis team was convened by the government to organise and coordinate the fight against the pandemic. The government regularly develops guidelines tailored to each sector. These guidelines are then forwarded by the respective ministries to the operative working groups for implementation. The main task of implementing policy guidelines for the road, rail and aviation sectors lies with the Ministry of Transport.

Transport-related measures taken by the government to control COVID-19

Of all the measures implemented by the government against the spread of the pandemic, the measures at international airports were introduced first, on 1st March 2020 (**Figure 39**). The severity level of these measures was adjusted several times throughout 2020. Initially, international passengers had to undergo a temperature screening. From 20th March 2020, a quarantine obligation was additionally imposed on international arrivals from certain regions. Between 29th May and 20th August 2020, the highest category level was declared, constituting a complete border closure and a ban on international arrivals. Subsequently, these measures were lowered until 21st October, during which international travellers had to go into quarantine. For the following week, it was determined that entry from certain countries would be prohibited. This severity level was lifted again after one week and substituted by that of the previously implemented severity level. From 12th December 2020 and until the end of the year, category one, according to which persons entering internationally had to undergo a temperature screening, was reinstated.

The exact details of actions have been presented in the *Aeronautical Information Circular* (CIA), which was developed and adapted monthly according to the state of the pandemic. It contains measures and implementation steps for all stakeholders (passengers, crew, etc.) in civil aviation. In the area of border controls between bordering countries, the *COMESA_EAC-SADC* guidelines for the safe crossing of persons and goods during the COVID-19 pandemic were applied from June 2020. Land borders reopened on 1st October 2020, with truck drivers being obliged to provide a negative PCR test when crossing into Mozambique.

The public transport sector was affected by a variety of measures during two periods (April-May 2020 and end-October-December 2020). During both periods, a recommendation was made by government authorities to limit the capacity for urban transport vehicles. For example, minibuses were allowed a maximum of 15 passengers (versus the usual 20-25 passengers). Furthermore, motorcycles, a common mode of informal transport in northern provinces, were initially forbidden. However, this decision was swiftly revoked due to a

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lack of alternative transport modes. In general, wearing masks and hand sanitation was required. From April 2020 onwards, the public transport operating hours were reduced to three hours a day, from 17:00 to 20:00. For trucks, as of April 2020, only one person was allowed in the truck cabin, which was later increased to two drivers to counteract reports of driver fatigue. Between May and October 2020 measures were imposed regarding urban and inter-urban travel, especially with regard to the Maputo metropolitan area.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 39: Mozambique containment and closure policies

Record closing of public transport: 0 - no measures; 1 - recommend closing (or significantly reduce volume/route/means of transport available); 2 - require closing (or prohibit most citizens from using it).
Record restrictions on internal movement between cities/regions: 0 - no measures; 1 - recommend not to travel between regions/cities; 2 - internal movement restrictions in place.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures; 1 - recommend not leaving house.

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.

Source: Oxford COVID-19 Government Response Tracker

A phased approach for the lifting of the lockdown

Due to the restrictions, especially in the inter-urban areas, and the challenges described above, the policy guidelines and their implementation were adapted step by step. Until June, a maximum capacity was set to 30% for inter-urban transport. From June 2020 onwards, it was raised to 50%, and by December 2020, buses were permitted to resume operating at full capacity.

Challenges in implementing the COVID-19 transport-related restrictions

- Changing COVID-19 test requirements and policies, as well as differing international standards resulted in prolonged waiting times and complications at land borders. For example, an antigen test taken in Mozambique was not accepted by South African authorities, where a PCR test was instead required;

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- Allowing only one truck driver in the cabin, and mandatory quarantine requirements in some neighbouring countries when staying overnight, resulted in longer journeys taken by one driver within one day and a consequent negative impact on driver fatigue and road safety;

- Many reported being unable to follow stay-at-home guidance by the government, due to the need to continue their livelihood activities;

- The interruption of inter-urban transport, with many buses no longer allowed to operate and limited additional suitable buses existing, resulted in people having no adequate means to return home. Consequently, large crowds were gathering at public transport stations to get on the last services each day.

Impact of the transport-related COVID-19 restrictions

Waiting times at borders

For land borders, there were several reports of people having to wait three or more days to cross the border between Mozambique to South Africa because of changing testing requirements and policies.

Movement of goods

The movement of goods was largely unaffected since the transport of cargo and essential goods was ensured by the government. However, as described above, waiting times accumulated at the land borders, especially at the beginning of the pandemic in 2020.

Public transport

As in many other countries, physical distancing on public transport doing "business-as-usual" was not feasible, and maximum capacity restrictions were thus put in place. This in turn resulted in reduced revenues for public transport operators, who could not increase fares due to specific laws prohibiting this, nor was there a government financial intervention to compensate them for their losses. Further, the reduced capacity numbers and limited number of vehicles in many cases meant that passengers experienced long waiting times at public transport stations. This led to a positive side-effect, which was that many passengers shifted to different modes of transport, such as cycling and walking, especially in off-peak hours.

Road accidents

There was the general perception that an increase in speeding, due to lower traffic volumes, put road users, especially VRUs, such as cyclists and pedestrians, at a higher risk.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

Throughout the entire analysis period in 2020, the visiting frequency to public transit stations averaged a 23% decrease compared to the baseline (**Figure 40 and 41**). During the first wave from March to June 2020, the average number of visitors in all areas decreased relatively constantly (-20% to -30%). Consequently, the number of visitors in the home area increased (+10%). Comparing this observation with the average developments to all locations in the second wave, there are only marginal changes, indicating that mobility behaviour remained relatively consistent throughout both waves, well below the baseline value of mobility throughout.

Figure 40: Mobility development in Mozambique to public transit stations during wave 1 vs wave 2
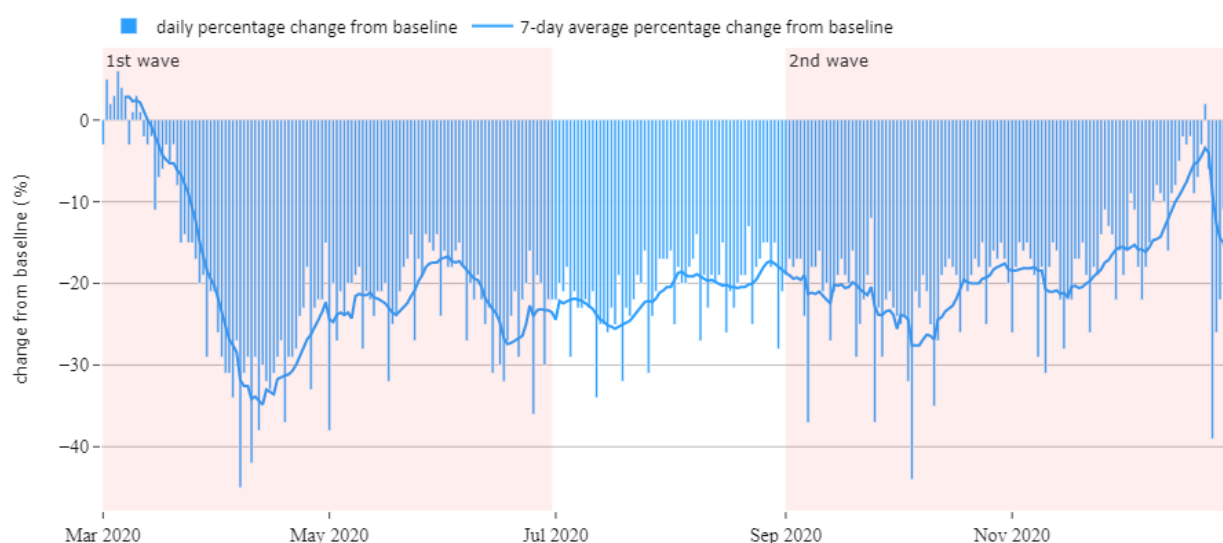
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 41: Mobility development in Mozambique to specific locations during wave 1 vs wave 2

The radar chart represents the mobility data for Mozambique, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

Key learnings from the COVID-19 Mozambique case study

- Creating a Crisis Team with regular consultations allowed time-sensitive and extensive collaboration among the various government agencies;

- Adapting existing SOPs may be required when previously instated measures are creating unfavourable side effects, e.g. driver fatigue due to only one driver allowed in the truck cabin;

- Greater regional alignment would facilitate cross-border movement of passengers and goods;

- Capacity restrictions on public transport can make travelling safer and more comfortable for users;
- Improving the coverage of public transport can reduce traffic congestion caused by the heavy influx of private-owned vehicles in times of a pandemic;
- Pandemic measures encourage people to shift to more active means of transport aiding physical distancing guidelines and highlight the need for more inclusive infrastructure to support different modes of transport and mobility needs and protect VRUs.

5.7 Tanzania

In Tanzania, the first confirmed case of COVID-19 was reported on 17th March 2020. Since early May 2020, no data on new cases and related deaths is available. In total, 509 cases were reported, alongside 21 deaths. **Figure 42** shows the daily confirmed positive PCR tests (red) and deaths (black), and their 7-day average between March and December 2020.

Overall, Tanzania has responded to COVID-19 pandemic rather differently to the other six focus countries. Whereas at the beginning of the pandemic various measures were taken, especially from February through April 2020, since May 2020 most measures have been lifted and the country has resumed with business as usual. This directly coincides with the end of the official COVID-19 case reporting.

Figure 42: SARS-CoV-2 virus in Tanzania
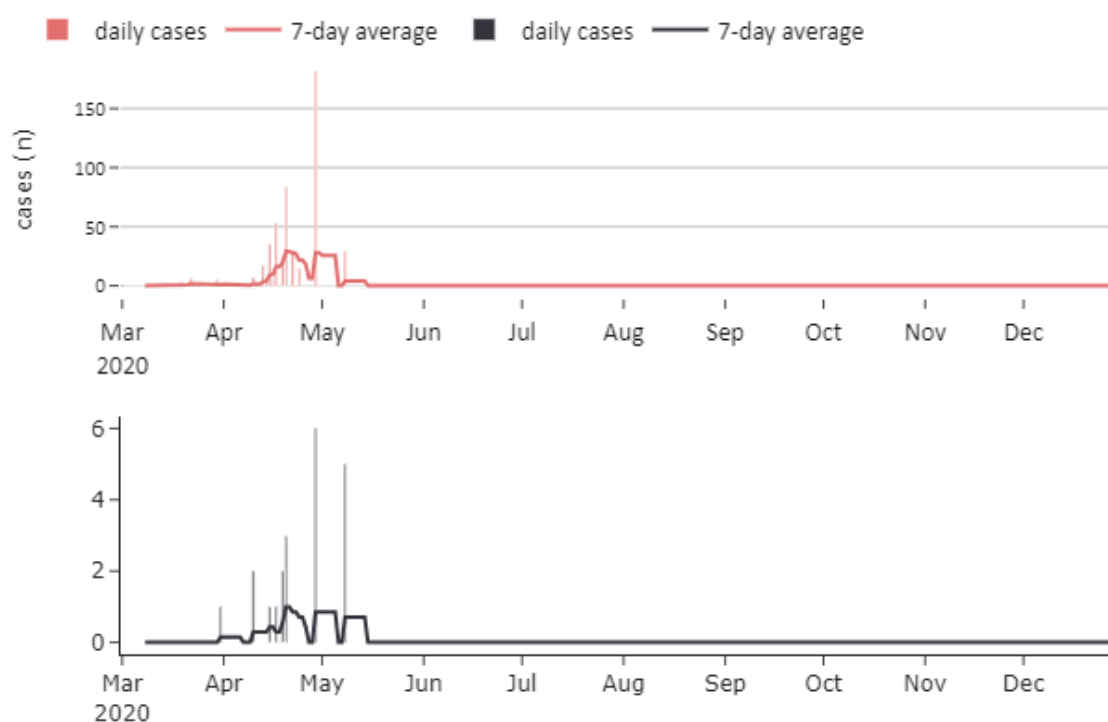
Source: Johns Hopkins University

Transport-related measures taken by the government to control COVID-19

Since the end of January 2020 temperature screening had been implemented at international borders (**Figure 43**). Once the first case of the disease was confirmed mid-March, there was a ban on arrivals from certain countries, and as of mid-April all borders, and consequently the airports well, were closed. On 18th May 2020, international flights could resume, and only temperature screening remained in place thereafter, with only a short interim period during which arrivals from certain countries were required to quarantine.

For land border crossings, it was mostly the case that individuals crossing into neighbouring countries had to provide a negative PCR test result, whilst this was not the case for arrivals into the country. With people waiting for processing and their test result, this resulted in significant queues into Tanzania at border crossings.

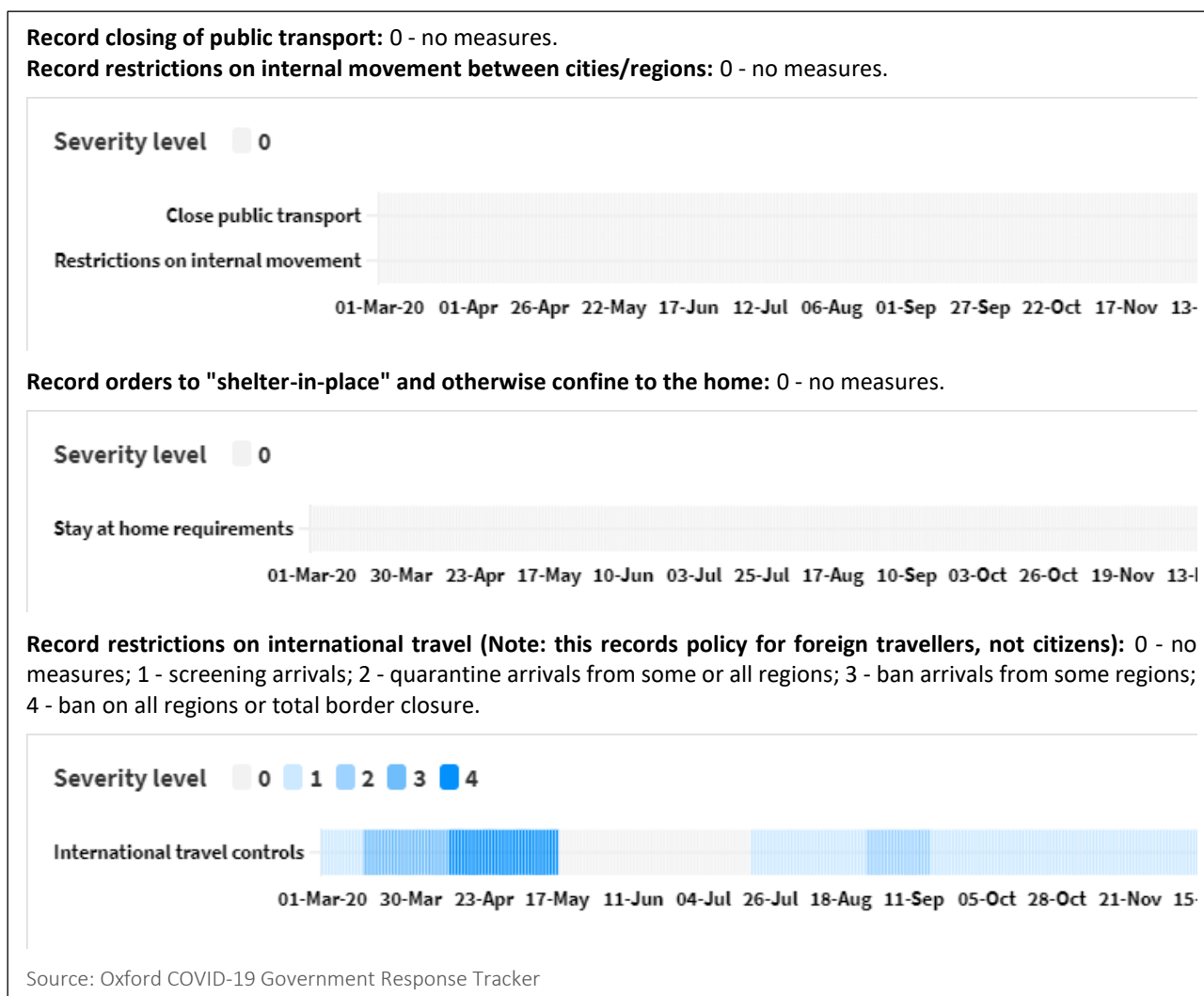For public transport, restrictions were put in place mandating individuals to wear a mask, handwashing was advised, and seats were allocated at the beginning of the pandemic. These rules primarily applied in major cities like Dar es Salaam, Mwanza or Arusha, whilst in rural areas few measures were imposed. All the restrictions were promptly lifted in May 2020. Unlike all other focus countries, no containment or closure policies in the form of restrictions on internal movement between cities and regions were imposed at any time.

The graphs show the development of government measures against the spread of SARS-CoV-2 in the period March to December 2020.

Figure 43: Tanzania containment and closure policies

Record closing of public transport: 0 - no measures.
Record restrictions on internal movement between cities/regions: 0 - no measures.

Record orders to "shelter-in-place" and otherwise confine to the home: 0 - no measures.

Record restrictions on international travel (Note: this records policy for foreign travellers, not citizens): 0 - no measures; 1 - screening arrivals; 2 - quarantine arrivals from some or all regions; 3 - ban arrivals from some regions; 4 - ban on all regions or total border closure.

Source: Oxford COVID-19 Government Response Tracker

Some NGOs had given trainings to public transport operators such as drivers, as well as to public transport users to educate them on how the disease spreads and what preventive measures can be applied, such as hand washing, mask wearing and so on. In some cases, hand disinfectant stations were set up at public bus stops, posters were put up and TV and radio announcements were made. Whilst the government was cooperating and supporting these efforts in the beginning (not through monetary means), no more licenses for trainings were granted as of May 2020, coinciding with the last officially reported COVID-19 case figures.

Mobility development during wave 1 (March-June'20) versus wave 2 (September-December'20)

Given the less stringent measures, it is unsurprising that the reduction in mobility during both "waves" was minor compared to that in the other focus countries (**Figure 44 and 45**). In wave 1, most categories were down between 0-10%, with Retail and Recreation and Workplaces having reductions slightly above 10%. In turn, people staying at home was only marginally more compared to the baseline. In wave 2, figures were very similar to the baseline day, except for workplaces, for which the reduction was 20%, thus in fact higher

than during wave 1 – a somewhat surprising finding given no more COVID-19 restrictions are officially in place.

Figure 44: Mobility development in Tanzania to public transit stations during wave 1 vs wave 2
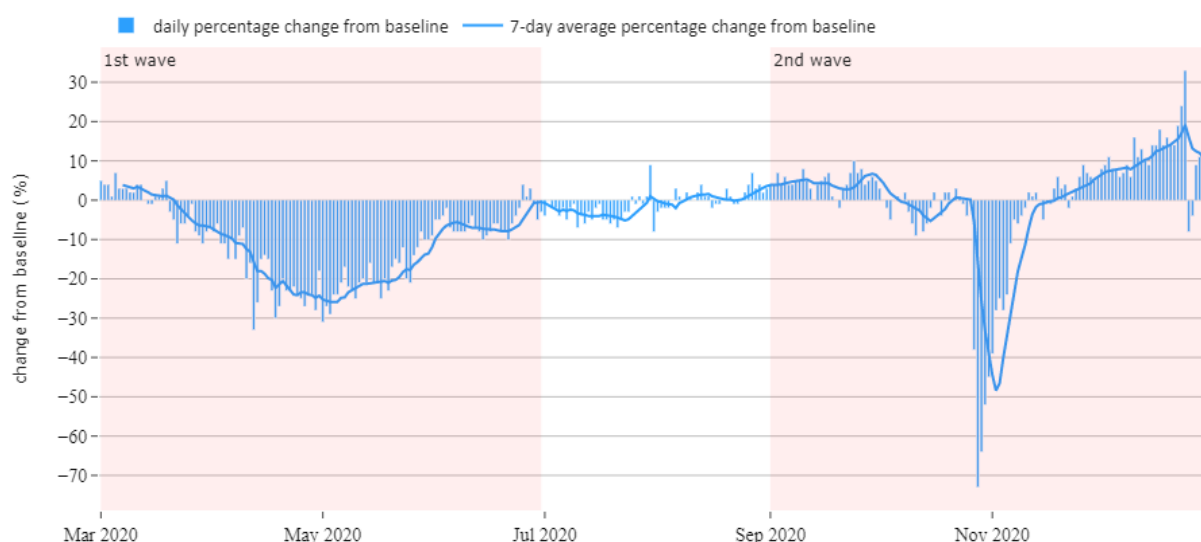
The data shows how visitors to (or time spent in) transit stations, e.g., subway stations; seaport; taxi stand; highway rest stop; car rental agency, change compared to baseline days. A baseline day represents a normal value for that day of the week. The baseline day is the median value from the 5-week period Jan 3 – Feb 6, 2020.

Source: Google COVID-19 Community Mobility Reports

Figure 45: Mobility development in Tanzania to specific locations during wave 1 vs wave 2
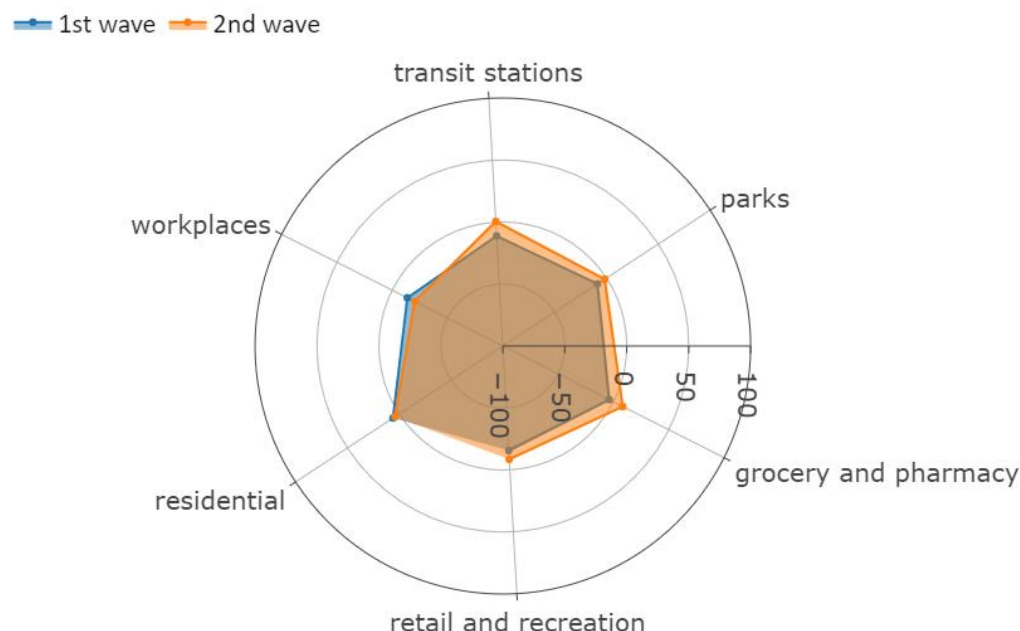
The radar chart represents the mobility data for Uganda, and each radial axis represents a location (grocery & pharmacy, parks, residential, retail & recreation, transit stations, and workplaces). The values on each radial axis are in the range from -100% to +100% frequency compared to a baseline day. Shown are average percentage changes for two analysis periods.

Source: Google COVID-19 Community Mobility Reports

In May and June 2020, the Tanzanian government had relaxed all measures and by July 2020 asked citizens to go back to their normal lives including public transport. However, cross-border truck drivers continued to be subjected to the measures while entering and passing through neighbouring countries. Opinions gathered from the FGDs were mainly from truck drivers. At the border posts, there were long delays caused by mandatory

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testing while waiting for health officials to attend to the drivers. Unverifiable claims have been made about bribes being requested at the borders to facilitate transit, and that some public transport operators felt that it was not their responsibility to prevent the spread of COVID-19, resulting in certain reluctance to facilitate trainings and preventive measures. For example, it was reported that certain people displaying symptoms were not prevented from travelling on public transport since it was seen as the government's responsibility to act.

Key learnings from the COVID-19 Tanzania case study

- An effective data collection system is of paramount importance. The lack of data since May 2020 onwards made It difficult to assess the progression of the virus and any assessment of the suitability of the measures undertaken to control the spread of the virus via the transport system

- Political leadership is key when it comes to educating the public on the SOPs especially to reduce community transmission in public transport; providing some financial support to public transport operators can help increase the level of attention to and effectiveness of measures aiming at containing the spread of the virus

- With all neighbouring countries continuing to report new cases, it remains likely the disease continues to pose a risk within the country, especially as borders have reopened. Without a proper data collection system in place it remains challenging to assess the severity of the situation and to tailor suitable responses

- Greater coordination between bordering countries is important to mitigate complications for cross-border drivers.

6. Research uptake and next steps

A variety of dissemination activities were undertaken to create impact, ranging from webinars and newsletter articles to social media posts and more. Pending funding opportunities, there is significant potential in expanding this project to more countries to gather an even greater understanding of the impact of COVID-19 on transport and mobility in Africa and beyond.

6.1 Research uptake/ dissemination activities

To disseminate the results, two webinars were developed and promoted through IRF and Global Alliance communication channels. The first webinar focussed on the methodology and preliminary findings of this study (16). The second webinar covered the final findings, key learnings and recommendations and included a panel discussion with central transport stakeholders from four of the seven focus countries (17). Both webinars were aimed at governments, authorities, and key transport stakeholders to promote in-country and regional collaboration, discussion, and engagement. Further, the civil society participated in acknowledgement of its valuable role in promoting community buy-in and acceptance for policies. Both webinars were very well received and attracted participants from LMICs and beyond from all over the world. The first webinar alone saw 311 registrations from 64 countries (26 of which African) and from 277 organisations. The second webinar counted 215 registrations from 55 countries and from 202 organisations.

The webinars and this report are available on the Global Transport Knowledge Partnership (gTKP) to keep knowledge alive (future updates, case studies) and to disseminate the findings through the gTKP's network, which specifically addresses LMICs.

Moving forward, the project team will continue to communicate the findings of this research and organise opportunities for discussion and exchange via other webinars, conferences and workshops. For road safety NGOs in Africa, the report findings and recommendations will be used to specifically support the current campaign and the call for action on safer walking and cycling in African cities as a long-term solution to sustainable mobility. During the Heads of States meeting in 2022, the NGO community will also have the opportunity to appraise the extent to which the report recommendations have been taken up and implemented and present a scorecard for the seven countries.

The IRF will ensure that the findings of this report are shared within international and regional coordination efforts and initiatives that involve public authorities and policy makers to ensure that its recommendations are well included on the knowledge base that will inform decisions going forward.

6.2 Upscale to other low-income countries

The project team envisions significant potential in upscaling this research to a variety of other LICs. In the short term, these countries may be Ethiopia, Ghana, Nigeria, Rwanda, Tunisia, and Zambia. The project team has a sound network on the ground in all these countries, which would facilitate this work.

Through its IRF Africa Board, the IRF gathers members from prominent African Institutions, multilateral development banks, key regional and sub-regional institutions, and stakeholders. The IRF Africa Board meets quarterly and operates at a strategic level, primarily performing an advisory role. Its responsibilities include, among others: identifying and defining strategic areas of action; defining the most suitable activities to address identified issues to maximise impact and value; facilitating coordination and development of partnerships in Africa for the implementation of the defined activities; supporting IRF in ensuring that priority areas and identified actions remain high and relevant in the political agenda. It presents an ideal forum from where to ensure further scale-up in Africa including the possibility to organise capacity building activities to support the implementation of the key recommendations.

Moreover, by leveraging on the results produced by the other cohorts under this HVT COVID-19 stream, the project team further aims to organise an inter-regional exchange in order to assess to which extent the findings and recommendations formulated in this report resonate to other LMICs outside the African continent.

7. Discussion and conclusion

This report has been mapping out the COVID-19 country measures implemented in the seven focus countries, providing background and insights into the transport-related restrictions such as those affecting international travel, public transport, and urban and inter-urban travel restrictions. The report has assessed the impact of these measures on transport – specifically looking at the impact on individual mobility to various locations such as public transport stations, workplaces, and residential areas, prior to providing insights into the detailed qualitative findings derived from interviews and focus group discussions.

While the onset and evolution of reported cases varies by country, all governments took some precautionary measures to avoid the spread of the virus. These spanned from restrictions on public gatherings, curfews, closures of establishments such as restaurants, as well as to significant restrictions on international and national travel and transport more generally. Some countries closed their airports, ports, and national borders, while others implemented restrictions on inner- and interurban travel only.

Most COVID-19 restrictions aim at reducing close contact between people by avoiding gatherings. This inevitably impacted mobility as well. Government measures restricting the opening hours of shops, restaurants and institutions significantly reduce the daily demand for mobility, similarly to curfews and work from home orders. Restrictions on public gatherings and travelling similarly affect the demand side. On the supply side, restrictions regarding occupancy rates, public transport closures or restrictions, caused significant reductions.

In response to the COVID-19 pandemic, governments in the seven focus countries applied a wide range of these measures. Once first cases were confirmed, all countries eventually imposed the highest level of restrictions for international travel, meaning that international incoming and outgoing flights were banned, and borders were closed. However, the longevity of these measures varied significantly, as well as how countries chose to continue operating thereafter. Importantly, the severity of the restrictions did not always coincide with the rate of virus spread within the countries. Many countries reopened their borders despite rising case numbers for fear of the severe negative impacts on their economy.

When addressing public transport, certain countries took drastic measures during the initial phases, such as a complete closure thereof. However, overall, most of the countries already softened restrictions around September 2020 out of economic necessity (there was insufficient capacity to ensure that those in need could access transport and earn the needful to feed their families). In some cases, despite measures still being in place, ensuring adequate enforcement proved near impossible.

Comparing mobility behaviour across all countries and locations between the first and second COVID-19 waves, it can be observed that the reduction of mobility was generally much larger during the first wave, than during the second. Comparing the seven countries, Morocco shows the most significant increase in average mobility in the second wave compared to wave one. Senegal, Uganda, Kenya, and Cameroon also witness significant increases, whilst Tanzania and Mozambique, which witnessed less restrictions and lower initial declines in mobility, remained much closer to their initial wave one levels. This exemplifies once more how the restrictions and regulations put in place by government strongly impacted the extent to which mobility in the individual countries was reduced and shaped during the initial months of the pandemic.

A strong opinion from the community was, that although capacity restrictions and physical distancing caused some inconvenience, daily commute and travel was more comfortable and safer due to reduction in the number of passengers. For pedestrians and cyclists, the measures brought positive experiences, with more available space for their mobility because of reduced vehicular traffic and removal of vendors on cities' streets. This was further evidenced by the observation of a noticeable shift to other modes of travel – especially walking for longer distances than usual – as well as increased cycling.

There was a strong feeling that restrictions on passenger capacity was a good practice to discourage the culture of exceeding the carrying capacity on buses and even motorcycles. It was suggested that this, alongside other measures making public transport more reliable, safe, and organised, should be integrated permanently in the transport system.

Following the thorough case study assessment of the seven selected African countries and comparative analyses, the key findings below constitute the emergent best practices in response to Africa's response to COVID-19 and its impact on transport and mobility of people and goods.

7.1 Key findings

- **Creating a national taskforce with regular consultations and follow-up meetings** allows time-sensitive and extensive collaboration among the various ministries, the national police, and other vital bodies and may enable fast and effective results. Alongside this, it remains vital to continuously maintain proactive communication regarding the development of the issue at hand – such as the COVID-19 case numbers. Only through robust and updated data can the severity of the situation be assessed and appropriate actions for all sectors, including the transport sector, be implemented.

- **Integrating representatives of the informal transportation sector** (e.g. boda boda associations) **in the design and implementation process** of measures against the spread of the virus is hugely beneficial. Greater consultation and involvement of all public transport operators can heighten their understanding of the situation and may enable even more practical and effective measures and SOPs, avoiding pitfalls that may not be immediately obvious to classical decision-makers and advisors.

- **Fostering dialogue and harmonising cross-border SOPs**, such as for testing strategies at land borders, can mitigate the complications for cross-border traffic. **Greater regional alignment** and coordination can facilitate cross-border movement of both passengers and goods, whilst at the same time significantly reducing waiting times and ensuring basic needs of truck drivers are met, e.g. through sufficient facilities at both sides of border crossings. This is especially important for the transport of essential goods and workers which must remain mobile despite lockdown measures.

- **Enforcing and implementing of a thorough M&E process** at all levels is essential to ensure the effectiveness of measures being applied and to ensure compliance to the SOPs while at the same time safeguarding traffic and road safety rules. In some cases, the roll-out and implementation of measures may reveal unforeseen challenges which consequently require an adaptation of the SOPs to the specific context. Bribery continues to pose a challenge in many countries.

- **Improving coordination within the transport sector** (e.g. through trainings) is required. More trainings for public transport operators and truck drivers on the COVID-19 pandemic and counteraction measures could reduce any reluctance to particular measures and heighten the sense of responsibility of jointly acting against the virus. Grassroot level NGOs can provide valuable support for these efforts and adapt to local contexts and needs, for example overcoming language barriers.

- **Encouraging a more rapid and effective development of user-friendly and safe transport infrastructure environments** (e.g. separate bicycle lanes and sidewalks) is of key importance. In certain cases, the pandemic accelerated and facilitated certain efforts that were already planned to improve infrastructure and could consequently be used for COVID-19 counter-acting measures as well. For example, dedicated bicycle lanes and walkways, aside from protecting vulnerable road users, allow for physical distancing in the case of a pandemic.

- **Implementing stable pricing policies to maintain public transport affordable for the general public.** Laws and financial penalties regarding maximum public transport pricing can ensure stable ticket prices for consumers. Whilst in HICs people may have the choice of switching to their personal vehicle, in LICs the public heavily relies on public transport and requires access thereto. To alleviate the financial burden of the public transport operators from reduced capacity restrictions during a pandemic, a government-backed financing programme may be implemented to compensate operators to a certain extent.

7.2 Key recommendations

The findings provide a rich base for informing and enhancing policy development in African countries as a way forward during the "new normal", as well as to counteract any potential future waves of the current or future pandemics.

- **A holistic approach to Policy Formulation.** The research has highlighted the deficiencies of the transport system in each country and equally the deficiencies in the processes being used. It is now essential to seize the opportunity to tackle engrained problems alongside those caused by the pandemic. Policy and decision makers should ensure that the stimulus packages and significant investments being deployed in the short and medium term embrace a human-centric vision which will best serve the country. Planning investments by looking at the transport system in a holistic way will help achieve this objective. In this respect, there are valuable tools available that can help policy makers at different levels and guide their action. The SuM4All Global Roadmap of Action is one of those.

- **Invest in Research & Data. T**he findings have highlighted the importance of research and data to allow an in-depth understanding of the context and dynamics within which decisions and actions are formulated. Countries should continue to invest in this area to provide a solid data and evidence-driven base for economic, social, and environmental action. Further, monitoring and evaluation is essential for documenting and assessing the respective responses and their impacts at all levels. Leveraging on local research and university capabilities combined with the use of cost-effective technology can greatly help filling the existing gaps in many of the countries in Africa.

- **Inclusion & Community Participation**. When formulating SOPs and responses, including all actors within the transportation sector – such as informal transport operators – in the decision-making process is essential to get buy-in and support. The power of the community to support pandemic counteractive measures should not be underestimated. Civil society can leverage their strength to advocate for actions that improve safety and access to sustainable mobility for all. Instituting a permanent mechanism for multi-stakeholder dialogue and exchange would be beneficial well beyond emergency response to pandemics.

- **Collaboration**. It is fundamental that the often-found silo culture is interrupted by creating common ground and understanding. It is only through the power of partnerships and cooperation that policies and measures reach their full potential. This applies on a national, regional and international level – especially when combatting a challenge at hand such as a pandemic which knows no borders. Ensuring that the country is well connected to and actively involved in regional and international exchange and coordination mechanisms is of central importance.

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APPENDIX A: KEY INFORMANTS INTERVIEW PARTNERS

The research partners express their sincere thanks to everyone who contributed to this research by agreeing to be interviewed regarding COVID-19 restrictions implemented in their respective countries.

Additional informants preferred to remain anonymous.

Country	Name	Title	Organisation
CAMEROON	Dr Ing. Jean François Wounba	Professor	National School of Public Works (ENSTP)
CAMEROON	Dr Olive Nicole Ngaba Mambo	Deputy Director	Ministry of Health
CAMEROON	Mr. Divine Mbamome Nkendong	Director of Road Transport	Ministry of Transport
KENYA	Mr. Peter Odwar	Data Analyst, Police Service HQ	National Police Service
KENYA	Dr Gladwell Gathecha	Senior Epidemiologist	Ministry of Health
KENYA	Mr. Isaac Mutashi	Chairman / Executive Director	Safedrive Africa Foundation (SDAF)
KENYA	Mr. Simon Kimutai	Chairman	Matatu Owner's Association
MOROCCO	Mr. Said El Karkouri	Head of Exploitation Division	Ministry of Equipment, Transport, Logistics and Water. Roads Directorate
MOROCCO	Mr. Benacer Boulaajoul	Director General	Agence Nationale de la Sécurité Routière
MOZAMBIQUE	Mr. Claudio Zunguze	National Director of Transport & Safety	Ministry of Transport & Communications
SENEGAL	Mr. Mamadou Alassane Camara	Road Director	Ministry of Infrastructure and Ground Transport
SENEGAL	Mr. Cheikh Oumar Gaye	Director of Ground Transport	Ministry of Infrastructure and Ground Transport
TANZANIA	Mr. Augustino Mkumbo	ZRC Eastern Zone	Road Safety Ambassadors
UGANDA	Ms. Mable Tomusange	Managing Consultant	Consult Afrika Usalama (CAU)
UGANDA	Mr. Paul Kwamusi	Transport and Road Safety Consultant	Integrated Transport Systems Limited
UGANDA	Mr. Winstone Katushabe	Commissioner Transport Regulation and Safety	Ministry of Works and Transport
UGANDA	Ms. Irene Namuyiga	Road Safety Engineer	Kampala Capital City Authority (KCCA)

APPENDIX B: FOCUS GROUP DISCUSSION COORDINATION PARTNERS

Country	Name of organisation	Organisation website
CAMEROON	SECUROUTE	https://securouteafrica.org/
KENYA	Safe Way Right Way	@SafeWayRightWayKE
MOROCCO	TARS Consulting	http://tarsconsulting.simplesite.com/
MOZAMBIQUE	Amend	https://www.amend.org/
SENEGAL	Laser International	https://laser-international.org/
TANZANIA	Helmet Vaccine Initiative Tanzania Foundation	https://web.facebook.com/pg/Helmet-Vaccine-Initiative-Tanzania-Foundation-182170255906880/about/
UGANDA	Hope for Victims of Traffic Accidents (HOVITA)	https://hovita.org/
UGANDA	Uganda Road Accident Reduction Network Organisation (URRENO)	http://www.urreno.org/