

## PHYSICAL DISTANCING POLICIES IN SOUTH AFRICA AND UGANDA

A COMPARATIVE ANALYSIS OF COVID-19 PHYSICAL DISTANCING POLICIES  
IN SOUTH AFRICA AND UGANDA- JANUARY 2020- NOVEMBER 2021

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TITLE: A Comparative Analysis of COVID-19 Physical Distancing Policies in South Africa and Uganda- January 2020- November 2021

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**Lay Abstract:** COVID-19 responses internationally have depended on physical distancing policies to mitigate or contain the spread of the virus since the World Health Organization (WHO) declared a pandemic in March 2020. It is therefore worth exploring the impact of these physical distancing policies on COVID-19 epidemiology throughout the pandemic thus far. COVID-19 physical distancing policy responses in African countries have not been well-studied. This study aims to explore implementation of select physical distancing policies enacted in South Africa and Uganda, how the policies affected local epidemiology, how the policy responses compared across the jurisdictions, and how contextual factors may have affected COVID-19 policy development and timing. Responses in each jurisdiction were compared based on physical distancing policies including lockdown, international travel bans, school closures, public transportation measures, and curfew, in addition to relief programs, vaccinations, and enforcement of policies.

## **Abstract**

**Background:** COVID-19 responses internationally have depended on physical distancing policies to mitigate or contain the spread of the virus, given the initial absence of treatments and limitations on vaccine availability. Across Africa, countries have varied in their COVID-19 responses and resulting local epidemiology. These jurisdictions differ based on contextual factors affecting their responses such as past epidemic experience, ratings of epidemic preparedness, and income level, among others. This study aims to explore how policy responses affected the COVID-19 epidemiology in these jurisdictions.

**Methods:** A qualitative multiple embedded case study design was followed to examine the COVID-19 policy responses in South Africa and Uganda from January 2020 to November 2021. A documentary review was conducted using sources including government websites and reports, news articles, and peer-reviewed journal articles to obtain data on policy responses and contextual factors. Epidemiological data were collected from public sources. Key informant interviews conducted with relevant stakeholders were used to confirm findings and cover missing information. A comparative analysis was conducted to explore differences in implementation of different types of physical distancing policies and potential consequences of lifting or prolonging public health measures.

**Results:** South African and Ugandan policy responses included physical distancing measures such as lockdown, international travel bans, school closures, public transportation measures, and curfew, in addition to relief programs, vaccinations, and enforcement of policies. Differences between jurisdiction policy responses existed in terms of overarching policy response strategy, timing, and stringency.

**Conclusions:** This study focused on providing in-depth comparisons of COVID-19 policy responses and relevant contextual factors in South Africa and Uganda. The study showed how contextual factors such as population age, geographic distribution, and recent epidemic response experience can influence COVID-19 transmission and response. The study also showed differences in overall strategy, timing, and strictness of epidemic management policies in these jurisdictions. These findings suggest it may be important to have sustained, strict measures to limit the spread of COVID-19 and manage the course of a pandemic, which need to be further explored alongside other important social and economic pandemic outcomes.

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I would also like to thank my committee members, Dr. Apatu and Dr. Kapiriri, for their feedback on my case reports and thesis document, which contributed to the overall clarity and comprehensiveness of my research.

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## **Declaration of Academic Achievement**

I, Sana Mohammad, declare that this thesis work is my own. I selected the countries for comparison, completed the documentary review, recruited key informants, conducted interviews, wrote the case reports, and completed the comparative analyses. My supervisor, Dr. Alvarez provided guidance on the direction of this thesis as part of a multi-national study on COVID-19 policy responses and epidemiology and provided in-depth feedback on multiple drafts of the case reports and final thesis document. My committee members, Dr. Apatu and Dr. Kapiriri, also provided feedback on the case reports and thesis document.

## **Introduction**

COVID-19 responses internationally have depended on physical distancing policies to mitigate or contain the spread of the virus since a pandemic was declared by the World Health Organization (WHO) in March 2020. In the initial absence of treatments, and with limitations on vaccine availability and rollout, policy approaches have been the main strategy for governments managing the pandemic.(1) These policy approaches have centered on different types of physical distancing measures to separate people and limit the ability of the virus to spread.(2)

Various factors have been associated with becoming infected or having severe outcomes from COVID-19 such as old age, gender, and comorbidities including smoking, obesity, or being immunocompromised.(3–5) In addition to individual-level factors that may predispose individuals to COVID-19, it is possible that other contextual factors such as the type of government, trust in government, and availability of economic relief can influence compliance with public health measures designed to prevent individuals from becoming infected.(6)

In light of governments' reliance on policy responses to manage the pandemic and other factors that can influence whether individuals experience severe COVID-19 outcomes, the International COVID-19 Policies and Epidemiology Working Group seeks to study the COVID-19 policy responses in jurisdictions across the world. This group aims to understand which physical distancing policies work and where, by situating country-specific COVID-19 policy responses in their broader geographical, political, and health systems context.(7) This working group has created a harmonized database to compile data on COVID-19 policies, epidemiology, and contextual information that are being used to inform case studies on COVID-19 policy responses

in different countries and multinational comparative research that can ultimately inform policy-making.

Earlier studies have looked quantitatively at national-level COVID-19 government policy responses and the effects on COVID-19 epidemiology. One study looked at national-level physical distancing policies including lockdown, curfew and stay at home orders across 54 countries up until April 2020 and found that decreases in daily new cases of COVID-19 were associated with policy implementation.(8) Another study looked quantitatively at a larger range of physical distancing policies including school and workplace closures, limits on gatherings, public transport closures, and lockdown and their effects on COVID-19 incidence in 149 countries up until May 2020. (9) The study found that implementation of physical distancing policies was associated with a reduction of COVID-19 incidence by an average of 13% and that earlier implementation was associated with a larger decrease in COVID-19 incidence. However, these studies did not describe the policies qualitatively in terms of start and end dates or in implementation across jurisdictions. Both of these studies also focused only on policy responses during the first wave of COVID-19. It therefore remains unclear what factors influence the success of physical distancing policies over time.

There is some comparative literature exploring how context has informed COVID-19 policy responses. One study compared public health and social measures used to manage COVID-19 in 10 countries, including China, Singapore, Japan, South Korea, UK, Italy, Germany, Sweden, US, and South Africa.(10) This study looked qualitatively at early COVID-19 policy responses, including physical distancing measures, and compared responses across jurisdictions. This study situated the COVID-19 policy responses in the broader political systems in these countries and found that these countries varied in timing and strictness of their policy responses depending on

their political systems. However, this study focused only on upper-middle and high-income countries. Another study focused on comparing early COVID-19 policy responses in select countries within Africa in the context of their health systems.(11) The study found that early implementation of policy responses is important for pandemic management and that past experience with epidemics may be helpful with the COVID-19 response. However, this study did not look at a wide variety of physical distancing policies in the selected countries or describe their implementation in detail. Given the limited exploration of COVID-19 policy responses in the context of low- and middle-income countries over time, it is worth researching jurisdictions in Africa to explore the impact of these physical distancing policies on COVID-19 epidemiology throughout the pandemic thus far.

Policy responses have been particularly important in Africa to prevent health systems from being overloaded. The Africa Center for Disease Control (CDC) led a response against COVID-19 that mobilized countries across the entire continent. The African Task Force for Coronavirus was created as a collaboration between Africa CDC, African Union members, and WHO to create policy recommendations to combat COVID-19 across the continent.(12) Despite coordinated efforts across the African continent to address the pandemic, there is variation in how African countries have fared during the COVID-19 pandemic. African countries have also remained vulnerable to the effects of COVID-19 due to ongoing vaccine inequity.

South Africa became the epicenter of COVID-19 in Africa at the end of March 2020, which prompted a national lockdown.(13) The lockdown was initially successful in bringing down cases; however, South Africa eased restrictions due to economic concerns, even as COVID-19 cases continued to rise.(14,15) In contrast, Uganda was celebrated for its initial COVID-19 response and was among the more successful African nations in curbing the spread of the

virus.(16) Perceptions around these countries' track records in responding to COVID-19 set up interesting comparisons of how the COVID-19 policies have differed between these jurisdictions. It is worth exploring what policy decisions in these two countries have led to potentially differential outcomes with respect to COVID-19 epidemiology.

South Africa and Uganda also have interesting contextual factors that justify their comparison. Both are large, relatively stable African countries with democratic governments. Both have somewhat similar population sizes with recent experiences with infectious diseases and are rated similarly in terms of epidemic preparedness.(17,18) South Africa is an upper middle-income country, while Uganda is considered a low-income country.(19) These differing income classifications affect the resources they have available for responding to a pandemic or providing socioeconomic support to their populations. Contextual factors have implications for COVID-19 transmission and public compliance with public health measures. Both countries are also English-speaking and demonstrated transparency around collecting and reporting COVID-19 data, which were important logistical considerations for conducting this research.

This study aims to answer the following research questions:

- What national-level physical distancing policies were enacted in South Africa and Uganda from January 2020 until November 2021, and how did these policies affect local COVID-19 epidemiology during this time?
- How did these policy responses compare across these jurisdictions?

The objectives of this study are to describe and understand the rationale behind the COVID-19 policy responses in South Africa and Uganda, the effects of these policy responses on the

epidemiology of COVID-19, and how contextual factors may have affected COVID-19 policy development and timing.

## **Methods**

***Study Design and Case Definition:*** This study followed a qualitative embedded multiple case study design.(20) Case studies can be used to answer “how” or “why” questions, and to explore current events in real-life contexts or events that are not under the control of the investigator. The case study design is being used to look at COVID-19 physical distancing policy responses and their effects on local COVID-19 epidemiology in different countries as part of an ongoing larger multinational study. Each case was defined as the COVID-19 policy responses and resulting changes in COVID-19 epidemiology occurring in a specific country. South Africa and Uganda are the cases for this study. Cases were bound both by the country context and time, from January 2020, when the World Health Organization (WHO) declared a Public Health Emergency of International concern, until November 2021 when the delta waves had subsided in each jurisdiction.(21) This timeframe enabled analysis of key policy decisions and their subsequent effects on COVID-19 epidemiology within each country over multiple COVID-19 waves.

***Settings and participants:*** South Africa and Uganda are the settings for this study. Each setting was described in terms of geography and other important contextual factors. Contextual information was used to support interpretation of the findings and to assess potential transferability i.e., the extent to which findings can be applied to other settings.

Key informant interviews were conducted with participants such as policy makers, public health officials, and researchers from each jurisdiction to ensure accuracy and completeness of data

collected, as well as to identify additional relevant data sources (e.g., other potential key informants, government documents).

***Participant sampling and recruitment:*** Personalized emails were used to contact potential key informants within each jurisdiction. Criterion sampling was used to select participants from each jurisdiction who were familiar with the policy-making process and factors that could influence policy development. Participants invited for interviews included policy makers, public health officials, and researchers. Snowball sampling was also conducted, whereby key informants were asked to identify other potential individuals knowledgeable on the research topic who could be contacted for an interview. The intention was to interview an estimated 1-5 individuals for each country to supplement findings from the documentary review.

### ***Data Collection***

Data were collected by a public health graduate student (SM) from July 2021 to April 2022 using a standardized data collection form for each country (see Appendix 1). Data were collected on country characteristics (geography, environment, social, economic, demographic, and health indicators) and political and health systems characteristics (e.g., type of government, health system financing) to help set the context for the pandemic response in each jurisdiction. Data on country characteristics were drawn from public sources such as the World Health Organization (WHO), the World Bank, and the Central Intelligence Agency. Data were also collected on the overarching approach to COVID-19 management (e.g., containment, mitigation, herd immunity), physical distancing policies, and related supporting policies such as economic relief programs. Data on policy responses and contextual factors were collected from government websites, government reports, news articles, and peer-reviewed journal articles. Generic search terms such



as “COVID-19 policy response”, “COVID-19 media address”, “COVID-19 physical distancing”, and “COVID-19 lockdown” were used for each jurisdiction initially. Data collection on policy responses entailed searching national government websites that had publicly available repositories of documents such as presidential addresses and media statements from cabinet ministers announcing COVID-19 measures. These repositories were scanned for COVID-19 relevant documents based on dates from January 1, 2020 until November 30, 2021. Research was conducted from Canada, therefore, to ensure that results pertained directly to each country’s COVID-19 response, site-specific Google searches of South African and Ugandan news outlet websites were done to obtain information on specific types of policy responses (e.g., “South Africa school closures” or “Uganda public transport closures”) where government announcements were unclear.

Sources specific to national-level COVID-19 responses in each jurisdiction were included in the documentary review. Documents explaining only sub-national (e.g., provincial) or local (e.g., municipal, village) level COVID-19 responses were excluded from the documentary review.

Epidemiological data were collected from publicly available sources such as Our World in Data. Policy decisions were explained in the context of timelines (e.g., first case, 100<sup>th</sup> case) and changing COVID-19 epidemiology (e.g., total number of cases and deaths in the country).

Following the documentary review, key informant interviews were conducted to confirm findings and cover any missing information. A standardized semi-structured interview guide was used for each interview (see Appendix 2). Notes were taken during interviews. Interviews were also recorded and transcribed with permission from participants to ensure accuracy. The primary

goal of the key informant interviews was to supplement data collection from the documentary review.

### *Data Analysis*

Data on country characteristics, political and health systems, and COVID-19 policies were input into a standardized data collection form for each country. Policy responses were documented according to type (overarching response strategy, physical distancing, vaccination, and socioeconomic support policies), start and end dates, descriptions of the policy implemented, and modifications over time. Qualitative analyses involved content analysis of resources included in the documentary review. Content analysis of notes and transcripts from key informant interviews were also used to provide supplementary information to the documentary review. For each country, a narrative summary was constructed into a case report to describe contextual factors, key policy decisions, and epidemiological events over the study period.

A comparative analysis was done using select contextual factors and major policies to explore similarities and differences in the COVID-19 responses and outcomes in South Africa and Uganda. Similarities and differences between the contextual factors and COVID-19 response policies implemented in each country were noted throughout the content analysis process. Tables with various contextual indicators were developed to compare contextual factors for each country. Policy responses for each jurisdiction were graphed against COVID-19 cases and deaths, compared to each other to observe similarities and differences in timing of the policies, and used to identify any policy measures which appeared to curtail COVID-19 waves. Narrative summaries of the policy responses in the case reports were used to compare the nuances of policy implementation in each jurisdiction and other important factors in the response such as policy enforcement and public compliance.

### ***Knowledge Translation***

Detailed case reports documenting the South African and Ugandan COVID-19 policy responses were produced. Each report is included as an appendix to the comparative paper (see Appendix 3 for the South Africa Case Report and Appendix 4 for the Uganda Case Report). Each case report is also available online at: <https://healthsci.mcmaster.ca/covid19-policies/research-topics/publications> This paper provides high-level overviews of the COVID-19 policy responses in each of these jurisdictions; however, its main focus is to report the findings of the comparative analysis of select key policies that were implemented.

### ***Ethics***

This research is part of a larger multinational comparative study of physical distancing policies and their effects on local COVID-19 epidemiology, which received ethical approval from the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243). Key informants who were recruited for the study were informed of the purpose of the study, data confidentiality, and their right to participate voluntarily or withdraw their data at any point in the study until data was analyzed. Verbal consent was obtained from key informants prior to conducting the interview. Privacy was maintained by using study ID numbers instead of names for key informants in the case reports and comparative analysis.

## **Results**

### **Data Collected**

#### ***Documentary Review***

A variety of sources were consulted for this documentary review including government websites, media reports, social media sites, peer-reviewed journal articles, and non-governmental

organization (NGO) websites. Table 1 provides a breakdown of the number of each type of source that was reviewed.

**Table 1: Sources used in documentary review for each case study**

Type of Source	Number used for South Africa Case Study	Number used for Uganda Case Study
Government Sources	91	33
Media Reports	14	44
Social Media	0	5 (Ministry of Health Twitter, President’s Twitter, NTV News YouTube, Baba TV Uganda YouTube, UBC Television Uganda YouTube)
Peer-reviewed Journal Articles	1	2
Non-governmental organization (NGO) websites	12	1
<b>Total</b>	<b>118</b>	<b>85*</b>

*NTV = Nation Television; UBC = Uganda Broadcasting Corporation*

*\*Social media had multiple items from each channel*

### **Key informant Interviews**

A total of 10 potential key informants from South Africa were contacted for interviews, while 5 were approached from Uganda. In total, 6 key informants (3 from each country) agreed to be interviewed. Key informants were involved in the COVID-19 response in advisory and operational capacities within their respective jurisdictions. Key informants included a researcher and 5 public health officials. Interviews ranged from 22 to 47 minutes. Median interview length was 39 minutes, while mean length was 37 minutes.

### **Select Contextual Factors of South Africa and Uganda**

It is important to understand the contexts within which the physical distancing policies were enacted. Several relevant contextual features are highlighted below. In-depth descriptions of Uganda’s and South Africa’s contextual features are provided in their respective case reports.

### ***Geographic Characteristics***

South Africa and Uganda are both highly populated jurisdictions. South Africa has a population of 59,308,690 (2020) while Uganda has a population of 45,741,000 (2020).(22) 67 % of South Africa's population lives in urban areas compared to 25% of people in Uganda.(23) South Africa has a population density of 48.9 people per square km of land (2020), which is lower than Uganda's population density of 228.1 people per square km of land (2020).(24) Population size and density can influence how quickly illness is able to spread amongst a population.

### ***Political and Health Systems Characteristics***

South Africa is a constitutional democracy with three levels of government (national, provincial, and local).(25) The African National Congress (ANC) is South Africa's current governing party and is led by President Cyril Ramaphosa, who has been in power since February 2018.(26) The National Health Act (NHA) 2003 dictates the responsibility for health at each level of government.(27) As of 2018, 42% of the South African population indicated trust in the national government.(28)

Uganda's government is a presidential republic, meaning that the President of Uganda is the Head of State and Head of Government.(29) The National Resistance Movement (NRM) is the current party in power and is led by President Yoweri Museveni, who is serving his 6<sup>th</sup> term in office.(26) President Museveni has been in power since January 1986 and was re-elected on January 14, 2021. Uganda's health system is governed at the national and district levels.(30) As of 2018, 55% of the Ugandan population indicated trust in the national government.(28)

South Africa and Uganda both have a mix of public and private healthcare. In each jurisdiction, there is a referral system for public health care delivery. South Africa has primary healthcare

facilities, from where patients may be referred to district level hospitals to undergo more sophisticated testing or minor procedures, and tertiary hospitals where patients may be referred for major surgeries or specialized care.(31) In Uganda, public healthcare is provided through district level health services, regional referral hospitals, and national referral hospitals.(32)

Both countries also have a mixed public and private lab system for testing. In South Africa, the National Health Laboratory System (NHLS) provides laboratory services for public healthcare support of the provincial and national health departments.(33) In Uganda, public laboratory services are provided by the Central Public Health Laboratories.(34) Like the public healthcare system, Uganda's laboratories have a tiered system where laboratories are housed at district health facilities, regional referral hospitals, and national referral hospitals.

### ***Epidemic Preparedness and Experience***

The Global Health Security (GHS) Index measures the ability of countries to prepare for and respond to infectious disease threats.(17) The GHS Index provides an overall score, as well as scores across constituent categories. Scores are presented on a scale of 0 to 100, where 100 represents the best possible health security conditions. Scores are grouped into the following categories: “least prepared”, “more prepared”, and “most prepared”. South Africa had an overall score of 54.8 out of 100 and Uganda had an overall score of 44.3 out of 100, which means they were both considered “more prepared”.(17) The rapid response category of the GHS Index assessed the ability to respond quickly to control epidemic spread. For the rapid response category of the GHS Index, South Africa had a score of 71.5 out of 100, which was “most prepared”, and Uganda had a score of 56.5 out of 100, which was “more prepared”.(17)

South Africa and Uganda have different experiences dealing with infectious diseases. South Africa has dealt primarily with HIV and tuberculosis (TB). South Africa has a National Strategic Plan on HIV, TB, and sexually transmitted infections (STIs) 2017-2022 to address these diseases. Uganda deals with a variety of infectious diseases on a regular basis. They have past experience managing Crimean Congo hemorrhagic fever, Marburg virus disease, Rift Valley Fever, Measles, Cholera, and Ebola, among others. In 2018-2019, the neighbouring Democratic Republic of Congo had an outbreak of Ebola, which threatened to spillover into Uganda. As a result, the Ugandan Ministry of Health prepared by improving surveillance systems, risk communication, and Ebola prevention and treatment capacity.(35) These systems were in place and adapted for the COVID-19 response, as confirmed by a key informant.

### ***Income Level***

South Africa is classified by the World Bank as an upper-middle income country, while Uganda is classified as a low-income country.(19) Both countries have had to mobilize financial and other resources to support their COVID-19 response. South Africa created a COVID-19 Solidarity Fund which raised money from individuals and businesses to support the government in buying items such as test kits and ventilators that were needed for the COVID-19 response, in addition to providing relief funds for vulnerable households.(36) Similarly, Uganda called on the public to donate food for vulnerable people and money to support the COVID-19 response.(37)

### ***Inequality***

Both countries are rated high on the Gini Index, which is used to quantify the level of income or wealth inequality in a jurisdiction. A number closer to 100 indicates perfect inequality – South Africa had a score of 63 as of 2014, and had the highest income inequality in the world.(38)

Uganda had a score of 42.8 and ranked 44<sup>th</sup> in the world. The inequalities in both of these jurisdictions have had implications for vulnerable populations experiencing disproportionate harms from COVID-19 policy responses, such as women who were affected by an increase in gender-based violence during lockdown.(39,40) Vulnerable populations are described in more detail in the respective country case reports.

### ***Population age and health characteristics***

Both South African and Ugandan populations are notably young. As of 2020, only 6% of South Africa's population was 65 years or older.(41) In Uganda, only 2% of the population was 65 years or older. 29% of South Africa's total population were ages 0-14 in 2020, while 46% of Uganda's total population were ages 0-14.(42) The high proportion of young people in these countries may have implications for COVID-19 symptom presentation. The age distribution of these populations is also important to consider in the context of school closures.

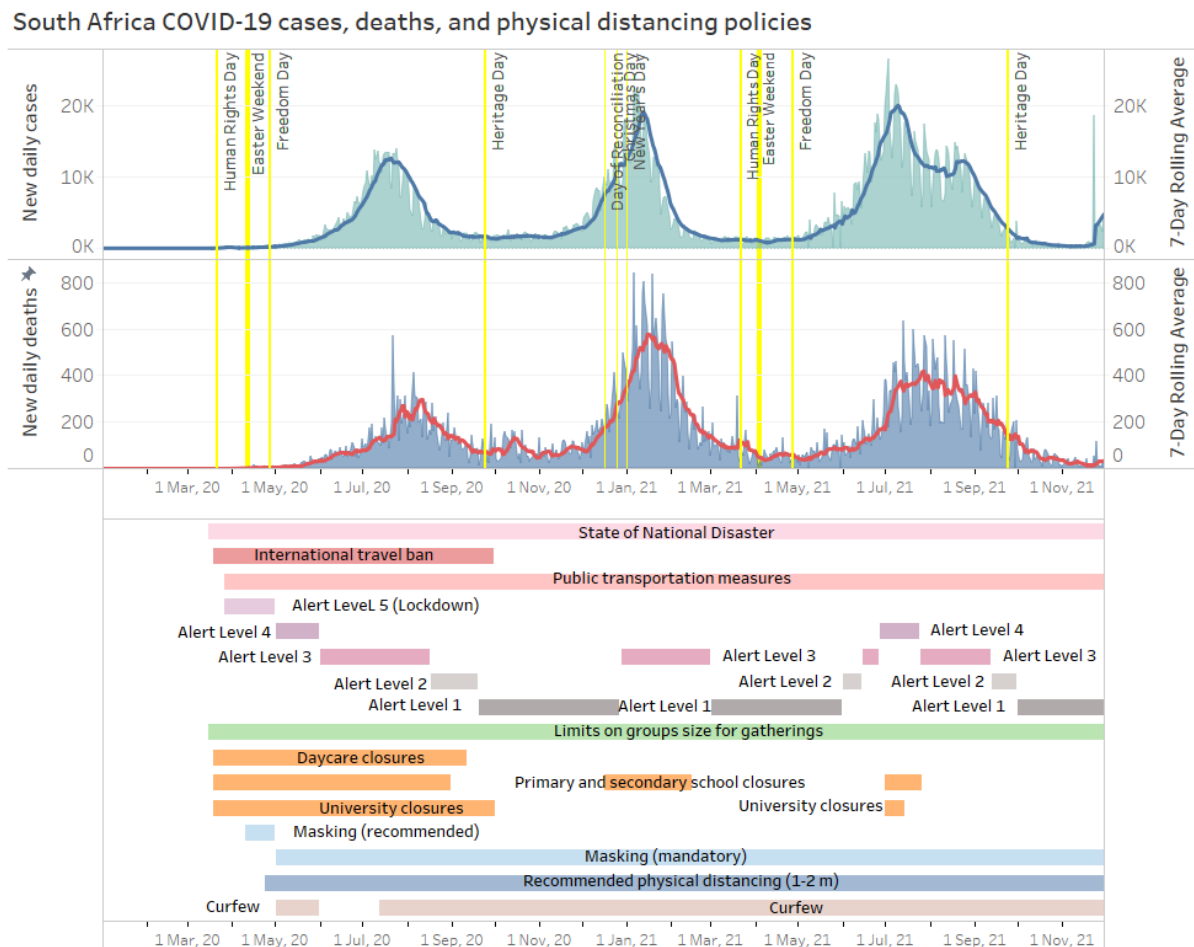
Certain population health characteristics including smoking, obesity, and HIV prevalence may have implications for COVID-19 severity. In South Africa, the prevalence of tobacco use in 2018 was 31% and was especially high in males where 47% of the male population used tobacco.(43) In Uganda, while tobacco use in the total population was lower than South Africa at 9.8%, tobacco use was also notably high in the male population at 16%.(43) In South Africa, prevalence of obesity in 2016 was 27% of the population, and was especially high for females, of which 39% were obese.(59) By comparison, obesity prevalence in Uganda was 4%, and was also high for females at 7% of the population. In South Africa, 19% of the population over the age of 18 had HIV, while in Uganda, 5% of the population over 18 had HIV. In South Africa especially, the HIV prevalence suggests that the population is highly immunocompromised.



## COVID-19 Responses

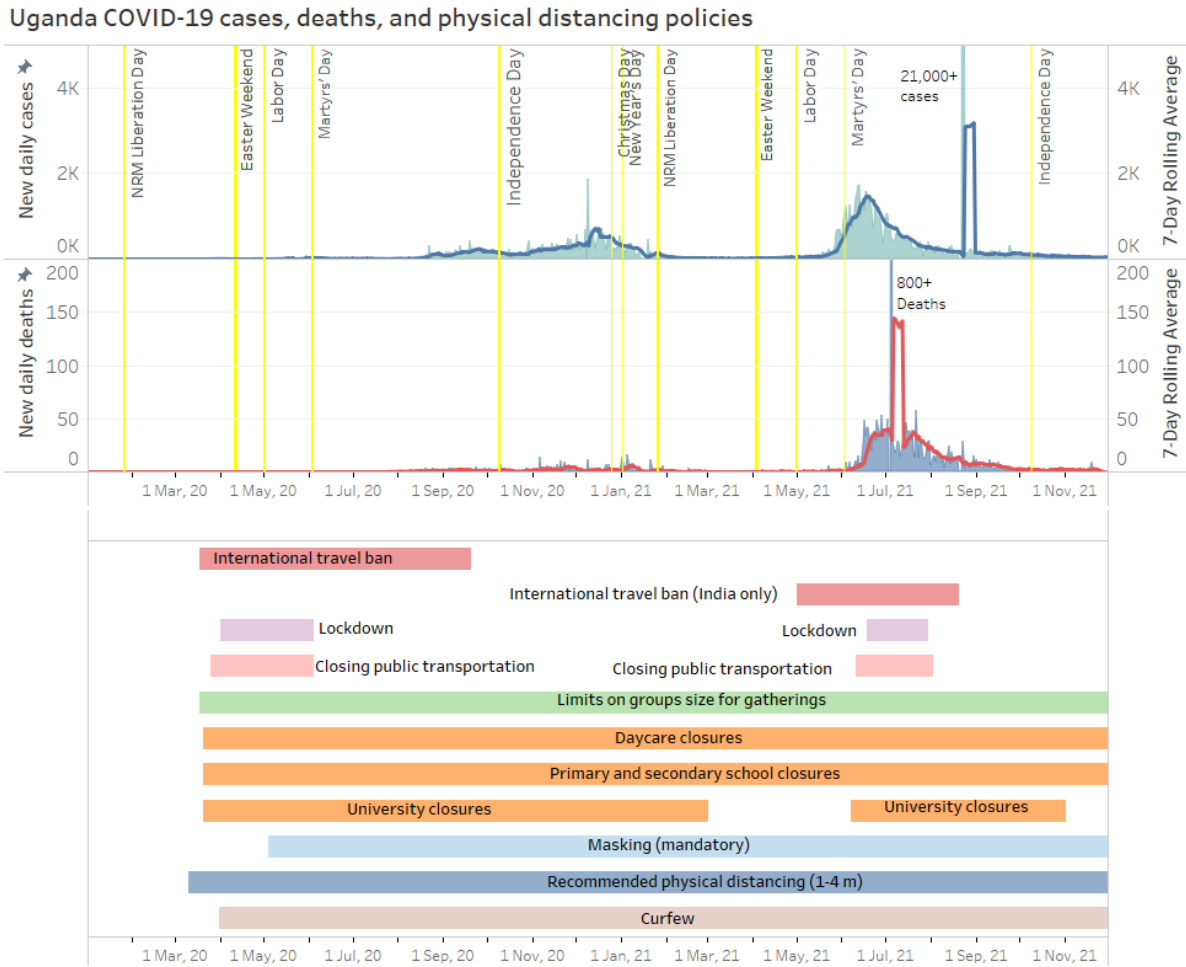
The COVID-19 policy responses in South Africa and Uganda can be compared on the basis of select major physical distancing policies including lockdown, school closures, international travel bans, public transportation measures, and curfew. Their responses can also be compared in terms of relief programs used to support the population with physical distancing, vaccinations, and enforcement of policies. Figures 1 and 2 show cases, deaths, and a timeline of select COVID-19 physical distancing policies in South Africa and Uganda respectively.

**Figure 1: Graph of South Africa's COVID-19 cases, deaths, and timeline of key policies**



*Alert Levels 1-4 depended on rising cases and hospital capacity and had implications for gathering limits and curfew hours; however, there was no published threshold for each alert level, and policies were nuanced and changed over time. See Appendix 3: South Africa Case Report for detailed explanations of each Alert Level over the study period.*

**Figure 2: Graph of Uganda's COVID-19 cases, deaths, and timeline of key policies**



***Overarching COVID-19 Response Strategies in South Africa and Uganda***

The COVID-19 policy response decisions in South Africa were made by the National Coronavirus Command Council (NCCC), which was chaired by President Cyril Ramaphosa and composed of cabinet members. South Africa's first COVID-19 case was detected on March 5, 2020 and this number had risen to 61 by March 15, 2020.(44,45) At that time, South Africa declared a National State of Disaster and began implementing public health measures in response, including a travel ban, gathering limits and school closures. Following a lockdown beginning March 26, 2020, South Africa's pandemic response was marked by lifting and

reinstating public health measures depending on COVID-19 transmission and hospital capacity, which was somewhat guided by a 5- level alert system. Alert Level 5 was a full national lockdown, while lower levels had progressively relaxed measures.(46)

Uganda's COVID-19 response was led by their National Taskforce on Coronavirus, which was chaired by President Yoweri Museveni. Unlike South Africa, Uganda never officially declared a National State of Emergency. Instead, a key informant explained how they used presidential directives:

“What we had were presidential directives. Presidential directives were then sort of codified in law, through what we call COVID-19 rules, essentially laws, like many amendments to our Public Health Act, such that once the President made directives on travel, or curfews or business operation, the Ministry of Health's legal team would then work with the Ministry of Justice (...) and then that would then be legally binding.” – Interview 001 (Uganda, public health official)

Uganda's COVID-19 response began prior to detecting their first case. Screening measures were implemented at Entebbe International Airport beginning in January 2020, before WHO declared COVID-19 a public health emergency.(47) Uganda's Ministry of Health created the National COVID-19 Response Plan for March 2020 to June 2021.(48) The plan was aimed at reducing COVID-19 entry into the country, transmission, morbidity, and mortality while also minimizing the socioeconomic ramifications from the pandemic. Uganda later developed a National COVID-19 Resurgence Plan June 2021 – June 2022 that was meant to build off the original response plan and help deal with scenarios where cases were rising again.(49)

COVID-19 responses can be categorized as containment or mitigation approaches.(50,51) A containment approach to COVID-19 policy is one that aspires to zero community transmission. By contrast, a mitigation approach seeks only to reduce COVID-19 transmission to the extent necessary to maintain societal function while preventing collapse of the healthcare system.

South Africa's COVID-19 response can be defined as a mitigation approach. A key informant described South Africa's approach as follows:

“We never at any stage opted for zero COVID, or total containment, rather, we went for minimizing the number of cases, and our stated goal was to flatten the curve. So largely, it was about slowing transmission, and mitigating the impact.” – Interview 002 (South Africa, public health official)

Uganda's COVID-19 response began initially as a containment approach which aimed to use travel-related policies to prevent COVID-19 from entering the country and reaching the community. Uganda later switched to a mitigation strategy, which coincided with the lifting of lockdown measures and rise in community transmission.<sup>(52)</sup> A key informant described

Uganda's approach as follows:

“So the initial phase, containment was the strategy, it was the goal. However, community spread started around, you know, July, August, there was evidence now of community spread at that point...So, I would say it's, it's more or less a story of, you know, two approaches, one for containment. But a second more comprehensive plan once it became clear that community transmission had been established, where the focus was more on management of cases, infection control and health facilities, community-based surveillance, and ramping up of testing.” –Interview 001 (Uganda, public health official)

### ***Lockdown***

Both jurisdictions implemented lockdowns that required individuals to stay home except for essential reasons and involved widespread closures of non-essential services across different economic sectors. South Africa had only one national lockdown at the beginning which lasted approximately 4-5 weeks. Uganda also implemented a full national lockdown at the beginning of the pandemic; however, it was sustained for a period of approximately 2 months.

Both countries phased out their lockdowns progressively. Lifting of lockdowns was related to cases subsequently rising in both jurisdictions. In South Africa, lockdown measures were lifted according to the risk-adjusted measures framework, where lower alert levels signalled a relaxation in public health measures.<sup>(46)</sup> Uganda did not have a particular published framework

for lifting their measures. While South Africa had a risk-adjusted measures plan that was used throughout the pandemic, the measures that each alert level implied were not kept consistent over time. Despite their risk-adjusted plan, South Africa's approach approximated Uganda's in the sense that public health measures were announced and implemented as the government deemed necessary.

South Africa never returned to a full national lockdown for subsequent COVID-19 waves, after their initial lockdown during the first wave. The closest they came to a second lockdown was during their third wave as the delta variant was taking off, moving up to Alert Level 3, and then up to Alert Level 4 as cases continued to rise even further. In comparison, Uganda did commit to a second lockdown during their second wave, which was driven by the delta variant.<sup>(53)</sup> The second lockdown appears to have played a meaningful role in bringing case numbers down, based on the decline in cases that followed the implementation of the lockdown (see Figure 2).

### ***International Travel Bans***

Both countries also initially attempted to prevent COVID-19 cases from entering by implementing international travel bans from high-risk countries. South Africa also initially restricted travel into South Africa for foreign nationals from high-risk countries, and by closing 35 of 53 land ports and 2 of 8 seaports.<sup>(45)</sup> Once the lockdown went into effect on March 26, 2020, these measures were made stricter. All international flights, cross-border road transportation from neighbouring countries, and passenger ships were prohibited from entering South Africa.<sup>(54)</sup> These measures remained in place until October 2020 and all international flights and cross-border road transportation were permitted.<sup>(55)</sup> South Africa's international travel ban only applied during the first wave of COVID-19. Borders remained open during subsequent waves, subject to requirements around quarantine and testing.

Uganda's approach involved issuing a travel ban specifically for countries with a large number of COVID-19 cases, which they later followed up with a complete border closure whereby all entry into Uganda by air, land or water was prohibited.(56,57) This ban prohibited buses, mini-buses, and commercial motorcycles from entering Uganda from neighbouring countries, in addition to pedestrians and cyclists.(57) These measures were enforced by Ugandan security forces. Border measures played an important role in Uganda's containment approach as they focused initially on preventing importation of any COVID-19 cases. Later on, however, borders reopened in September 2020 for tourism.(58) During the second wave, there was much less emphasis on preventing cases from being imported. Instead, the travel ban was once again reserved for countries categorized as high risk by Uganda, which only applied to India during the delta wave.(59) All flights to India from Uganda were prohibited, and travellers arriving from India or who had travelled through India in the past 14 days were barred from entering Uganda.

### ***Public Transportation***

In South Africa, public transportation never fully shut down and their policies varied across different modes of transportation and based on distance travelled. During the lockdown, public transportation involved some closures including domestic flights and passenger rail operations.(60) Road transit including minibus taxis, metered taxis, and e-hailing services were only allowed to transport essential workers during specific hours. They had also set capacity limits based on the licensed maximum for different vehicle types. In the case of minibus taxis and buses, a 70% capacity limit was set, whereas for metered taxis and e-hailing services it was only 50%.(60) Public transportation measures were eased progressively alongside the lockdown to support commuters who were being allowed to return to work.(61) By waves 2 and 3, eventually the main measure that remained was a 70% capacity limit that applied only to public

transportation vehicles travelling long distances (defined as 200 km or more).(62–70) Local public transportation trips could carry 100% of licensed capacity provided that everyone was wearing a mask.

Uganda shut down their public transportation, which coincided closely with their lockdowns. Initially, as Uganda started implementing proactive measures prior to case detection, they recommended that individuals only use public transportation for essential reasons.(56) During the first lockdown, they instituted a ban across several modes of transportation including taxis, minibuses, buses, trains, and commercial motorcycles.(71) Once the closure had ended, they implemented 50% capacity limits for minibuses, buses, and taxis.(72) During the second wave, the public transport closures were more relaxed than during the first wave. Public transport including buses, taxis, and commercial motorcycles could not be used to travel between districts, but they could be used to travel locally within districts.(73)

### *School Closures*

South Africa and Uganda's approaches to school closures were also noticeably different. In South Africa, schools were initially closed during the lockdown and throughout wave 1; however, they underwent recurrent openings and closures in subsequent waves. While it is not possible to pinpoint exactly which policy decisions were most useful in mitigating COVID-19 transmission, it is interesting to note that South Africa's closure of primary and secondary schools aligned most closely with reducing cases during each COVID-19 wave South Africa experienced (see Figure 1). In Uganda, school closures began prior to the country's first recorded COVID-19 case and were in effect for close to 2 years for most students.(56) While it is challenging to estimate exactly how effective school closures were in Uganda, it is possible that

the sustained closures over 2 years contributed to lower COVID-19 transmission than it otherwise could have been given that approximately half the population of Uganda is 17 years of age or younger, and that this age group remained ineligible for vaccination over the study period.

### ***Gathering limits***

Both governments introduced limits on gathering size, which fluctuated throughout the pandemic. Gathering limits were changed regularly in South Africa, ranging from outright bans, and going up as high as 750 people indoors or 2000 people outside.(74) Uganda's approach to gathering limits was somewhat more conservative than South Africa. While they also varied over time, they only went as high as 200 people, indoors or outdoors.(75)

### ***Curfew***

A curfew was implemented in both countries; however, they were guided by different rationales. In South Africa, curfew was instituted to help preserve the healthcare system by reducing accidents overnight, thereby limiting the need to divert healthcare resources towards trauma-related care.(76) Curfews were among the policies that remained most consistently implemented in South Africa. In Uganda, curfew was implemented to promote physical distancing. The reasoning was that many services would have to close due to curfew, therefore reducing the places where people could congregate, and prompting people to remain at home for the night.(77)

### ***Vaccination***

Both South Africa and Uganda began efforts to procure vaccines in December 2020 through the WHO COVAX facility, Africa Union Vaccine Initiative, and direct purchase from manufacturers.(78) South Africa paid R283 million (18,082,814 USD) towards the COVAX



facility to secure vaccine doses for their population. South Africa was expecting to receive enough doses to vaccinate 10% of the population in 2021.(79) South Africa received its first shipment of AstraZeneca vaccines in early February 2021; however, given a study showing that AstraZeneca had reduced effectiveness against the beta variant, South Africa delayed their rollout until they received Johnson & Johnson and Pfizer vaccines instead.(80)

While Uganda also began efforts to procure vaccines in December 2020, health experts were concerned that the government lacked a clear plan or budget for vaccine procurement, which would affect Uganda's ability to access vaccines in a timely manner.(81) Like South Africa, Uganda also applied to the WHO's COVAX facility for vaccinations.(82) The COVAX facility was expected to support vaccination of 20% of the population. Uganda received donations of Astra-Zeneca from the Indian government and CoronaVac (Sinovac) vaccines from the Chinese government.(83,84) Initially, Uganda chose to begin their vaccination campaign with Astra-Zeneca and Chinese vaccines because they were easier to store than mRNA vaccines.(85)

Both countries also had similar strategies for prioritizing who would be eligible for vaccination.

In South Africa, the vaccination campaign was divided into three phases. Phase 1 began with healthcare workers. Phase 2 focused on frontline workers such as teachers and police forces, people living in congregate settings including old age homes, shelters, and prisons, people over the age of 60, and adults with comorbidities. Phase 3 was focused on the remaining adult population.(86) Similarly, in Uganda, health care workers were the first group to be vaccinated to ensure they were protected from severe outcomes from COVID-19 and to encourage them to continue providing care to infected individuals.(87) Teachers were also prioritized for vaccination to facilitate safe school reopening. Adults over 50 and adults aged 18-50 with health conditions including hypertension, diabetes, cancer, and other diseases including liver, kidney, or

heart disease were considered high-risk groups for contracting COVID-19 and were also prioritized for vaccination.

Vaccine rollout began in South Africa in mid-February 2021.(80) By September 2021, South Africa had enough vaccine supply for their entire adult population.(88) In comparison, vaccination in Uganda began on March 10, 2021.(89) Uganda had received enough vaccines for their adult population by November 2021.(90)

Vaccination progress remained slow in both jurisdictions by the end of the study period. Figure 3 shows the percentage of the total population that had been vaccinated with at least one dose or with a complete initial vaccine series by November 2021 for each jurisdiction. Neither jurisdiction had particularly high vaccine coverage. In South Africa, close to 30% of the total population had received their first dose by mid-November 2021, whereas in Uganda it was especially low, at less than 10% (see Figure 3).

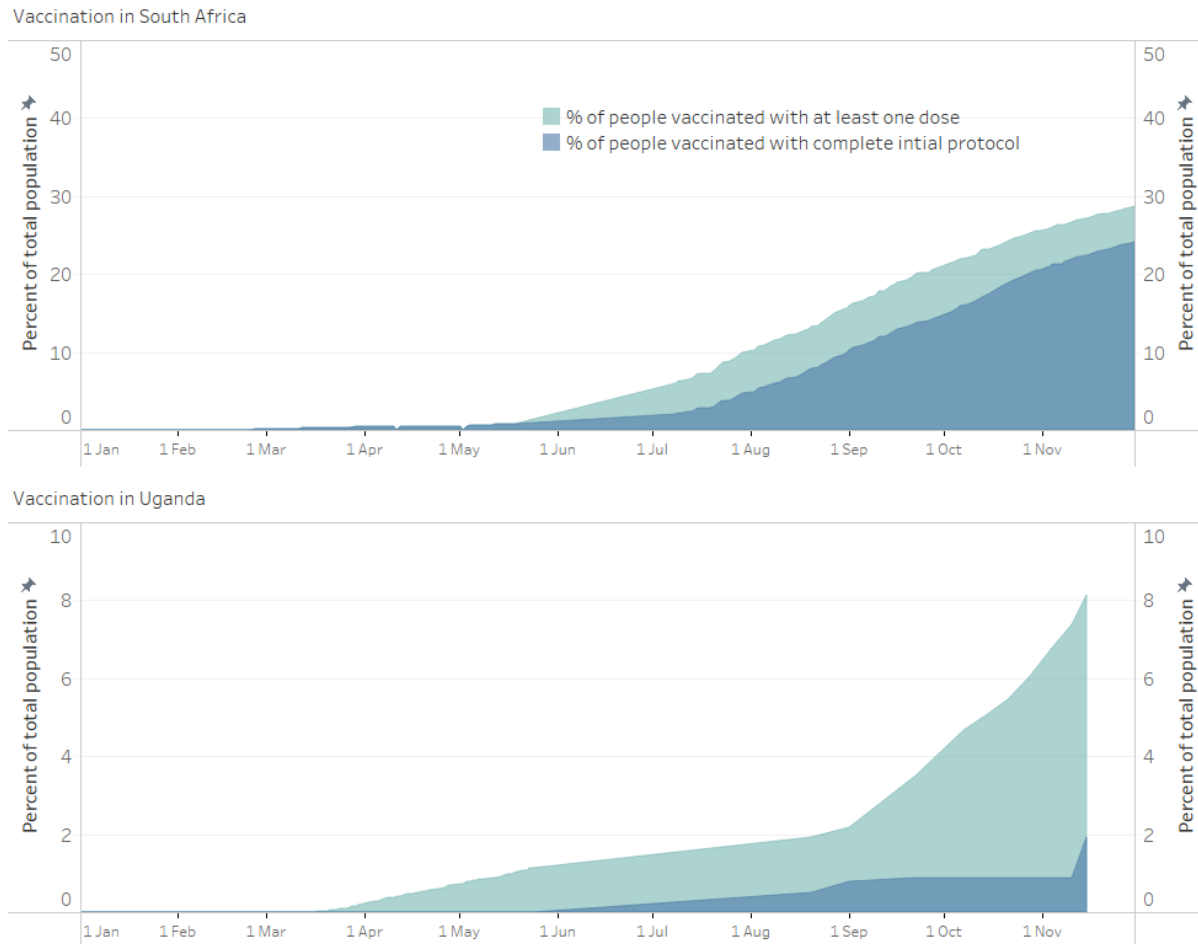
In South Africa, low vaccine coverage was attributed to barriers to access such as hours of operation of vaccine clinics that coincided with business hours where people were working.(91) In response, the government expanded their vaccination so that individuals could get their vaccinations on select weekends. The government tried to make vaccines easier to access in areas where vaccine uptake was disproportionately low by making them available at polling stations during local elections.(92) The government also piloted an incentive program, whereby they would provide R100 grocery vouchers to people over the age of 60 who received their first dose in November 2021.(92) A key informant also pointed to the issue of misinformation and vaccine hesitancy:

“I mean, South Africans never had issues with vaccine hesitancy before. You know, I've worked in vaccine trials for many years. And it was never an issue, you know, people just vaccinated. But I think with, you know, the, there's been a lot of misinformation and I think with social media and things being freely available, a lot of that crept in.” – Interview 003 (South Africa, researcher)

In Uganda, in early November 2021, the Ministry of Health had only begun expanding the vaccination program from health facilities to community locations including villages, churches, taxi parks, and markets to increase vaccine coverage in Uganda.<sup>(93)</sup> By the end of the study period, all adults over the age of 18 had just become eligible for vaccination.<sup>(90)</sup> However, children under the age of 17 were still not yet eligible to be vaccinated despite making up half of the total population. A key informant also cited vaccination misinformation on social media as a problem in Uganda:

“Then of course the other problem was demystifying facts about the vaccine, the rumors around the vaccine. Countering anti-vaxxers, you know, there's so many things with the social media now.” –Interview 004 (Uganda, public health official)

**Figure 3: Vaccination in South Africa and Uganda from January 2021 to November 2021**



*\*People vaccinated with a complete initial protocol means they received all initially prescribed doses for the vaccine brand they received*

### ***Socioeconomic Relief Policies***

Both the governments of South Africa and Uganda had instituted relief programs for populations that were vulnerable to the effects of public health measures to control COVID-19 transmission.

The South African government provided financial and food support to their population. South Africa used the Unemployment Insurance Fund (UIF) to create the COVID-19 Temporary Employee Relief Scheme (COVID-19 TERS).(94) The COVID-19 TERS benefit was provided to employers so that they could continue to pay employees their regular salary while they

remained home during lockdown. The government also supplemented existing social grants such as child support.(95) A temporary COVID-19 Social Relief of Distress grant provided R350 (22.36 USD) per month to unemployed individuals or to individuals who were otherwise not receiving any social grants.(95) This grant was originally available from May-October 2020 and was extended periodically until it was paused in April 2021 because the government could no longer afford to provide it.(96) The government later reinstated the grant in August 2021. South Africa also had a food program that was coordinated by the national Ministry of Social Development.(97) Emergency food parcels were delivered to registered people through existing food programs, as well as people who were not already supported by the Social Relief of Distress grant.

During Uganda's first lockdown, they also introduced a food distribution program to support those experiencing food insecurity.(98) The government had limited means to provide support for the population during lockdown, therefore food support was reserved for people whose incomes were directly affected by government public health measures and who could also not grow their own food.(99) During the second lockdown, the Ugandan government took another approach to supporting the population, opting to provide cash transfers rather than food packages.(100) The cash transfer program provided UGX100,000 (26.48 USD) to vulnerable people; however, this program also had limited reach. More than 7.7 million people living in poverty were not supported by the program.(101) The government justified their choice of beneficiaries, claiming that the people not included in the program were not necessarily considered vulnerable even if they were poor, owing to them living in rural areas and being able to produce their own food.

### ***Public Response and Policy Enforcement***

The public reaction to COVID-19 measures in South Africa was mixed. A poll conducted in South African urban centres from April 2 and April 6, 2020 demonstrated that 83% of South Africans were satisfied with the government's response to COVID-19.(102) A later poll conducted from April 20 to April 22, 2020 suggested that 84% of South Africans supported the lockdown, believing that the risk posed by the pandemic justified the response.(103) Despite indications of general support for the South African government's COVID-19 response, people with lower household income were less likely to be satisfied with the government response or to trust the information provided by the government.(102)

In Uganda, a public opinion poll taken from July 6 until July 15, 2020 found that 75% of respondents initially approved the government's decision to implement a lockdown.(104,105) However, up to 78% of the participants polled reported that they had stopped fearing COVID-19 and were less likely to follow public health measures.

Police forces were relied upon in both South Africa and Uganda to enforce public health measures. In South Africa, lockdown measures were enforced by the South African Police Service and the South African National Defence Force. Police conducted patrols to limit movement of individuals. (106) Violation of public health measures during lockdown could result in a fine, imprisonment, or both. Police involvement in South Africa during lockdown was controversial because of police violence against individuals who disobeyed public health regulations.(95) The South African government also criminalized violation of the mask mandate.(78) Failure to wear a mask in public spaces could result in a fine, prison time, or both.

In Uganda, police were also responsible for patrols during lockdown and ensuring individuals' movements were limited to essential reasons.(37) A key informant confirmed that the police

played a major role in enforcing curfew, which was in effect for most of the study period. Police violence against individuals violating COVID-19 measures was also noted, which prompted the President to emphasize that police should arrest people going against measures rather than resorting to violence.(37)

## **Discussion**

### ***Principal Findings***

This study is part of a larger multinational study of physical distancing policies and their effects on local COVID-19 epidemiology.(7) Within this project, we chose to study the COVID-19 policy responses of South Africa and Uganda in an effort to document African responses, while situating the policies in the broader context of each country.

The suite of physical distancing policies used in South Africa and Uganda to prevent COVID-19 transmission were similar in the sense that they both used lockdown, school closures, international travel bans, public transportation measures, gathering limits, and curfews. However, policy implementation differed on several points. South Africa only began implementing public health measures after cases began rising rapidly. South Africa never aimed to achieve zero community transmission, aspiring instead to only mitigate spread. By comparison, Uganda's policies approach was more proactive than South Africa. Uganda began implementing policies prior to a single case being detected. Their initial approach was grounded in complete containment of the virus by preventing importation of cases from initiating community spread.

Mitigation strategies in both South Africa and Uganda's COVID-19 responses were marked by a need to preserve the economy. Despite Uganda's shift in strategy away from total containment of

the virus, mitigation measures in both countries had a different character. South Africa's response was marked by a recurrent tightening and relaxation of public health measures over the course of the study period, depending on whether cases were rising and whether hospitals could respond to any changes. In their policy decisions, it seemed that the South African government wanted to ensure that some public health measures were in place to control transmission, but only to the extent that they felt was absolutely necessary. In comparison, Uganda sustained policy measures for longer periods of time, that were also stricter in nature, prior to lifting them. Based on several of Uganda's policies such as school and public transportation closures, and their decision to reinstitute a national lockdown during the second wave, their government was willing to go further than South Africa with their measures to reduce the risk of COVID-19 transmission over the study period.

It is worth noting that South Africa had three recorded waves over the same time period in which Uganda had only two waves (see Figures 1 and 2). COVID-19 responses in both countries have entailed a complex layering of physical distancing policies which overlapped in time and may individually have had varying degrees of effectiveness. While it is difficult to say exactly what role policy responses played in mitigating the number of waves in each country, it is still worth considering the differences between South Africa and Uganda's approaches in terms of timing and stringency of measures, and how these differences may have influenced the course of the pandemic in each of these jurisdictions. As of November 30, 2021, there were 49,432 cumulative cases per million people in South Africa and 2,706 cumulative cases per million people in Uganda.<sup>(107)</sup> At the same time, there were 1,496 cumulative deaths per million people in South Africa and 69 cumulative deaths per million in Uganda.



Country context may also have played a role in these outcomes. South Africa's population is more concentrated in urban centres in comparison to Uganda. South Africa and Uganda have young populations overall; however, Uganda's is especially notable with half the population being under 17, and not being able to congregate in schools. Both countries were similarly prepared to respond to epidemics; however, Uganda's recent experience with Ebola just prior to the emergence of COVID-19 may have helped them activate their response systems faster.

Both South Africa and Uganda provided relief measures to support vulnerable populations during the pandemic using a mix of strategies. South Africa's aimed mainly to use existing social service programs and supplement them, although they did also implement programs for people not otherwise receiving any support. Uganda's programs were introduced to provide support during the lockdowns. Both countries at times provided grants and food parcels to support vulnerable individuals and households. Both countries are resource-limited and raised money to support their COVID-19 responses. In these resource-limited settings with notable income and wealth inequality, it is important to note that attention was still given to providing socioeconomic supports for people most vulnerable to the effects of public health measures.

### *Placing this study in the literature*

Similar to our research group, others have also studied COVID-19 policy responses. The Cambridge Core blog looked at country responses to COVID-19, as well as the responses of some sub-national jurisdictions.(108) These reports provided high-level information on jurisdiction contexts and overviews of the policy responses focusing primarily on the first several months of the pandemic response. However, the Cambridge Core blog did not cover the COVID-19 responses of any African countries.

The Oxford COVID-19 Government Response Tracker (OxCGRT) also collected policy information about public health measures taken against COVID-19 since January 2020.(109) They have developed a database of indicators on economic, health system, vaccine, and containment policies. The OxCGRT has a stringency index, which measures strictness of government policies according to the following areas: school closures, workplace closures, cancellation of public events, limits on public gatherings, public transportation closures, stay-at-home measures, public education campaigns, international travel measures, and limits on internal movements. The stringency index averages scores for each of these policy areas to create a composite score from 0 to 100, with 100 being the strictest. While the OxCGRT does not contextualize policy responses according to changing local epidemiology, the OxCGRT stringency index illustrates that South Africa's measures were at their strictest during their national lockdown, rating at 87.96, and never again reached the same strictness for the rest of the study period.(110) By comparison, it showed that Uganda's maximum stringency was 93.52 during their first lockdown, and that measures were similarly strict at 87.04 when their second lockdown was instated. These metrics align well with our findings.

The International Labour Organization (ILO) explored economic measures to support businesses, employees, and vulnerable populations against the effect of COVID-19.(111) The ILO has provided information on economic policies up until June 2020 for Uganda and December 2020 for South Africa. The International Monetary Fund (IMF) has covered the COVID-19 policy responses in various countries including South Africa and Uganda up until July 1, 2021.(112) The IMF provided overviews of physical distancing measures in South Africa and Uganda, which aligned well with our findings. Similar to the ILO, The IMF also had a particular focus on

economic policies and documents these in more detail than our study. However, the IMF policy tracker did not incorporate other policy-relevant contextual information.

### *Strengths and Limitations of the Study*

The case study design used in this research allowed for an in-depth exploration of country-specific contextual factors and COVID-19 physical distancing and supporting policy responses in South Africa and Uganda over time. The study drew from a wide variety of sources including government and media reports, and key informant interviews to confirm findings.

Limitations to this study exist because findings rely on availability of complete, accurate policy and epidemiological data being reported by the government, the media, and other publicly available sources. Policy implementation and enforcement were not always clear, which may have affected our findings. In cases where policies were implemented later than announced or not implemented at all, it is difficult to assess their impact and there may be some discrepancies with the findings presented in this paper. Standardized data collection forms and interview guides were used to conduct this research; however, the policy responses were nuanced for each country which made it challenging to ensure fidelity of the policy descriptions or key informant interviews. While English is an official language in both Uganda and South Africa, only English-language documents were analyzed for this study, which means that potentially important resources may have been missed. Only a small number of key informants from each country participated in interviews. The key informants were knowledgeable on the COVID-19 response in their respective jurisdictions; however, they may not have been involved in all aspects of decision-making or implementation.

### ***Implications for policy and practice***

This paper has investigated the COVID-19 response beyond the first wave and explored how policy decision-making has differed over subsequent waves in South Africa and Uganda up until November 2021. Exploring the COVID-19 responses over time generates knowledge on how to deal with the ongoing nature of managing a pandemic in terms of implementing policy measures to mitigate or control the virus, vaccinating the population, handling emerging variants, and addressing socioeconomic challenges arising from public health policies.

Based on the COVID-19 responses in South Africa and Uganda, policy-makers and other stakeholders should consider their overall goals for pandemic management and think about how factors such as timing and stringency can affect the success of their pandemic management. They should also consider the impact of policy measures on vulnerable populations and find ways to provide socioeconomic support to these populations in the face of prolonged public health measures.

### ***Implications for research***

While other work exploring COVID-19 policies has been done, many are focused on economic policies. To our knowledge, there are a limited number of studies conducting comparative analyses focused specifically on different types of physical distancing policies especially in countries within Africa. Continued exploration of pandemic management in African countries is needed to provide insight around decision-making in resource-limited settings.

Sources used for this study varied based on jurisdiction. South Africa's government had a complete repository of policy announcements published on their website and other resources were used primarily to gauge public response to mitigation measures. While Uganda's

government websites had resources on their policy measures, other sources were needed to help contextualize their implementation. For Uganda, social media were particularly useful for mapping out policy timelines and locating presidential addresses. Future policy research should consider how social media sources may be used to supplement government web sources.

## **Conclusion**

This study focused on providing in-depth comparisons of COVID-19 policy responses and relevant contextual factors in South Africa and Uganda. The study showed how contextual factors such as population age, geographic distribution, and recent epidemic response experience can influence COVID-19 transmission and response. The study also showed differences in overall strategy, timing, and strictness of epidemic management policies in these jurisdictions. These findings suggest it may be important to have sustained, strict measures to limit the spread of COVID-19 and manage the course of a pandemic, which need to be further explored alongside other important social and economic pandemic outcomes.

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**Appendix 1: Standardized Data Collection Form**

Country or jurisdiction \_\_\_\_\_

WHO Region \_\_\_\_\_ (African Region, Region of the Americas, South-East Asia Region, European Region, Eastern Mediterranean Region, Western Pacific Region) [<http://origin.who.int/about/regions/en/>]

Data collector(s) \_\_\_\_\_

Use sources shown in the “sources” column, where marked, or if you use a different source, make a note of it. If blank, these will require varied sources depending on the country or jurisdiction. Write in all sources used and note what information is found from each source.

**Part 1: Timeline**

Events	Findings	Comments	Sources
Date WHO declared a Public Health Emergency of International Concern	January 30, 2020		Rolling updates on coronavirus disease (COVID-19). WHO. (Updated regularly). <a href="https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen">https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen</a>
Date pandemic declared	March 11, 2020		WHO Timeline - COVID-19. WHO (Updated April 27, 2020) <a href="https://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19">https://www.who.int/news-room/detail/27-04-2020-who-timeline---covid-19</a>
Date of country’s/jurisdiction’s first case			WHO Coronavirus Disease (COVID-19) Dashboard (Updated regularly) <a href="https://covid19.who.int/">https://covid19.who.int/</a>
Date of country’s/jurisdiction’s 100 cases			WHO Coronavirus Disease (COVID-19) Dashboard (Updated regularly) <a href="https://covid19.who.int/">https://covid19.who.int/</a>

Global Health Security Overall Rank # and category			Global Health Security Index <a href="https://www.ghsindex.org/">https://www.ghsindex.org/</a>
Global Health Security Epidemic Preparedness Rank # and category			Global Health Security Index <a href="https://www.ghsindex.org/">https://www.ghsindex.org/</a>
Other:			
Other:			

**Part 2: Country characteristics – geographic, environmental, social, economic, demographic and health**

<b>GEOGRAPHIC and ENVIRONMENTAL</b>			
<b>Category</b>	<b>Findings</b>	<b>Comments</b>	<b>Sources</b>
Population of country / jurisdiction			Countries in the world by population (2020). Worldometer. (n.d.) <a href="https://www.worldometers.info/world-population/population-by-country/">https://www.worldometers.info/world-population/population-by-country/</a>
Land area of country / jurisdiction (km <sup>2</sup> )			Countries in the world by population (2020). Worldometer. (n.d.) <a href="https://www.worldometers.info/world-population/population-by-country/">https://www.worldometers.info/world-population/population-by-country/</a>

Agricultural land (%)			Central Intelligence Agency World Factbook. <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Population distribution-description			Central Intelligence Agency World Factbook. <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Population density of country / jurisdiction (#/ km <sup>2</sup> )			Countries in the world by population (2020). Worldometer. (n.d.) <a href="https://www.worldometers.info/world-population/population-by-country/">https://www.worldometers.info/world-population/population-by-country/</a>
Urban population (%)			Countries in the world by population (2020). Worldometer. (n.d.) <a href="https://www.worldometers.info/world-population/population-by-country/">https://www.worldometers.info/world-population/population-by-country/</a>
Geography – brief description			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
PM2.5 air pollution, mean annual exposure, 2017 (micrograms per cubic meter)			The World Bank - PM2.5 - <a href="https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3?view=chart">https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3?view=chart</a>  PM2.5 For Canadian Provinces (2016): <a href="https://www.canada.ca/content/dam/eccc/documents/pdf/cesindicators/air-quality/air-quality-en.pdf">https://www.canada.ca/content/dam/eccc/documents/pdf/cesindicators/air-quality/air-quality-en.pdf</a>
PM2.5 air pollution, population exposed to levels exceeding WHO			The World Bank - PM2.5 - <a href="https://data.worldbank.org/indicator/EN.ATM.PM25.MC.ZS?view=chart">https://data.worldbank.org/indicator/EN.ATM.PM25.MC.ZS?view=chart</a>

guideline value, 2017 (% of total)			
<b>SOCIAL</b>			
<b>Category</b>	<b>Findings</b>	<b>Comments</b>	<b>Sources</b>
Social connectedness Social infrastructure - Individualism vs. collectivism vs. tribalism vs. solidarity			
Ethnic groups and %			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Number of different ethnic groups (based on above)			Add above
Languages spoken and %			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Number of different languages spoken(based on above)			Add above

Religions and %			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Number of different religions (based on above)			Add above
Trust in government			Our World In Numbers (Updated 2018) <a href="https://ourworldindata.org/trust">https://ourworldindata.org/trust</a>
Mobile cellular subscriptions (per 100 people)			World Bank open data found at: <a href="https://data.worldbank.org/">https://data.worldbank.org/</a>
Individuals using the Internet (% of population)			World Bank open data - found at: <a href="https://data.worldbank.org/">https://data.worldbank.org/</a>
Other:			
<b>ECONOMIC</b>			
<b>Category</b>	<b>Findings</b>	<b>Comments</b>	<b>Sources</b>
Economic framework – Index of economic freedom (composite of rule of law, government size, regulatory efficiency, and open			2020 Index of Economic Freedom <a href="https://www.heritage.org/index/ranking">https://www.heritage.org/index/ranking</a>

markets) <b>Categorical</b> - Free, Mostly free, Moderately free, Mostly unfree, Repressed, Not ranked) <b>and rank</b>			
World Bank classification – Low, lower middle, upper middle, high			World Bank: World by Income & Region (2020) <a href="https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html">https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html</a>
GINI Index			Central Intelligence Agency World Factbook - Gini <a href="https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html">https://www.cia.gov/library/publications/the-world-factbook/rankorder/2172rank.html</a>
GDP per capita, PPP, (current international \$)			World Bank open data - GDP - found at: <a href="https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD?view=chart/">https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD?view=chart/</a>
GNI per capita, PPP (current international \$)			World Bank open data - GNI - found at: <a href="https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD?view=chart">https://data.worldbank.org/indicator/NY.GNP.PCAP.PP.CD?view=chart</a>
Current health expenditure (%)			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Vulnerable employment, total (% of total employment)			World Bank <a href="https://data.worldbank.org/indicator/SL.EMP.VULN.ZS">https://data.worldbank.org/indicator/SL.EMP.VULN.ZS</a>
Vulnerable employment, female (% of female employment)			World Bank <a href="https://data.worldbank.org/indicator/SL.EMP.VULN.FE.ZS">https://data.worldbank.org/indicator/SL.EMP.VULN.FE.ZS</a>

Vulnerable employment, male (% of male employment)			World Bank <a href="https://data.worldbank.org/indicator/SL.EMP.VULN.MA.ZS">https://data.worldbank.org/indicator/SL.EMP.VULN.MA.ZS</a>
DEMOGRAPHIC and HEALTH			
Category	Findings	Comments	Sources
Population ages 0-14 (total and %)  %			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.0014.TO">https://data.worldbank.org/indicator/SP.POP.0014.TO</a> <a href="https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS">https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS</a>
Population ages 15-64 (total and %)  %			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.1564.TO">https://data.worldbank.org/indicator/SP.POP.1564.TO</a> <a href="https://data.worldbank.org/indicator/SP.POP.1564.TO.ZS">https://data.worldbank.org/indicator/SP.POP.1564.TO.ZS</a>
Population ages 65 and above (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.65UP.TO">https://data.worldbank.org/indicator/SP.POP.65UP.TO</a> <a href="https://data.worldbank.org/indicator/SP.POP.65UP.TO">https://data.worldbank.org/indicator/SP.POP.65UP.TO</a>
Population ages 0-14, female (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.0014.FE.IN">https://data.worldbank.org/indicator/SP.POP.0014.FE.IN</a>
Population ages 0-14, male (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.0014.MA.IN">https://data.worldbank.org/indicator/SP.POP.0014.MA.IN</a>

Population ages 15-64, female (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.1564.FE.IN/">https://data.worldbank.org/indicator/SP.POP.1564.FE.IN/</a>
Population ages 15-64, male (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.1564.MA.IN/">https://data.worldbank.org/indicator/SP.POP.1564.MA.IN</a>
Population ages 65 and above, female (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.65UP.FE.IN/">https://data.worldbank.org/indicator/SP.POP.65UP.FE.IN</a>
Population ages 65 and above, male (total and %)			World Bank open data found at: <a href="https://data.worldbank.org/indicator/SP.POP.65UP.MA.IN/">https://data.worldbank.org/indicator/SP.POP.65UP.MA.IN</a>
Life expectancy at birth 2017 (yrs)			World Bank: Life Expectancy <a href="https://data.worldbank.org/indicator/sp.dyn.le00.in">https://data.worldbank.org/indicator/sp.dyn.le00.in</a>
Current tobacco smoking, adults aged 15+, total (%)			World Bank: Smoking <a href="https://data.worldbank.org/indicator/SH.PR.V.SMOK">https://data.worldbank.org/indicator/SH.PR.V.SMOK</a>
Current tobacco smoking, adults aged 15+, males (%)			World Bank: Smoking <a href="https://data.worldbank.org/indicator/SH.PR.V.SMOK.MA">https://data.worldbank.org/indicator/SH.PR.V.SMOK.MA</a>
Current tobacco smoking, adults aged 15+, females (%)			World Bank: Smoking <a href="https://data.worldbank.org/indicator/SH.PR.V.SMOK.FE">https://data.worldbank.org/indicator/SH.PR.V.SMOK.FE</a>



Raised blood pressure, adults aged 18+, total (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Raised blood pressure, adults aged 18+, males (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Raised blood pressure, adults aged 18+, females (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
(Diabetes) Raised blood glucose, adults aged 18+, total (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
(Diabetes) Raised blood glucose, adults aged 18+, males (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
(Diabetes) Raised blood glucose, adults aged 18+, females (%)			WHO noncommunicable diseases by country - <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Obesity, adults aged 18+, total (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Obesity, adults aged 18+, males (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>

Obesity, adults aged 18+, females (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Proportional mortality from cardiovascular diseases (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Proportional mortality from cancers (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Proportional mortality from chronic respiratory diseases (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Proportional mortality from diabetes (%)			WHO NCD by country <a href="https://www.who.int/nmh/countries/en/">https://www.who.int/nmh/countries/en/</a>
Prevalence of HIV in adult population (%)			Central Intelligence Agency World Factbook (2018 est) <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
BCG Immunization coverage estimates by country (%)			WHO - BCG Immunization coverage <a href="https://apps.who.int/gho/data/node.main.A830?lang=en">https://apps.who.int/gho/data/node.main.A830?lang=en</a>
Homelessness (%)			OECD <a href="https://www.oecd.org/els/family/HC3-1-Homeless-population.pdf">https://www.oecd.org/els/family/HC3-1-Homeless-population.pdf</a>

International migrant stock (% of population)			World Bank <a href="https://data.worldbank.org/indicator/SM.POP.TOTL.ZS">https://data.worldbank.org/indicator/SM.POP.TOTL.ZS</a>
Prevalence of undernourishment (% of population)			World Bank <a href="https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS?view=chart">https://data.worldbank.org/indicator/SN.ITK.DEFC.ZS?view=chart</a>
Adult literacy rate 2015 (%)			UNESCO Institute for Statistics <a href="http://uis.unesco.org/#slideoutsearch">http://uis.unesco.org/#slideoutsearch</a>
Literacy rate, adult male (% of males 15 and above)			UNESCO Institute for Statistics <a href="http://data.uis.unesco.org/index.aspx?queryid=121">http://data.uis.unesco.org/index.aspx?queryid=121</a>
Literacy rate, adult female (% of females 15 and above)			UNESCO Institute for Statistics <a href="http://data.uis.unesco.org/index.aspx?queryid=121">http://data.uis.unesco.org/index.aspx?queryid=121</a>
Primary school net enrolment ratio 2015 (%)			World Bank <a href="https://data.worldbank.org/indicator/SE.PRM.NENR">https://data.worldbank.org/indicator/SE.PRM.NENR</a>

**Political and health system**

POLITICAL SYSTEMS			
Category	Findings	Comments	Sources

Type of government – democratic vs. authoritarian (monarchy, dictatorship, single-party)			Forms of government. Lumen. (n.d.) <a href="https://courses.lumenlearning.com/boundless-politicalscience/chapter/forms-of-government/">https://courses.lumenlearning.com/boundless-politicalscience/chapter/forms-of-government/</a>
Type of government - other description			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/fields/299.html">https://www.cia.gov/library/publications/the-world-factbook/fields/299.html</a>
Date since current government in place			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/fields/313.html#BC">https://www.cia.gov/library/publications/the-world-factbook/fields/313.html#BC</a>
Election Term Length			<a href="https://en.wikipedia.org/wiki/List_of_next_general_elections">https://en.wikipedia.org/wiki/List_of_next_general_elections</a>
Fragile States Index - score (out of 120) [higher is worse] and FSI rank (out of 178 countries) [higher is better]			Fragile States Index - Country dashboard. <a href="https://fragilestatesindex.org/country-data/">https://fragilestatesindex.org/country-data/</a>
Global Freedom Score			<a href="https://freedomhouse.org/countries/freedom-world/scores">https://freedomhouse.org/countries/freedom-world/scores</a>

Number and status			Global freedom score category and number
Internet Freedom Score Number and status			<a href="https://freedomhouse.org/countries/freedom-net/scores">https://freedomhouse.org/countries/freedom-net/scores</a>
Freedom of the press score and rank (0-60: high   61-120: medium   121-180: low)			<a href="https://rsf.org/en/ranking">https://rsf.org/en/ranking</a>
Name of governing party in power and leaning			Political spectrum. Wikipedia. (Updated April 20, 2020) <a href="https://en.wikipedia.org/wiki/Political_spectrum">https://en.wikipedia.org/wiki/Political_spectrum</a> Check how the governing party describes itself (conservative, liberal, progressive, etc), then determine how it fits into the range of political ideologies in the jurisdiction. For example, the BC Liberal Party is the conservative party in that jurisdiction.
Multilevel government (federal vs. unitary) Sub-questions: 1) Is there a constitutional division of			Degree of centralization re: policy authority for health is the most relevant measure, but useful to note if a country has a federal constitution (distinct constitutional power for different levels of government). A quick search of the country name + federalism can determine constitutional structure.

<p>power for health? 2) Level of decentralization</p>			<p>See also brief op-eds by in-country experts on the role of federalism in COVID response in a number of federal countries: <a href="http://www.forumfed.org/collection/federalism-and-covid-country-perspectives/page/2/">http://www.forumfed.org/collection/federalism-and-covid-country-perspectives/page/2/</a></p>
<p>For democratic governments, party discipline (Yes, No)</p>			
<p>Policy authority for health and level of involvement from levels of government (decision making power, funding decisions, consider health regions)</p>			<p>International Health Care Systems Profiles (Commonwealth Countries) <a href="https://international.commonwealthfund.org/countries/">https://international.commonwealthfund.org/countries/</a></p>
<p>Policy authority for education</p>			<p>World Education News <a href="https://wenr.wes.org/category/education-system-profiles">https://wenr.wes.org/category/education-system-profiles</a></p>
<p>Policy authority for international travel</p>			<p>International Air Transportation Authority <a href="https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/">https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/</a></p>

Policy authority for emergency management			
Act(s) determining policy authority for emergency management			
Interest groups – any prominent groups involved or pushing for certain style of policies			<p>Suggest labour unions (e.g. CLC in Canada), chambers of commerce, and individual large companies/industries (example for Canada, check iPolitics' Lobby Wrap  <a href="https://ipolitics.ca/2020/05/18/lobby-wrap-air-canada-chl-lobbying-for-financial-aid/">https://ipolitics.ca/2020/05/18/lobby-wrap-air-canada-chl-lobbying-for-financial-aid/</a>)                      Religious groups</p>
Ideas – beliefs or values (public opinion polls, protests)			<p>Possible to measure trust in government and confidence in government response to pandemic using public opinion data? Vox Pop is fielding a rolling study for Canada:  <a href="https://voxpoplabs.com/covid-19/">https://voxpoplabs.com/covid-19/</a></p>
External factors			

HEALTH SYSTEMS			
Health financing – public, private, mixed			International Health Care Systems Profiles (Commonwealth Countries) <a href="https://international.commonwealthfund.org/countries/">https://international.commonwealthfund.org/countries/</a>
National Centre for Disease Control			Where We Work - CDC <a href="https://www.cdc.gov/globalhealth/countries/default.htm">https://www.cdc.gov/globalhealth/countries/default.htm</a>
Central health authority			International Health Care Systems Profiles (Commonwealth Countries) <a href="https://international.commonwealthfund.org/countries/">https://international.commonwealthfund.org/countries/</a>
Number of health districts			International Health Care Systems Profiles (Commonwealth Countries) <a href="https://international.commonwealthfund.org/countries/">https://international.commonwealthfund.org/countries/</a>
Physician density (physician/1,000 pop)			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
Hospital bed density (beds/1,000 pop)			Central Intelligence Agency World Factbook <a href="https://www.cia.gov/library/publications/the-world-factbook/">https://www.cia.gov/library/publications/the-world-factbook/</a>
National stockpile PPE			WHO - countries who have received WHO PPE <a href="https://www.who.int/news-room/detail/03-03-2020-shortage-of-personal-protective-equipment-">https://www.who.int/news-room/detail/03-03-2020-shortage-of-personal-protective-equipment-</a>



			<p><a href="#">endangering-health-workers-worldwide</a></p> <p><i>Scroll to the bottom (note to editor) for a list of countries who received PPE from WHO</i></p>
Emergency preparedness planning – experiences with pandemics in past 25 years			<p><a href="https://www.ghsindex.org/">https://www.ghsindex.org/</a></p>
Pandemic response plan - Y/N (date last updated)			
Hazard Risk and Vulnerability Assessment (or similar plan) - Y/N and date last updated			
Laboratory landscape – public health, private labs			
COVID-19 testing policy Availability of testing			<p>Our World in Data</p> <p><a href="https://ourworldindata.org/grapher/covid-19-testing-policy?year=2020-05-08">https://ourworldindata.org/grapher/covid-19-testing-policy?year=2020-05-08</a></p>

COVID-19 test used and where developed			
COVID-19 antibody test used and where developed			
Surveillance systems and data collected			
What is known about COVID outbreaks in the country with regards to local outbreaks (long-term care, hospital, occupational, prisons, etc.) High-level overview (see epidemiology section for further details)			

<b>Policies</b>					
<b>Policy</b>	<b>Findings - yes/no or categorical</b>	<b>Date started</b>	<b>Date ended</b>	<b>High-level summary of policy and modifications made (with dates)</b>	<b>Sources</b>

COVID-19 primary spokesperson(s)					
Declared planned approach to pandemic – <b>Categorical</b> - containment, mitigation, herd immunity, re-opening, other					
Change(s) in declared approach(es), dates and reasons provided					
Declaration of state of emergency - Y/N					
<b>Distancing measures</b>					
Physical distancing - Y/N and recommendation (distance)					

<p>Ban on group sizes for gatherings - Y/N (Description - size number and exception notes, e.g., religious gatherings, sporting events, bars/restaurants)</p>					
<p>School closures, Daycares -Y/N</p>					
<p>School closures, Primary and secondary - Y/N</p>					
<p>School closures, Universities - Y/N</p>					
<p>Closing non-essential services - Y/N (with description)</p>					
<p>Closing restaurants</p>					
<p>Suspended elective medical/dental procedures</p>					

Separation of cases or suspected cases within institutions or in separate institutions - Y/N					
Health workers allowed to only work at one site (hospital) - Y/N					
Health workers allowed to only work at one site (senior care facilities) - Y/N					
Isolation for vulnerable populations (elderly, immunocompromised) - Y/N					
Quarantine orders after travel - Y/N					International Pandemic Preparedness <a href="https://pandemic.international.sos.com/2019-ncov/ncov-travel-restrictions-flight-operations-and-screening">https://pandemic.international.sos.com/2019-ncov/ncov-travel-restrictions-flight-operations-and-screening</a>

Quarantine orders for cases - Y/N					
Quarantine orders for contacts - Y/N					
Recommended self-isolation after travel - Y/N					
Recommended self-isolation for cases- Y/N					
Recommended self-isolation with symptoms - Y/N					
Recommended self-isolation for contacts - Y/N					
Work-from-home / remote work - Y/N					
Quarantine for "at risk" or "priority" neighborhoods - Y/N					

Lockdown - Y/N					
Other:					
Other:					
<b>Identification, containment and mitigation measures</b>					
International bans for non-essential travel - Y/N					<p>International Air Transport Authority  <a href="https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/">https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/</a></p> <p>European Union  <a href="https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en">https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en</a></p>

Closing public transportation - Y/N					
Screening at airports / borders - Y/N					<p>International Air Transport Authority  <a href="https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/">https://www.iata.org/en/programs/safety/health/diseases/government-measures-related-to-coronavirus/</a></p> <p>European Union  <a href="https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en">https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-and-transportation-during-coronavirus-pandemic_en</a></p>
Contact tracing - Y/N					
Assessment centres - Y/N					
Drive-through testing sites - Y/N					
Mass fever screening in public transportation - Y/N					



RECOMMENDED use of masks/PPE for public - Y/N					
REQUIRED use of masks/PPE for public - Y/N					
Public decontamination transit - Y/N					
Public decontamination streets - Y/N					
<b>Social and economic policies - support adherence to other policies</b>					
Economic relief policies for individuals / families - Y/N					
Housing economic relief (eviction freeze, rent/mortgage deferral)					
Economic relief policies for businesses - Y/N					

Anti-price gouging - Y/N					
Anti-hoarding - Y/N					
Audio/video telehealth					
Telehealth access to prescription medication					

**Epidemiology of COVID-19**

<b>Date</b>	<b>Category</b>	<b>Findings</b>	<b>Comments</b>	<b>Sources</b>
	Total number of cases			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	Total number of deaths			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	Total number tested			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	Total number recovered			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>

	Total number of cases in hospital			
	Total number in ICU			
	Total number on ventilators			
	Total in long term / nursing / retirement / older adult congregate living care			
	Total in prisons			<p>Correctional Services Canada  <a href="https://www.csc-scc.gc.ca/001/006/001006-1014-en.shtml">https://www.csc-scc.gc.ca/001/006/001006-1014-en.shtml</a></p> <p>US Bureau of Prisons  <a href="https://www.bop.gov/corona-virus/index.jsp">https://www.bop.gov/corona-virus/index.jsp</a></p> <p>European Prison  <a href="https://www.prison-insider.com/en/articles/europe-coronavirus-la-fievre-des-prisons">https://www.prison-insider.com/en/articles/europe-coronavirus-la-fievre-des-prisons</a></p>
	Nosocomial infections / number of outbreaks in hospitals			
	Number of cases linked to non-health occupational exposure (and description of occupation)			

	Number of cases linked to health occupational exposure (and description of occupation)			
	Number of cases / 1M			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	Number of deaths / 1M			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	Numbers tested / 1M			Worldometer <a href="https://www.worldometers.info/coronavirus/">https://www.worldometers.info/coronavirus/</a>
	% of cases testing positive			DOMO <a href="https://www.domo.com/covid19/testing-and-treatment#testing">https://www.domo.com/covid19/testing-and-treatment#testing</a>
	Total number of cases - male			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under “updates”
	Total number of cases - female			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under “updates”
	Total number of deaths - male			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under “updates”

	Total number of deaths - female			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under "updates"
	Total number of tested - male			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under "updates"
	Total number of tested - female			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under "updates"
	Case definition for testing and changes (with dates)			Link to sources of data used by Worldometer by clicking on the country name. The original sources is listed under "updates"
	Other:			
	Other:			

## Appendix 2: Interview Guide

### Semi-structured key informant interview guide (30-45 minutes)

Participant ID \_\_\_\_\_ Date \_\_\_\_\_  
Location \_\_\_\_\_ Researcher \_\_\_\_\_  
Start time \_\_\_\_\_ End time \_\_\_\_\_ Date of informed consent \_\_\_\_\_

Review and obtain informed consent - see informed consent form. Please note: (i) we are not part of any NGO or donor agencies; (ii) we will not offer you any kind of subsidy for interviewing you, (iii) we will keep your information anonymous, and will use only it for research, and (iv) you can stop me at any time. Are you agreed to be interviewed? (Yes) or (No). OK to record: Y / N

**-Thank you for agreeing to be part of this study. Have you had a chance to look over the interview questions that I sent you beforehand? I will first ask you some broad questions, and at the end, I will ask you some specific questions to help understand the context of this work. For this interview, “jurisdiction” means country or sub-national entity such as a province, state or territory. Do you have any questions before we start?-**

#### Semi-structured interview questions

##### **1) What is/was your role with regards to dealing with COVID-19?**

**Probes** – Were you involved in policy decisions to combat COVID-19?

Were you involved in developing or implementing policies?

Were you involved in public health actions, emergency management, or education decisions?

Were you involved in treating patients with COVID-19?

##### **2) From your perspective, can you describe the unfolding of COVID-19 in your jurisdiction?**

**Probes** – When was your first case discovered and how

Who was involved in decision making – government, public health

Who was the main spokesperson to the public?

How did things play out following the initial cases?

##### **3) From your perspective, what are the main sources of information used when making decisions about COVID-19 policy in your jurisdiction?**

**Probes:** President/Prime Minister, governor, mayor, international organizations, like the WHO?

National scientific and/or medical bodies? Look to the experience of other jurisdictions? Consider the public response to different actions? Were decisions led by experts or political figures? Physical distancing policies and their effects on the epidemiology of COVID-19: A multi-national comparative study

- 4) a) What was the overarching plan for the pandemic in your jurisdiction before WHO declared a Public Health Emergency of International Concern on January 30, 2020?  
b) From January 30 and March 10 before WHO declared a pandemic?  
c) After WHO declared a pandemic on March 10?  
d) Did the decision about the overarching plan change over time, and if so, what influenced the change?

Probes - Plan – containment, mitigation, herd immunity, other, no announced plan  
Who decided and what was their rationale for this decision?

- 5) Do you believe the plan (Covid-19 risk management policy measures such as lockdown, flight closure, quarantine, social distancing, disinfection, remote work, distance learning, etc) was successful? Why or why not? How do you measure success?

Probes - Numbers tested, number of cases, numbers hospitalized, numbers dead, numbers recovered, other

- 6) Which Covid-19 risk management policy measures worked well about this plan? What factors contributed to things that worked well about this plan?

Probes - Consistency in messaging, communication, early action, public engagement

- 7) Looking back, what would you suggest could have been done for better Covid-19 risk management in your country/jurisdiction, why and how?

Probes - Early testing, lockdown, flight bans, social distancing, better communication, different strategy

- 8) (Possibly review questions surrounding specific policies that were unclear from earlier research) Physical distancing policies and their effects on the epidemiology of COVID-19: A multi-national comparative study

- 9) Who else would be good to speak with to get a clear understanding of policies and epidemiology of COVID-19 in your jurisdiction? Can you provide contact information for this/these individual(s)? Or, are there documents which may be relevant to understanding events surrounding the pandemic which I could access?

Probes – Policymakers, researchers, healthcare professionals, public health officials, emergency managers and/or other stakeholders, surveillance data with breakdown of numbers nationally, by state and by municipality

- 10) Is there any other information you feel I have left out which you would like to tell me regarding the response to COVID-19 in your jurisdiction?

- Before ending this interview, I need to gather some personal data for contextual factors -

**Demographic information**

Age \_\_\_\_\_ Gender: F / M / Other \_\_\_\_\_ Country or subnational jurisdiction \_\_\_\_\_  
Current professional designation \_\_\_\_\_ Length of time at current position \_\_\_\_\_  
Other professional designation(s) \_\_\_\_\_

Thank you for your time. Is it ok to contact you again if I need any clarifications or have other questions? Thanks again! OK to contact for further interview: Y / N

Appendix 3: South Africa Case Report

**South Africa physical distancing policies and  
epidemiology from January 2020 - November 2021:  
A case report**

Policy Frameworks and Epidemiology of COVID-19  
Working Group

April 2022



**HEALTH SCIENCES**  
Health Research Methods,  
Evidence, and Impact



University of Colorado  
Boulder



# Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

**Report title** South Africa physical distancing policies and epidemiology from January 2020 – November 2021: A case report

**Publication date** April 2022

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## Conflicts of Interest

No conflicts of interest were reported.

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## Links to supplementary materials

[Study proposal](#)

[Informed consent](#)

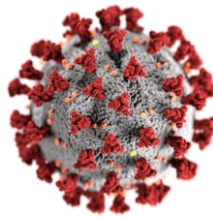
[Interview guide](#)

COVID-19 [Country characteristics database](#)

## I. Introduction and project description

### A new disease that spread around the world

On December 31, 2019, the World Health Organization (WHO) was notified of a cluster of individuals with pneumonia of unknown cause in Wuhan, China. (1) On January 12, 2020, China shared the genetic sequence of the novel coronavirus with other countries to help develop diagnostic tests. (1) Thailand reported the first known case of the novel coronavirus outside of China on January 13, 2020. WHO declared the novel coronavirus (2019-nCoV) outbreak a Public Health Emergency of International Concern on January 30, 2020 with 7,711 confirmed cases, 12,167 suspected cases, and 170 deaths in China and 83 cases in 18 countries outside of China. (1,2) The disease was later named COVID-19 for coronavirus disease 2019 and the virus referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). (1) WHO declared COVID-19 a pandemic on March 11, 2020. (1)



### Physical distancing policies and knowledge gaps

As an emerging infectious disease, there were originally no effective vaccines or preventive treatments for SARS-CoV-2. Therefore, governments have had to rely on the use of public policies to combat the spread of the virus. (1–4) Creating policies has been difficult due to the large amount of information and ongoing uncertainty around the characteristics of the virus and who it affects. (4) One of the most commonly used policies to mitigate (slow) the spread of the virus that causes COVID-19 centres on physical or social distancing, which relies on separating people to reduce the transmission of the virus. (5) However, it is still unclear when is the best time to institute such policies and what happens when distancing policies are eased in which contexts. There are many aspects of distancing, such as recommendations for maintaining a physical distance in public, banning group gatherings, or complete lockdowns, that complicate their assessment. (5) There are also many factors that have been attributed to people acquiring or having a worse outcome from COVID-19. (6–11) However, there was no harmonized database available with all the policies, epidemiology and contextual information that was needed in order to perform comparative analyses useful to informing policy making.

## Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

### About this project

The Policy Frameworks and Epidemiology of COVID-19 Working Group was developed after a “CONVERGE Virtual Forum: COVID-19 Working Groups for Public Health and Social Sciences Research.” A group of international researchers convened to explore what physical distancing policies countries implemented and their effects on the epidemiology of COVID-19. The Working Group was further supported through an award from CONVERGE and the Social Science Extreme Events Research (SSEER) Network. CONVERGE is a [National Science Foundation](#)-funded initiative headquartered at the [Natural Hazards Center](#) at the [University of Colorado Boulder](#).

This project is registered in:



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Elizabeth Alvarez, Stephanie E. Hopkins, Ellen Amster, Lisa Schwartz, Katharine Boothe, Mark Loeb, Emma Apatu, Ahmed Belal, Donna Goldstein, Jean Slick, Edris Alam, Neil Abernethy. (2020).



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# Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

In collaboration with:



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**South Carolina**



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## Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

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## II. Methods

### Research design

A qualitative embedded multiple case study research design was used to compare countries (or subnational jurisdictions, such as provinces, states or territories). The suite of public policies and resulting changes in the epidemiology of COVID-19 are examined within their specific country setting. Our cases start in January 2020. (Please see full [study proposal](#)). Research ethics approval was obtained by the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243).

### Data collection

For each country, the setting, such as health systems, political systems and demographics were described to help with interpretation of findings and potential transferability, or the degree to which findings are applicable to other sites or future research.

Publicly available data were first collected on the jurisdiction following a standardized data collection form. Epidemiological data were drawn from publicly available data. WHO, World Bank, Central Intelligence Agency and other publicly available sources were used for timelines and country characteristics, where possible. Other sources of information included governmental and non-governmental websites, news articles, government reports, and peer-reviewed journals.

Next, key informant interviews were conducted to fill in gaps, verify information found through the documentary searches, and identify further participants and documentary sources of relevant information. (See [informed consent](#) and [interview guide](#)) Key informant interviews were conducted with policymakers, health workers, researchers and other stakeholders as appropriate to fill in knowledge gaps.

### Data analysis and presentation

Our [COVID-19 policies](#) and epidemiology databases harmonize data on setting characteristics, policies, demographic characteristics and epidemiological risk factors and outcome metrics. These will further be described in single country or jurisdiction case reports. Comparisons will be selected based on both literal and theoretical replication. Countries that have similarities in either policies or epidemiological trends can be considered literal comparisons, whereas countries that differ will be used as theoretical comparisons. These comparisons will be submitted to peer-reviewed journals for publication.

### III. Findings

#### Setting characteristics

##### Geographic, environmental, social, and economic contextual factors

South Africa is a country in the WHO African Region. (12) South Africa has a population of 59,308,690 (2020), a land area of 1,213,090 km<sup>2</sup> and a population density of 48.9 people per km<sup>2</sup>. (13–15) The population is distributed mainly on the southern and southeastern coasts, and around Pretoria, one of South Africa’s three capital cities. (16) As of 2020, 67.4 % of South Africa’s population lived in urban areas. (17) 25.6% of South Africa’s urban population lived in informal settlements as of 2018. (18)

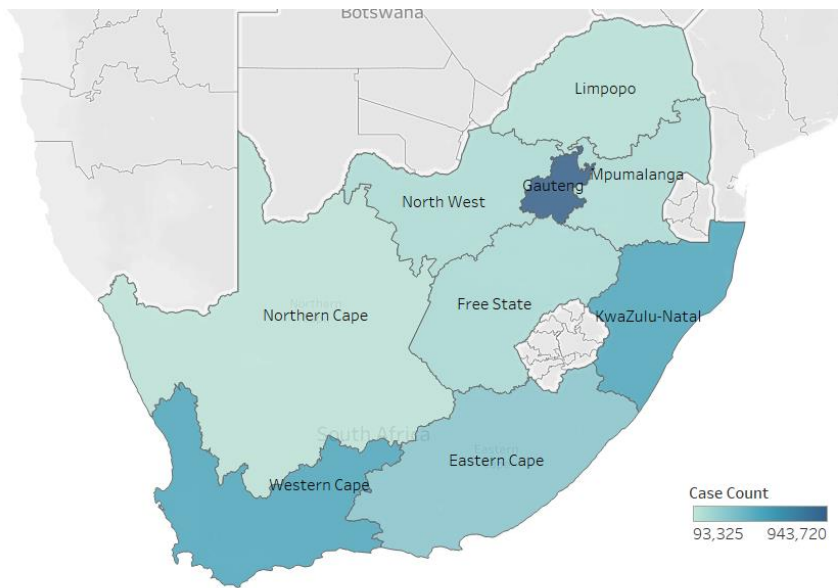


Figure 1. Heat map of total COVID-19 cases in South Africa on November 29, 2021 (19)

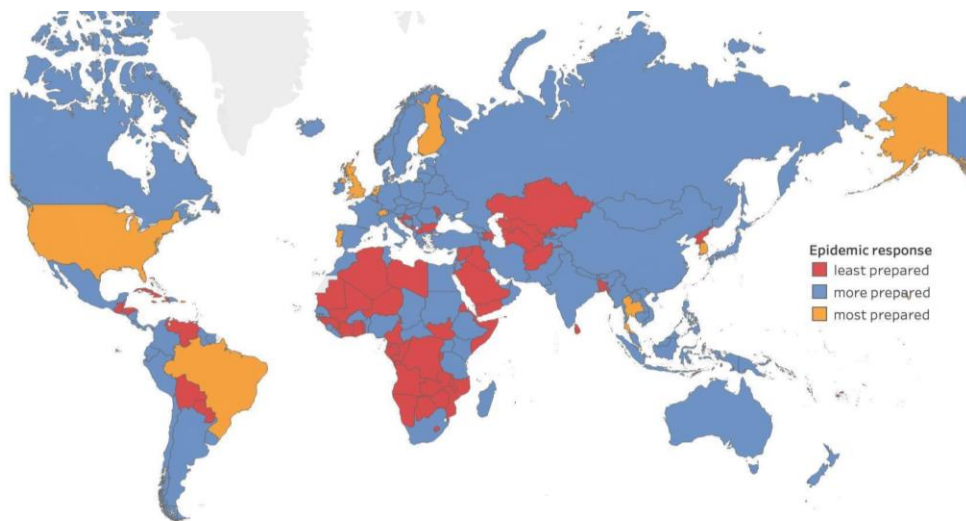


Figure 2. Global Health Security Index Epidemic Preparedness Rank Category (20)



## Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

**Table 1. COVID-19 relevant contextual factors for South Africa**

Global Health Security Index, 2019 (Overall Index Score out of 100 and category) (20)	54.8 - More prepared
Global Health Security Index, 2019 (Epidemic Preparedness Index Score out of 100 and category) (20)	71.5 - Most prepared
Particulate matter (PM2.5) air pollution, mean annual exposure, 2017 (micrograms per cubic meter) (21)	25.10
PM2.5 air pollution, population exposed to levels exceeding WHO guideline value, 2017 (% of total) (22)	100
International migrant stock, 2015 (% of population) (23)	5.77
Trust in national government, 2018 (% of population) (24)	42.21
Mobile cellular subscriptions, 2020 (per 100 people) (25)	161.797
Individuals using the internet, 2019 (% of population) (26)	68.2
Index of economic freedom, 2021 (Score and category) (27)	59.7- Mostly Unfree
World Bank classification, 2020 (28)	Upper Middle
Gini Index, 2014 (29)	63
GDP per capita, PPP, 2020 (Current international \$) (30)	13,355.6
GNI per capita, PPP, 2020 (Current international \$) (31)	13,130
Current health expenditure, 2019 (%) (32)	9.11
Vulnerable employment, total, 2020 (% of total employment) (33)	10.27
Vulnerable employment, female, 2020 (% of female employment) (33)	10.23
Vulnerable employment, male, 2020 (% of male employment) (33)	10.31
Homelessness (%) (34)	--
Adult literacy rate, 2019 (%) (35)	95.02
Literacy rate, adult female, 2019 (% of females 15 and above) (36)	94.53
Literacy rate, adult male, 2019 (% of males 15 and above) (37)	95.55
Primary school enrolment, 2017 (% net) (38)	87.01

**GDP** - gross domestic product; **GNI** - gross national income; **PPP** - purchasing power parity

## Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

### Population health characteristics

Life expectancy at birth in South Africa was reported to be 64.13 years in 2019. (39) For males, life expectancy at birth was 60.73 years, and for females it was 67.68 years in 2019. (40,41) Non-communicable diseases are believed to play a role in who develops severe symptoms of COVID-19. In South Africa, the proportional mortality from cardiovascular diseases was 19%, cancers 10%, chronic respiratory diseases 4%, and diabetes 7% in 2016. (42) (See Figure 3.) The probability of dying between ages 30-70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease was 26.2% for all adults, and 32.3% and 21.2% for males and females, respectively. (43)

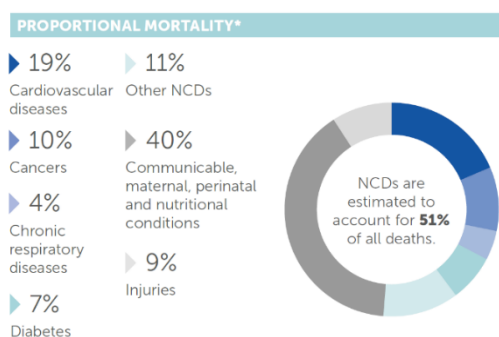


Figure 3. Proportional mortality from non-communicable diseases (NCDs)- South Africa, 2016 (42)

Table 2. Age and health characteristics for South Africa

	Male	Female	Total
Population ages 0-14, total, 2020 (% of total population) (44–47)	8,636,966 (14.56)	8,444,602 (14.24)	17,081,570 (28.80)
Population ages 15-64, total, 2020 (% of total population) (48–51)	19,293,233 (32.53)	19,666,314 (33.16)	38,959,544 (65.69)
Population ages 65 and above, total, 2020 (% of total population) (52–55)	1,285,813 (2.17)	1,981,762 (3.34)	3,267,576 (5.51)
Current tobacco use prevalence, total, 2018 (%) (56)	46.8	16	31.4
Raised blood pressure (Systolic blood pressure $\geq 140$ or Diastolic Blood Pressure $\geq 90$ ), ages 18+, 2015 (%) (57)	23.6	24.4	24
Raised fasting blood glucose ( $>7.0$ mmol/L or on medication), ages 18+, 2014 (%) (58)	7.7	11.8	9.8
Prevalence of obesity among adults (Body Mass Index $\geq 30$ ), 2016 (%) (59)	14.5	38.5	27
Prevalence of Human Immunodeficiency Virus (HIV), 2020 (% of population ages 15-49) (60)			19.1
Bacillus Calmette-Guérin (BCG) Immunization coverage estimates, 2020 (%) (61)			86
Prevalence of undernourishment, 2019 (% of population) (62)			6.5

## Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

### Governance and health systems

South Africa is a constitutional democracy with three levels of government (national, provincial, and local). (63) The executive authority includes the cabinet, which includes the President, Deputy President, and Ministers. At the national level, the legislative authority consists of parliament, which is comprised of the National Assembly, who are officials elected through proportional representation, and the National Council of Provinces, which includes members from each province who are responsible for representing provincial interests in national policy development. (64) The African National Congress (ANC) is South Africa's current governing party and is led by President Cyril Ramaphosa, who has been in power since February 2018. (16)

The National Health Act (NHA) 2003 dictates the responsibility for health at each level of government, taking into account the Constitution and other laws regarding health services. (65) The National Department of Health serves as the primary health authority in the country. South Africa's health system relies on a mix of private and public healthcare, with the majority of the population relying on public health insurance. The public health system consists of primary healthcare facilities, district level hospitals where patients may be referred from primary care to undergo additional testing or minor procedures, and tertiary hospitals, where patients requiring major surgeries or specialized care may go. (66) The government-funded healthcare system provides services to 71% of the population. (67) The private system is funded by individuals using private health insurance or paying out of pocket and serves 27% of the population. South Africa is presently in the process of implementing National Health Insurance in an attempt to establish universal health coverage. (68)

**Table 3. Political and health system indicators for South Africa**

Fragile States Index score, 2021 (maximum 120, higher is worse) (69)	70.00
Fragile States Index rank, 2021 (out of 179 countries, higher is better) (69)	89
Global Freedom score and status, 2021 (70)	79 – Free
Internet Freedom score and status, 2021 (71)	73 – Free
World press freedom index, 2021, global score (0-100, lower is better) and rank (out of 180 countries, lower is better) (72)	21.59 – 32
Physician density, 2019 (physician/1,000 pop) (73)	0.8
Hospital bed density, 2020 (beds/1,000 pop) (74)	--

# Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

## Pandemic experience and preparedness

South Africa's past infectious disease experience has included HIV and tuberculosis (TB). South Africa was especially hard hit by the HIV/AIDS epidemic, which was a legacy of former President Thabo Mbeki, who famously denied that AIDS had a viral cause. (75) In the late 1990s and early 2000's Mbeki rejected offers of grants and medications to put towards HIV treatment, and his government was opposed to treatment programs. HIV prevalence in South Africa remains high at 19.1%. (60) Tuberculosis is also highly prevalent in South Africa, and people living with HIV are especially at risk for contracting TB. (76) South Africa has a National Strategic Plan on HIV, TB and sexually transmitted infections (STIs) 2017 – 2022. (77)

Public laboratory services in South Africa are provided through the National Health Laboratory Service (NHLS), which supports the national and provincial health departments. (78) The NHLS has laboratories in all nine provinces across South Africa and provides testing services for public healthcare providers. A private lab system also exists. Testing capacity in private vs public labs have been discrepant throughout the COVID-19 pandemic. (79) Testing capacity was strengthened during the COVID-19 pandemic, with the addition of mobile lab units that could provide PCR testing. Initial testing capacity of 5000 COVID-19 tests daily was expected to increase by 6-fold with the addition of mobile testing units. (80)

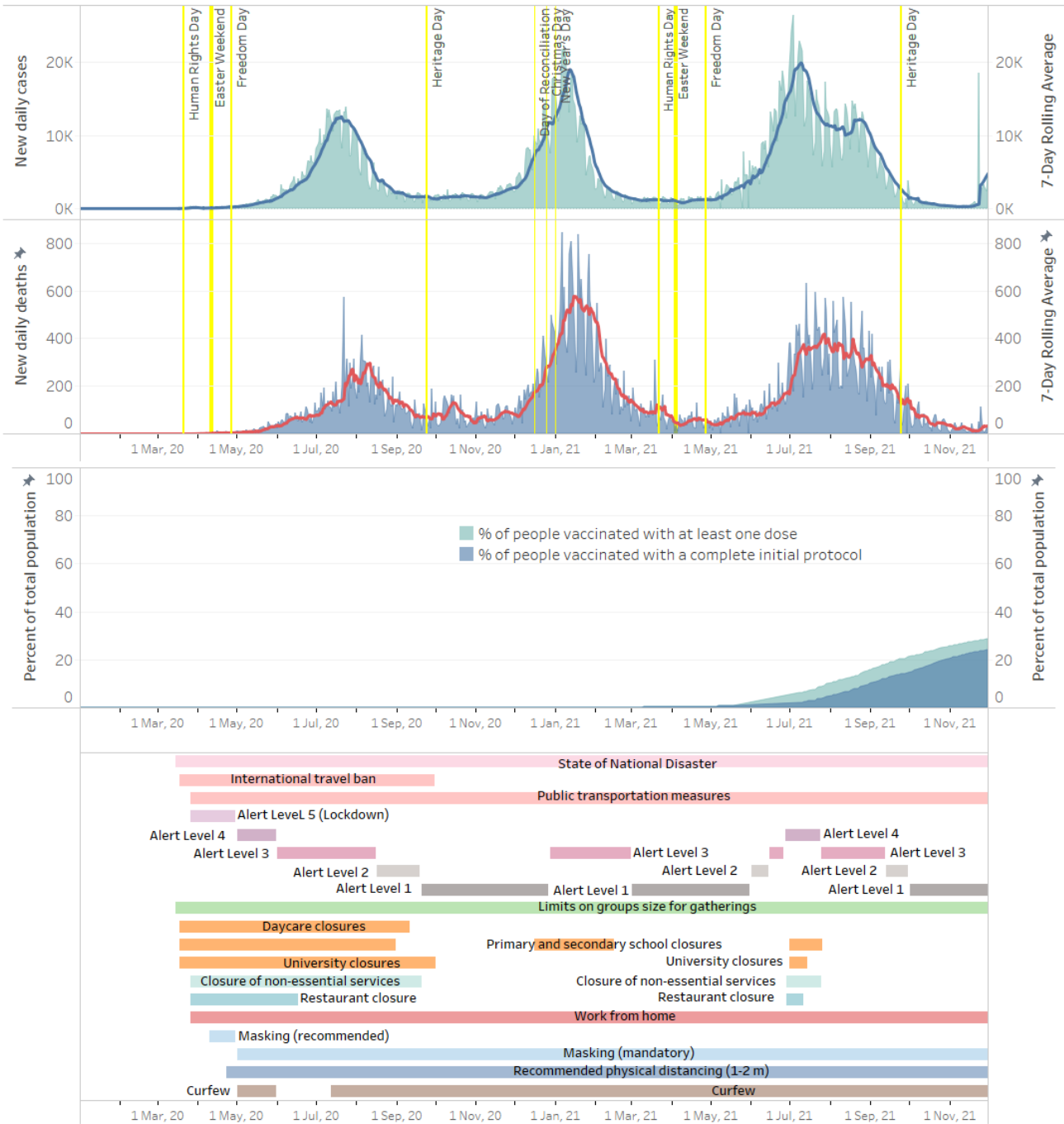
## B. Policies and epidemiology

### Cases and social distancing policies

South Africa's first case of COVID-19 was recorded on March 5, 2020. A State of Emergency was declared on March 15, 2020. As of November 29, 2021, there were 2,963,679 cases and 89,843 deaths in South Africa. (19,81) Figure 4 shows the number of daily cases and deaths in South Africa, number of people vaccinated, and dates for selected public health policies implemented from January 2020 to November 2021.

# Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

South Africa COVID-19 cases, deaths, vaccinations and physical distancing policies



\*People vaccinated with a complete initial protocol means they received all initially prescribed doses for the vaccine brand they received

**Figure 4. Number of reported COVID-19 cases, deaths, and vaccinations in South Africa with select policies from January 2020 to November 2021**

# Policy Frameworks and Epidemiology of COVID-19 – South Africa Case Report

## Description of events in South Africa

President Ramaphosa and the Minister of Health were the primary spokespeople for the COVID-19 response in South Africa. President Ramaphosa addressed the nation and provided updates on COVID-19 policy measures periodically through regular media briefings. The Minister of Health was Zweli Mkhize for much of the pandemic, until June 2021, when he was put on leave due to corruption allegations. (82) The Minister of Tourism Mamamoloko Kubayi-Ngubane was named Acting Minister of Health, until his ultimate replacement by Dr. Joe Phaala on August 5, 2021. (82–84)

The National Coronavirus Command Council (NCCC), led by President Ramaphosa, mobilized cabinet ministers to make COVID-19 policy decisions. These decisions were informed by the Ministerial Advisory Committee (MAC) on COVID-19, formed by Minister of Health Mkhize, comprising of scientists, clinicians, epidemiologists, and public health professionals that advise the government on appropriate COVID-19 mitigation policies. (85) A key-informant confirmed that the MAC on COVID-19 prepared detailed advisories using local epidemiological evidence and responses from other jurisdictions to develop recommendations for the South African government on their COVID-19 response.

## Wave 1

South Africa initially developed a plan consisting of 8 overlapping stages to deal with COVID-19. (86) Stage 1 focused on preparation for COVID-19, including increasing testing capacity. Stage 2 involved the declaration of a State of National disaster and several other policy measures including school closures, gathering limits, an international travel ban, and social distancing and proper hand washing. Stage 3 was the national lockdown. Stage 4 involved increasing COVID-19 screening, including deployment of community health workers into high-risk communities to screen for symptoms and refer people for testing. Stage 5 focused on identifying COVID-19 hot spots and implementing mitigation measures to manage local outbreaks. Stage 6 focused on providing medical treatment. Stage 7 involved preparing for COVID-19 deaths and burials and the associated mental health burden. Stage 8 focused on continuing to identify COVID-19 cases and conducting serosurveys to study population immunity in case of later waves.

South Africa used a mitigation approach to their pandemic response, as evidenced by their stated goal of “flattening the curve”. A key-informant confirmed that South Africa aimed to minimize the number of cases, slow COVID-19 transmission, and mitigate the impact of the pandemic, as opposed to aspiring to zero community transmission.

South Africa’s first COVID-19 case was confirmed on March 5, 2020. (87) The patient was a 38-year-old man who had returned to South Africa from Italy with his wife. He presented with a fever, headache, sore throat, and cough to a private clinic on March 3, 2020 and was instructed to isolate.

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By March 15, 2020, South Africa had 61 confirmed cases of COVID-19. (88) This increase prompted the South African cabinet to declare a National State of Disaster in accordance with the Disaster Management Act, which went into effect on March 15, 2020. The Disaster Management Act 2002 is the primary legislation dictating the responsibilities of various ministries in South Africa's COVID-19 response. Declaring a National State of Disaster gave the government legal authority to enact public health measures to mitigate COVID-19 transmission and was extended periodically throughout the pandemic. It was still in effect as of November 2021.

President Ramaphosa announced several public health measures, focusing primarily on travel. (88) Effective March 15, 2020 South Africans were advised against travelling to high-risk countries including Italy, Iran, South Korea, Spain, Germany, USA, UK and China. Testing and self-isolation were required for South African citizens returning from high-risk countries, including those who had returned since mid-February. Travellers returning from medium-risk countries such as Portugal, Hong Kong, and Singapore were to be screened for symptoms. A travel ban on foreign nationals from high-risk countries took effect on March 18, 2020. South Africa also restricted entry into the country by closing 35 of 53 land ports and two out of 8 seaports. To prevent transmission among South Africans, the government also prohibited gatherings of more than 100 individuals as of March 15, 2020 and announced that school closures would take place from March 18 to April 15, 2020, following the end of the Easter weekend. (89) The Minister of Social Development, Lindiwe Zulu, announced that early childhood development centers would also be closed on March 18, 2020. (90)

As of March 18, 2020, South Africa had experienced their 100<sup>th</sup> case of COVID-19. On March 23, 2020, President Ramaphosa announced escalated measures to combat COVID-19, in response to a six-fold increase in cases since his previous address one week earlier. (91) With cases rising from 61 to 402 in 8 days, President Ramaphosa announced a 21-day lockdown from March 26, 2020 until April 16, 2020. During this lockdown period, all South Africans were required to stay at home except for essential reasons including seeking medical care, buying medicines or other supplies, or collecting government social assistance. Remote work was encouraged where possible. Essential workers were exempted from the lockdown, and included health workers, emergency personnel, security services (police, traffic officers, soldiers), banking services, utility services (electricity, water, telecommunications), and lab services. Stores and businesses were closed except for those essential to food production and transportation, supermarkets, pharmacies, financial services, and gas stations. The government published complete lists of essential workers and businesses who were allowed to continue operating during lockdown.

During lockdown, telehealth consultations were permitted. The Health Professions Council of South Africa (HPCSA), the governing body for health professions, set regulations restricting telehealth delivery in 2014, which were amended during the lockdown. Initially, when lockdown was announced, the HPCSA permitted telehealth consultations provided that health care providers had an existing relationship with the patient seeking care. (92) This policy was amended on April 4, 2020 so that patients could seek virtual care from a provider without having an existing relationship, at the urging of the South Africa Medical Association.

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Travel-related policies were also made stricter during lockdown. (91) International travellers who entered South Africa after March 9, 2020 from high-risk countries were required to undergo a 14-day quarantine from their hotels. Beginning March 23, 2020 South African citizens and residents returning from high-risk countries were automatically required to quarantine for 14 days.

The lockdown included restrictions on public transportation, which were explained by the Minister of Transportation Fikile Mbalula, and went into effect March 26, 2020. (93) Public and private rail operations were suspended, including for commuters, and international and domestic flights were prohibited. Cruises were no longer allowed at South African sea ports. Only essential cargo was allowed into South Africa via air or seaports. Cross-border road transport from neighbouring countries were no longer permitted. (93) Minibus taxis, metered taxis, e-hailing services, and buses were allowed to operate only during the hours of 5-9am and 4-8pm to transport essential workers and had capacity limits based on their licensed maximums. Buses and mini-bus taxis were allowed to have up to 70% of their licensed capacity, while metered taxis and e-hailing services were allowed up to 50% of their licensed maximum.

Lockdown measures were enforced by the South African Police Service, with the support of the South African National Defence Force. Enforcement measures included implementation of foot patrols, roadblocks, and vehicle checkpoints, to coincide with the beginning of the lockdown period. (94) Roadblocks were instituted within communities and residential areas, and on provincial and national roads to minimize movement of individuals. The police were also responsible for enforcing the bans on gatherings, alcohol sales, and movement introduced during the lockdown period. Funerals were the only gathering permitted during lockdown, and police were also involved in enforcing the limit of 50 people. Although funerals were permitted, night vigils were not. The consequences for non-compliance with lockdown regulations could be a potential fine, imprisonment for up to 6 months, or both. Police involvement in South Africa during lockdown was controversial and incited protests among South Africans because of police brutality directed particularly towards poor neighbourhoods with predominantly black populations. (95)

Alongside the lockdown, President Ramaphosa announced that South Africa would increase its capacity to screen, test, contact trace, and treat COVID-19 patients in an effort to ramp up their public health management program. (91) Community health teams would be deployed to screen and test where people live, prioritizing high-risk, population-dense areas. To support the hospital system and prevent it from being overwhelmed, a system was introduced whereby “centralised patient management” would occur for severe cases and “decentralized primary care” would be used for mild cases. President Ramaphosa later elaborated on the details of this program. (96) 10,000 field workers were expected to be deployed to communities to screen for COVID-19 symptoms. Symptomatic individuals would be tested at local or mobile clinics. Individuals infected with COVID-19 who were asymptomatic or had moderate symptoms would then isolate at home or at a designated government facility, while individuals with severe



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symptoms would be hospitalized. A system for contact tracing using mobile technology was introduced to monitor contacts of confirmed cases for the emergence of new cases. (96)

By April 9, 2020 South Africa had 1,934 confirmed cases; however, the average increase in cases dropped to 4% during the lockdown period from 42% in the weeks prior to the lockdown. (97) Given early indications that the public health measures were working as intended, President Ramaphosa announced an extension of lockdown measures by an additional two weeks to the end of April, citing concerns that lifting measures too soon would lead to uncontrollable transmission. School closures were included in the extension of the lockdown. (98)

In his media statement on April 10, 2020, Health Minister Mkhize recommended that individuals wear cloth face masks to provide additional protection against COVID-19 infection, in combination with previously announced recommendations for proper handwashing and social distancing. He emphasized that the public should use cloth face masks to preserve surgical and N95 masks. (99)

An eviction ban was added to lockdown regulations on April 16, 2020 to prevent individuals from becoming homeless and being unable to comply with the lockdown. Evictions were no longer allowed to take place for the duration of the State of National Disaster unless approved by court order. (100,101)

With the lockdown approaching its end, President Ramaphosa announced the COVID-19 [risk-adjusted framework](#). (102) The framework consisted of 5 alert levels corresponding to public health measures that would be implemented based on local COVID-19 transmission. The framework provided an extensive list stipulating which businesses, organizations, services, and social gatherings would be allowed to operate at each level. It also covered additional public health measures to be followed by individuals such as masking and physical distancing. In the risk-adjusted framework, physical distancing of 2m was required for individuals in public spaces. However, distancing measures communicated to the public were at times discrepant, varying from 1, 1.5, or 2m. (102–104)

The risk-adjusted framework was used throughout the entirety of the pandemic, with some amendments to each alert level made based on the circumstances at the time. The National Coronavirus Command Council determined which Alert Level would take effect based on the number of cases and health system capacity. Alert Level 5 was considered a full national lockdown, indicating high COVID-19 transmission and low health system readiness. (105) Lower alert levels indicated progressively lower COVID-19 transmission with higher health system readiness, and a corresponding relaxation of public health measures. A key-informant confirmed that decisions around which alert level was in effect were not based on specific thresholds. If cases were rising and the hospital system could accommodate the increase, limited public health measures would be implemented and a lower alert level would be maintained. If cases were rising and hospitals were becoming strained as a response, stricter public health measures would be instituted, and a higher alert level would take effect. When

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setting Alert Levels, the economic and social impact of continued measures were also taken into consideration. (85)

For post-secondary schools, the alert levels defined the degree of reopening which could take place. (106) Under Alert Level 5, schools would remain closed for in-person learning. Under Level 4, final year clinical students would be allowed to return beginning with medical students and then staggering the return of students in other programs (nursing, dentistry, veterinary medicine etc.). At Level 3, a maximum of 33% of the student population would be allowed to return to campus, including the students permitted under Level 4. At Level 2, a maximum of 66% of students would be allowed to return. Finally at Level 1, all students could return. However, university closures did not appear to follow this schedule in reality.

The public reaction to COVID-19 measures in South African was mixed. An early poll conducted in South African urban centres from April 2 and April 6, 2020 demonstrated that 83% of South Africans were satisfied with the government's response to COVID-19. (107) The poll demonstrated that South Africans supported public health measures such as requiring people with COVID-19 to remain at home until they recovered, requiring close contacts of COVID-19 cases to self-isolate, restricting public gatherings, and other measures such as closing various public places such as restaurants, nightclubs, places of worship, and markets. A later poll conducted from April 20 to April 22, 2020 suggested that 84% of South Africans supported the lockdown, believing that it was the appropriate choice given the risk posed by pandemic. (108) Despite general support for the government's public health response in South Africa, people with lower household income tended to be less satisfied with the government response and less likely to trust the information provided by the government. (107) The lockdown measures prompted protests as a result of income loss and unequal provision of government aid. (109)

A move to Alert Level 4 took effect on May 1, 2020. (102) During Alert Level 4, borders remained closed for international travel, except for returning South African nationals. Interprovincial travel also remained prohibited, except for movement of cargo or for extenuating circumstances such as funerals. People began returning to work and public transportation measures were eased to support commuters. (110) Some commuter trains were allowed to resume operations; however long-distance rail operations remained banned. Road-based modes of public transportation were allowed to operate over longer hours from 5am – 7pm, while maintaining capacity limits set during the lockdown.

Under Alert Level 4, the public was advised to remain at home except to access or provide essential services, or to work in sectors being reopened. (102) Individuals who were elderly or with other health conditions were especially encouraged to remain home. Gatherings except for funerals or for work purposes remained prohibited. Several venues, including bars, conference and convention centres, cinemas, theatres, and concerts, remained closed. Curfew took place from 8pm-5am each day. (111) Importantly, mask-wearing became mandatory under Alert Level 4 regulations.

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By May 24, 2020, following the easing of public health measures from a Level 5 to a Level 4 Alert Level, cumulative confirmed cases rose to 22,583. (85) Despite rising cases and an expectation that this trend would continue, President Ramaphosa announced that South Africa would move to Alert Level 3, effective June 1, 2020. To prepare for increased infections associated with the removal of public health measures, field hospitals were built, and hospital beds were reallocated to deal with COVID-19 cases.

Under Alert Level 3, South Africans were still asked to stay at home if they did not need to go to work or school or for essential reasons such as purchasing needed items or seeking medical care. (85) The curfew announced under Alert Level 4 was lifted. Gatherings were still prohibited except for funerals (to a maximum of 50 people) or work-related meetings taking place in the workplace. Public facilities used for cultural, sporting, entertainment, or recreation activities remained closed. High-risk settings remained closed including restaurants and bars, except for delivery or take-out. Accommodations such as hotels and personal care services such as hairdressing remained suspended. Religious gatherings were allowed to occur as of June 1, provided that 1.5m physical distancing and masking could be maintained, and no more than 50 people were in attendance. (103) Domestic flights were allowed for business-related travel. (112) Capacity limits for road-based public transportation remained in place; however, drivers no longer had to abide by limited hours of operation. Long distance trips by road-based public transit were allowed, while long distance trains were still prohibited. (112)

On June 17, 2020 President Ramaphosa further eased certain restrictions, while maintaining the Alert Level 3 classification across the country. (113) Restaurants were allowed to reopen for dining-in. Licensed accommodations such as hotels were allowed to reopen. Cinemas and theatres were allowed to reopen in accordance with limits on gatherings. Personal care services and non-contact sports such as golf, tennis, and cricket were allowed to resume.

With the announcement of a move to Alert Level 3, several areas were designated as COVID-19 hotspots, defined as areas exceeding 5 active cases per 100,000 or where cases were rising quickly. (85,114) Despite identification of hot spots, public health measures continued to be lifted; however, President Ramaphosa made it clear that any area of the country could be moved back to stricter Alert Levels as necessary. (85)

Schools were allowed to resume classes for grade 7 and grade 12 students on June 8, 2020. On June 24, 2020, Minister of Basic Education Angie Mosthekga announced that a phased return to schooling for additional students would begin on July 6, 2020. (115) This original plan included students in pre-grade R, grades R, 1, 2, 3, 6, 10, 11, and schools for learners with severe intellectual disabilities, severe and profound intellectual disabilities, and autistic learners. However, on July 6, 2020 only students in grades R, 6, and 11 returned to school. (116) Minister Mosthekga announced that the return of additional students would be phased in throughout the rest of July.

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On July 12, 2020, President Ramaphosa reported that health facilities were strained, and that people were being turned away from required care due to a lack of hospital beds and essential supplies. To increase hospital capacity, Rampahosa informed the public that the healthcare system was delaying non-urgent care; however, different provinces and private systems decided at different times when to institute this policy. (104,117) Despite increasing COVID-19 cases, South Africa remained at an Alert Level 3, believing that a return to a Level 4 or 5 would not significantly reduce transmission and fearing that the economic ramifications of returning to stricter public health measures would cause long-term harm.

In response to rising cases, the government made masking regulations stronger, opting to hold building owners, employers, and public transport operators legally responsible for ensuring that everyone wear a mask on their premises or when on board their vehicles. (118) The penalty for not taking appropriate measures to ensure masking was a potential fine, imprisonment for up to 6 months, or both. Several measures were also reintroduced to prevent trauma cases that would further strain healthcare resources. These policies included reinstating curfew from 9pm-4am, when trauma incidents tended to occur most frequently, and banning of alcohol sale and transport. Under level 3, the government clarified that social gatherings remained prohibited except for funerals. A ban on interprovincial travel was also reintroduced to prevent cases from spreading across the country from hotspot areas. Soon afterwards, schools were closed again for all students from July 27, 2020 until August 24, 2020, with the exception of Grade 12 students who returned on August 3, 2020 and Grade 7 students, who returned to school on August 10, 2020. (119) All grades were expected to return by August 31, 2020. (120)

While Alert Level 3 was still in effect, public transportation measures were further adjusted on July 16, 2020. (121) For local trips under 200 km, buses, taxis, and e-hailing services were allowed to have up to 100% of their licensed capacity, provided that they followed health protocols such as mandatory masking, opening windows and sanitizing vehicles. Commuter rail and long-distance travel by buses still had a 70% capacity limit, while long-distance travel by rail remained prohibited.

Although restaurants were allowed to reopen for sit-down dining under Alert Level 3, restaurant and hospitality workers were displeased over current public health measures and sought further relaxation of the regulations. (122) They protested in front of parliament because of reduced revenues during the lockdown and ongoing measures such as curfew and alcohol bans that influenced their operations.

Early childhood development (ECD) centers remained closed throughout lockdown and were still closed during Alert Level 3. (123) Beginning in July 2020, the Minister of Social Development began to make plans for reopening and invited submissions of online self-assessments from ECD centers to assess readiness to reopen. (124) As of September 11, 2020, early childhood development centres were allowed to reopen subject to appropriate health and safety measures put into effect and approval from the Ministry. (125)

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Believing that South Africa has passed the peak of COVID-19 infections, President Ramaphosa announced that the country would move to Alert Level 2 as of August 17, 2020. (126) The move to Level 2 meant lifting public health measures across most economic activities. Interprovincial travel was allowed to resume, accommodation/hospitality venues and tours were permitted to operate as long as physical distancing protocols were followed. Bars and taverns could reopen subject to restrictions on hours of operation and capacity limits. Sale of alcohol was permitted for licensed establishments. Family and social gatherings were permitted, despite the government recommending that such visits only occur if necessary. Many other recreational settings were allowed to resume activities including gyms, beaches, theatres, and cinemas, among others. Other public health measures continued to apply— physical distancing and masking were still required, gatherings including funerals and religious events were still not allowed to have more than 50 people, and curfew from 10pm -4am was still in effect. South Africans were still encouraged to stay home and work from home if possible. Under Alert Level 2, changes were made to transportation rules that went into effect on August 25, 2020. (127) Interprovincial travel was now fully permitted. Rail operations for long distance trips were permitted with a 70% capacity limit. International travel restrictions remained in effect.

A public opinion poll conducted in August 2020 highlighted self-reported adherence to public health measures among South Africans. (128) 97% of South Africans reported wearing a face mask when near others, 90% reported avoiding public gatherings or entertainment venues, and 86% reported staying home instead of going to work, school or other routine activities. In August 2020, the Minister of Police released crime statistics for April 1 to June 30, 2020, which covered the times where lockdown, Alert Level 4, and the beginning part of Alert Level 3 measures were in effect. (129) A total of 298,252 arrests were made during this time for non-compliance with Disaster Management Act regulations, while 28,337 of those arrested were convicted of offences relating to alcohol, gathering, and transportation among others.

With COVID-19 cases being low and the health system having the capacity to manage, South Africa moved to Alert Level 1 on September 20, 2020. (130) Under Alert Level 1, curfew was amended to 12am – 4am daily and public health measures pertaining to social and religious gatherings, and international travel were eased. (131) Gathering at conferences, concerts, cinemas, theatres, weddings, and political gatherings, among others, were permitted provided that venues allow no more than 50% of their capacity, up to a maximum of 250 indoors or 500 people outdoors. Gatherings at other facilities such as gyms, casinos, or accommodation facilities (hotels, lodges etc.) were permitted to have 50% of venue capacity, provided that physical distancing was possible. Night clubs remained the only business prohibited from operating. Masking and physical distancing of 1.5m were still required at all gatherings. Funerals were an exception to easing gathering limits, and still only allowed to have a maximum of 100 people.

International travel restrictions were also eased to enable people to travel in or out of South Africa for business, leisure, or other reasons effective October 1, 2020. (132) 18 land borders, 3

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international airports, and all commercial seaports resumed operation. International travel from high-risk countries was still prohibited except for business reasons subject to approval from the Department of Home Affairs. International travellers were required to present a negative PCR test taken within 72 hours of leaving their country of origin, signed by a certified medical practitioner to be allowed entry into South Africa. Travellers were required to undergo mandatory symptom screenings on arrival and were asked about recent contact with COVID-19 cases. On November 11, 2020, President Ramaphosa further amended the Level 1 restrictions and announced that international travel would be opening up to all countries provided that health protocols were followed, and travellers could present a negative COVID-19 test. (133)

As of October 1, 2020, certain public transportation measures remained in effect. Interprovincial travel was still allowed. For long-distance travel, road and rail transportation had capacity limits of 70%, while local trips were allowed to carry 100% of their licensed limit. (134) These public transportation capacity limits remained in effect past November 30, 2021. (135–143)

Universities fully reopened for all in-person activities October 1, 2020. (144) All students, including international students, were allowed to return, although students were allowed to continue to work remotely from home.

### Wave 2 – Beta Variant

In early December 2020, South Africa experienced a resurgence of COVID-19 cases and hospitalizations and was at risk for a second wave. (145) Alert Level 1 measures were in effect across the country, except for Nelson Mandela Bay Metropolitan Municipality, which was deemed a COVID-19 hotspot, and faced additional measures taking effect at midnight December 3, 2020. These measures included a curfew from 10pm – 4am, restricted hours for alcohol sale, prohibited alcohol consumption in public spaces, and restricting gathering limits to 100 people indoors or 250 outdoors, with no more than 50% of venue capacity. On December 9, 2020, Minister Mkhize confirmed that South Africa was in its second wave of COVID-19. (146)

By December 14, 2020, President Ramaphosa indicated that cases had almost doubled from 4,400 new cases to 8,000 new cases since his last address. Daily average deaths had also increased from 100 deaths per day to 150 deaths—an increase of close to 50%. Two additional areas—Sarah Baartman District and Garden Route District—were declared hotspots and were required to follow the additional public health measures faced by Nelson Mandela Bay area. (147) The country remained at Alert Level 1 with stricter enforcement of the mitigation policies including masking, and additional measures being added to prevent superspreading events. Gathering limits were reduced to 100 people indoors and 250 people outdoors, to a maximum of 50% of venue capacity. Gatherings were expected to have adequate ventilation, physical distancing, masking, and provision of hand sanitizer. With holiday season approaching, the government sought to prevent people from gathering by closing beaches and parks during the

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festive season from December 16, 2020 to January 3, 2021 in areas with the highest rates of infection. In some locations, beaches and public parks remained open, however all festivals and live performances were prohibited. To reduce the burden on healthcare services, curfew hours were extended to 11pm-4am, non-essential establishments were required to close by 10pm to enable people to abide by the curfew, alcohol sale was limited to specific hours, and alcohol consumption was prohibited in public spaces. During the festive season, the public was encouraged to keep gatherings small and to spend time outdoors or in well-ventilated areas if meeting with other people.

In addition to adjusting Alert Level 1 for the country and reiterating the need for individuals to take precautions against COVID-19, President Ramaphosa started discussing plans to vaccinate South Africans. (147) He announced that South Africa would be joining the WHO's COVID-19 Global Vaccine Access (COVAX) Facility and was expecting to receive enough doses to vaccinate 10% of the population in 2021. South Africa was also a member of the Africa Vaccine Acquisition Task Team that was exploring additional opportunities to obtain vaccine doses outside of the COVAX facility.

On December 18, 2020, Minister of Health Mkhize confirmed the presence of the 501.V2 COVID-19 variant, later named the beta variant. (148) Soon afterwards, with cases continuing to rise at an alarming rate and the beta variant becoming well-established in South Africa, President Ramaphosa announced that the country would be moving back to Alert level 3 for 14 days, effective December 28, 2020 to January 15, 2021. (149) All indoor and outdoor gatherings were prohibited for 14 days with the exception of funerals and several specific businesses such as restaurants, museums, gyms, and casinos, among others listed in the regulations. Masking regulations were strengthened, stipulating that every individual was now legally responsible for wearing a mask in public. Failure to comply with masking could result in a fine, a prison sentence of up to 6 months, or both. Curfew hours were extended again from 9pm – 6am. 22 districts were declared as hotspots and had additional restrictions that were aimed to limit gatherings during the summer festive season. Individuals in hotspot regions were encouraged to remain in their district and travel for essential reasons only while travel to hotspots was not recommended.

As public health measures were ramped up in late December 2020, efforts to procure vaccines were underway. (149) South Africa paid R283 million towards the COVAX facility to secure vaccine doses for their population using a COVID-19 Solidarity Fund that had received donations from the government, businesses, and individual South Africans to support the COVID-19 response. At the same time, the South African government was in discussions to procure vaccines directly from manufacturers.

On January 11, 2021, President Ramaphosa announced that the country would remain at an adjusted Alert Level 3 with additional public health measures because cases were continuing to rise, driven by the beta variant. (150) Most indoor and outdoor gatherings were suspended

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again, including social, religious, and political events, with several notable exceptions including funerals, restaurants, museums, and gyms, among others. Curfew was ongoing, with slightly adjusted hours, and sale of alcohol remained limited. Schools had been on holiday break since December 16, 2020 and were supposed to reopen on January 26, 2021 according to the academic calendar; however, the break was extended until February 15, 2021 in order to keep students safe. (151,152) The extended school closure was met with a mixed response from the public. Some individuals were nervous about the ability of schools to implement health and safety protocols and the possibility of increasing infections among teachers and students. This concern was particularly true for parents of low socioeconomic status residing in townships and informal settlements, in comparison to wealthier parents from South African suburbs.

### *Vaccination Strategy*

President Ramaphosa announced the vaccination strategy in South Africa would comprise a 3-part strategy to procure vaccines, administer vaccines to priority populations, and distribute vaccines to the community at large. (150) The strategy was designed around achieving herd immunity, which was estimated to require vaccination of 67% of the population or 40 million South Africans. Vaccine procurement would occur through the WHO's COVAX facility, the African Union Vaccine Initiative, which was a pool established specifically for African countries to obtain vaccines, and through direct negotiation with vaccine manufacturers.

Part 2 of the strategy was focused on vaccine rollout and was divided into three phases. (150) Phase 1 was to focus on healthcare workers. Phase 2 expanded eligibility to essential workers including teachers, police, and other frontline workers; people living in congregate settings such as old age homes, shelters, and prisons; people over the age of 60; and adults with comorbidities. Phase 3 would then allow the remaining adult population to be vaccinated.

Part 3 of the strategy involved providing vaccines to locations throughout the country where they could be administered including hospitals, clinics, outreach services and mobile clinics and private settings including doctors' offices, pharmacies, and workplaces. (150)

As of February 1, 2021, South Africa had received its first shipment of AstraZeneca vaccines from Serum Institute of India and vaccination of healthcare workers was set to begin, pending verification that the vaccines had retained their quality during transportation. (153) At the same time, South Africa awaited shipments of vaccines from the COVAX facility, Johnson & Johnson, and Pfizer.

In response to a study showing decreased effectiveness of the AstraZeneca vaccine against the beta variant, South Africa decided to delay the rollout of vaccinations to health care and frontline workers, opting to wait on the arrival of incoming Johnson & Johnson and Pfizer vaccines instead. (154) Vaccinations still began mid-February and by late February, over 67,000 health workers had been vaccinated. With arrivals of additional doses of the Johnson & Johnson vaccine, the vaccination campaign was ramped up. (155)



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As of February 1, 2021, South Africa recorded their lowest increase in daily COVID-19 cases since December 2020, indicating that South Africa had passed the peak of their second wave. (153) In response, President Ramaphosa announced that some public health measures would be relaxed under Alert Level 3. Curfew hours were adjusted to 11pm-4am. Religious gatherings were allowed to resume with a maximum of 50 people indoors or 100 people outdoors, up to a maximum of 50% of the venue capacity if the venue was too small to enable social distancing. Beaches, parks, public swimming pools, and other public places were allowed to reopen. Regulations on alcohol sales were relaxed. Several other public health measures stayed in effect. Gatherings, other than religious gatherings, funerals, and certain other establishments such as restaurants and gyms, were still not permitted. Masking and distancing continued to be required in public spaces. President Ramaphosa emphasized that with widespread presence of the beta variant, it was important to continue public health measures, even with vaccinations underway.

With South Africa emerging from its second wave, President Ramaphosa announced that the country would again move to Alert Level 1 on March 1, 2021. (155) Many public health measures were relaxed, and most economic activities were allowed to resume. Curfew hours were reduced, gatherings were permitted to occur with a maximum of 100 people indoors or 250 people outdoors with appropriate social distancing, and alcohol sales were allowed to resume as normal. Masking and distancing were still required, with failure to wear a mask remaining a criminal offence.

With daily new case numbers stabilizing at approximately 1,200 and declining hospitalizations and deaths, President Ramaphosa announced on March 30, 2021 that South Africa would remain at Alert Level 1, with some adjustments to the public health measures. (156) Gathering limits were increased to allow 250 people in indoor venues or 500 people outdoors, as long as distancing could be maintained. Even with relaxed gathering limits, the government still urged people to avoid congregating in large groups, particularly for vulnerable populations including seniors and those with other health conditions. (157) Most other Level 1 measures such as curfew remained unchanged, however restrictions concerning alcohol sales and consumption were to be in effect for Easter weekend.

Vaccination of health workers was underway and was expected to take 3 months. (156) President Ramaphosa also announced that vaccination of priority populations was expected to begin in Mid-May 2021 and that registration would begin in April 2021.

In February 2021, a public opinion poll looked at self-reported adherence to public health measures. (158) While most respondents still supported and adhered to public health measures, there was a slight decline since the poll done in August 2020. 95% of respondents reported masking in public, 87% reported avoiding public gatherings, and 78% reported staying home.

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### Wave 3- Delta Variant

On May 3, 2021, Minister Mkhize discussed concerns regarding the B.1.617 variant circulating in India, which was later named the delta variant. (159) The delta variant had not been detected in South Africa. Minister Mkhize reassured the public that there were no direct flights to South Africa from India and that all entry points into South Africa were following screening protocols for individuals.

After a period of maintaining lower case numbers following the end of the second wave, cases began to rise again and concerns over a third wave became apparent. (160) President Ramaphosa announced that South Africa would move to Alert Level 2 on June 1, 2021. Curfew hours were extended again and gathering limits were reduced to a maximum of 100 people indoors and 250 people outdoors. South Africans were still encouraged to reduce contacts, spend time outdoors in well-ventilated areas if meeting with someone, and to avoid public spaces or non-essential travel. Even with these additional measures, the daily number of cases had doubled, and hospitalizations and deaths had increased. (161) Several South African provinces were officially experiencing a third wave with others trending towards it. As a result, President Ramaphosa announced that the country would move back to Alert Level 3 on June 15, 2021. Curfew was again extended, and gatherings were limited to 50 people indoors and 100 people outdoors.

At the same time, the vaccination program was underway and gaining momentum. 480,000 health workers had been vaccinated with the J&J vaccine as part of Phase 1 of the vaccination strategy. (161) South Africa experienced some issues with their vaccine supply. The J&J supply coming from the USA had been under investigation for contamination, which forced the vaccine program to rely on Pfizer vaccines. Despite the challenges with the J&J vaccine, Phase 2 of the vaccination strategy continued, and an additional 1.5 million health workers and people over the age of 60 received their first dose of the Pfizer vaccine. With the promise of the arrival of additional J&J and Pfizer doses, South Africa estimated that they would be able to vaccinate 150,000 people per day and were expecting to ramp up to 250,000 per day. As vaccinations ramped up, the national vaccination program introduced streams. (162) The first stream focused on the general population and eligibility went according to age group. The second stream focused on vaccinating workers in the basic education sector while the third stream targeted police officers. A fourth stream was focused on vaccination in important economic sectors including the mining, manufacturing, and taxi industries.

The Delta variant was detected in several South African provinces including the Eastern Cape, Free State, Gauteng, KwaZulu-Natal, and Western Cape and was replacing the beta variant, which had been the dominant variant in South Africa since the second wave. (162) Even with the reinstatement of public health measures in early June, the delta variant was worsening the situation. As a result, President Ramaphosa announced that the country would move to Alert Level 4 for 14 days, from June 28, 2021 until July 11, 2021. All gatherings were prohibited. Curfew hours were extended to 9pm -4am. Sale of alcohol was prohibited. Public spaces such

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as beaches and parks were permitted to stay open but could not be used for gatherings. Other non-essential services such as restaurants, gyms, fitness centres, night clubs, casinos were required to close for the duration of this time. (163) Visits to institutions including old age homes and other congregant settings were limited. (162) Restaurants were only allowed to open for take-out or delivery because individuals could not remain masked while eating or drinking. School closures for the holidays were moved earlier and began June 30, 2021. (162) Universities closed for in-person learning for 2 weeks, while virtual learning could continue. (164) Gauteng province was experiencing a higher load of COVID-19 cases, therefore travel into and out of the province was restricted to essential reasons including work, business, or transport of goods. (162) In Gauteng, elective surgeries were also postponed.

With COVID-19 cases remaining high, the Delta variant spreading rapidly, and the healthcare system being under pressure, the third wave in South Africa was having a more severe effect than the first two waves. Thus, President Ramaphosa announced the extension of the Alert Level 4 for an additional 14 days until July 25, 2021. (165) Most measures remained in place, however restaurants and eateries were able to reopen as of July 11, 2021 to have a maximum of 50 people at a time. Other settings including gyms and fitness centres were also allowed to reopen. The vaccination program continued to expand eligibility, allowing people aged 35+ to register for an appointment as of July 15, 2021, with the goal of beginning to vaccinate this age group starting on August 1, 2021. (165)

With COVID-19 cases declining steadily since Alert Level 4 was instituted, South Africa was able to move past the peak of wave 3. (166) However, this decline was not felt equally across all provinces. While cases in Gauteng province were declining, infections in Western Cape, Eastern Cape, and KwaZulu Natal were rising. Despite this disparity, President Ramaphosa announced that South Africa would move back to Alert Level 3 as of July 25, 2021. Interprovincial travel for non-essential reasons was allowed to resume. Non-essential establishments including restaurants, bars, and fitness centers were allowed to reopen, with the exception of night clubs. (167) Gatherings were permitted with a limit of 50 people indoors or 100 people outdoors. Alcohol sales were allowed to resume. Schools were reopened July 26, 2021. (168)

Adults aged 18-34 were allowed to begin getting vaccinated as of September 1, 2021, in addition to adults over the age of 35. Vaccination capacity and supply had also been expanded so that individuals could get their doses without booking an appointment in advance. (166) The vaccination campaign continued to progress, and South Africa was vaccinating their population at a pace of 1 million doses every 4 to 5 days. Despite the entire adult population over age 18 being eligible for vaccination, South Africa focused resources on individuals over the age of 60 or presenting with comorbidities. (169) By September, South Africa was no longer concerned about their vaccine supply, believing that they had enough to vaccinate the entire adult population.

As cases began declining again in all provinces, President Ramaphosa announced that South Africa was moving to Alert Level 2 on September 13, 2021. Curfew hours were reduced,

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gathering limits were increased to a maximum of 250 people indoors and 500 people outdoors, and alcohol sales were permitted again. (169)

By September 30, 2021, President Ramaphosa confirmed that South Africa had exited their third wave driven by the delta variant and announced that South Africa would move to Alert Level 1 on October 1, 2021. (170) Gathering limits were raised, allowing 750 people indoors and 2000 people outdoors. Funerals were an exception to this rule and only a maximum of 100 people were permitted to attend.

In September 2021, there was a follow-up public opinion poll to the ones completed in August 2020 and February 2021. (171) While self-reported adherence to masking in public remained high among respondents at 94%, avoidance of public gatherings dropped to 78% and staying home dropped to 65% since February 2021.

In an effort to increase vaccination uptake in the population, the government launched the “Vooma Vaccination Weekends” campaign, which opened up vaccination sites on weekends to enable people to get vaccinated who may have had constraints on their weekday schedule. (172) The campaign took place across the country and mobilized political, religious, business, and other community leaders to encourage vaccination among the population. President Ramaphosa also announced that the National Department of Health would be rolling out vaccine certificates that would be used to allow individuals to provide valid proof of vaccination for activities such as travel that required it. (172) Health Minister Joe Phaala announced the launch of the vaccine certificate on October 8, 2021. (173)

Minister of Health Joe Phaala announced that South Africa would be opening up vaccination for children aged 12-17 starting October 20, 2021. (174) Children in this age group were eligible to receive one dose, pending further study of the risk of myocarditis following 2 doses. Minister Phaala also clarified that AstraZeneca, Moderna, Sputnik, and Sinovac vaccines were not in use in South Africa at the time, and that vaccine certificates could not be issued for these vaccines.

Minister Phaala announced an interesting initiative to support vaccination in the population. With the upcoming municipal elections, pop-up vaccination sites would be located at voting stations, particularly where vaccine uptake was disproportionately low. (175) He also introduced a pilot vaccination incentive scheme called the Vooma Voucher, which would provide R100 grocery vouchers to people over 60 who received their first vaccine dose in November 2021.

By the end of November 2021, South Africa was still in a State of Disaster and remained at an Alert Level 1. (176) President Ramaphosa emphasized the need for the population to come forward for vaccination to prevent hospitalization and death. Gathering limits and masking were the main public health measures still in effect.

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### Social and Economic Support

The South African government introduced economic and social relief measures to support the population during the pandemic, which were at times stopped and reinstated. The Unemployment Insurance Fund (UIF) was used to set up a COVID-19 Temporary Employee Relief Scheme (COVID-19 TERS). This fund was first announced on March 27, 2020 and was introduced to support businesses and employees during the lockdown period. (177) The COVID-19 TERS benefit was meant to support employers with paying employees their regular salary while they were at home during lockdown and was extended periodically throughout the pandemic.

The government also provided support by enhancing existing social grants. (178) The government provided a child support top-up, where South Africans received an extra R300 in May 2020 and an extra R500 per month from June to October 2020. All other social grants were also increased by R250 per month from May to October 2020. A temporary COVID-19 Social Relief of Distress grant was also introduced and provided R350 per month to people who were unemployed or not receiving other social grants or unemployment payments. (178) This grant was initially meant to be available from May-October 2020, but it was extended periodically throughout the pandemic until April 2021, where the government stopped the program citing they could not longer afford to provide the grant. (179) It was reinstated from August 2021.

In response to food insecurity during the pandemic, a food distribution program was also introduced by the national Ministry of Social Development, in coordination with their provincial level counterparts. (180) Emergency food parcels valued at R700 per household were delivered to registered people through existing Community Nutrition Development Centers (CNDCs). People eligible for food parcels included people currently served by CNDCs and other food programs that were closed during the lockdown, and households needing food who were not already supported by the Social Relief of Distress grant or other food insecurity programs.

### Disproportionately affected populations

There have been several populations especially at risk for COVID-19 in South Africa. With the declaration of a State of National Disaster and subsequent lockdown, people living in informal settlements were affected significantly. Informal settlements are densely populated, impoverished areas where people have built homes, oftentimes illegally, on municipal land. These areas tend not to have adequate water infrastructure or sanitation. (181) In the context of COVID-19, people living in these areas did not have adequate space to isolate at home and were at high risk of an outbreak. The South African government announced efforts to deliver water to these areas to support proper hand hygiene and to resettle people elsewhere to make these areas less population dense. (182) Despite a national eviction ban, there was difficulty in enforcing the ban at the municipal level and municipal law enforcement was used to evict people in informal settlements from their homes. (183)

Along similar lines, people who were homeless and living in shelters were also at a high risk of contracting COVID-19. (180) In shelters, the government attempted to support this population

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by providing resources such as personal protective equipment and hand sanitizer. The government also set up housing for people who were homeless in sports stadiums, schools, and other closed public spaces. (184)

Incarcerated people were also at a disproportionate risk of becoming infected. (185) The Department of Correctional Services (DCS) activated their Disaster Management Response strategy and worked on testing incarcerated people and isolating anyone who tested positive. The DCS worked with Department of Health and provincial governments to determine appropriate healthcare facilities where incarcerated people could be transferred if treatment was required.

The lockdown also had implications for gender-based violence (GBV). During the first week of lockdown alone, South African police noted that 2,320 cases of GBV had been reported. (186) GBV was so significant that President Ramaphosa described it as a second epidemic that South Africa was facing alongside COVID-19. (113) South Africa's national Gender-based violence command centre had received three times the number of calls they normally did. (187) With the rise in GBV incidents, the South African government tried to improve the capacity of their GBV command centre by increasing the number of social workers available to work on gender-based and family violence cases. (180) They also tried improving referral pathways between the GBV command center and relevant authorities to improve service provision for survivors of GBV and help them access support faster.

### Successes and Challenges in South Africa's Pandemic Response

Key informants identified several successes and challenges in South Africa's COVID-19 response. The initial lockdown worked to "flatten the curve" and gave South Africa time to develop additional healthcare capacity. Building field hospitals during lockdown and ensuring adequate oxygen supply contributed to this success—one key informant said that no one had died due to a lack of oxygen. Key-informants also mentioned that the screening, testing, contact tracing and isolation policies and public education programs worked well. There was strong risk communication and community engagement through social media and regular press conferences from the Minister of Health and the President. Ultimately, one key informant described South Africa's response as a "qualified success". While there were many deaths, they felt that South Africa had mitigated the effects of the pandemic, and that it could have been worse.

Some key informants felt that the government response was slow and not keeping up with the virus, with one suggesting that decision-making could have been streamlined to reduce bureaucracy when decisions needed to be made quickly. South Africa could also have mobilized other sectors more in sharing the responsibility and messaging around COVID-19.

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## Comparison with other country responses

There are many concerns in trying to compare countries’ responses to COVID-19. These concerns are shaped by limitations of the data itself and differences in contextual factors. A separate paper by this working group describes limitations of COVID-19 data. (Submitted) Table 4 presents a list of select African countries and their use of different social distancing policies.

Government	State of Emergency	■		■	■	
Case Management	Separation of cases or suspected cases within institutions	■	■			
	Recommended self-isolation for symptoms					
	Recommended self-isolation for contacts					
	Recommended self-isolation for cases				■	
	Recommended self-isolation after travel					
Closure	Suspended elective medical/dental procedures	■	■	■		
	Restaurant closure	■	■	■		
	Non-essential service closure	■	■	■	■	
Detection	Surveillance systems	■	■	■	■	
	Mass fever screening in public transportation	■	■			
	Drive through testing centres	■				
	Contact tracing	■	■	■	■	
	Assessment centres	■	■	■	■	
Economics	Housing economic relief	■	■	■	■	
	Economic relief policies for individuals/families	■	■	■	■	
	Economic relief policies for businesses	■		■	■	
	Anti-price gouging	■		■		
	Anti-hording	■		■		
Education	University closure	■	■	■	■	
	School closure- high school	■	■	■	■	
	School closure- elementary school	■	■	■	■	
	School closure- daycare	■	■	■	■	
Health Workforce	LTC Health workers allowed to only work at one site					
	Health workers allowed to only work at one site					
Healthcare Resources	Telehealth access to prescription medication	■				
	Audio/video telehealth	■	■			
Physical Distancing	Work from home/remote work	■	■			
	Required use of masks/PPE for public	■	■	■	■	
	Recommended use of masks/PPE for public	■		■		
	Quarantine orders for contacts	■	■	■	■	
	Quarantine orders for cases	■	■	■	■	
	Quarantine orders after travel	■	■	■	■	
	Quarantine for "at risk" or priority neighbourhoods	■	■	■	■	
	Physical distancing recommendation	■	■	■	■	
	Lockdown	■	■	■	■	
	Isolation for vulnerable populations	■	■	■	■	
	Ban on group size	■	■	■	■	
	Public Decontamination	Public decontamination transit	■	■		
		Public decontamination streets	■	■		
Travel bans	Screening at airports/borders	■	■	■	■	
	International bans for non-essential travel	■	■	■	■	
	Closing public transportation	■	■			
		South Africa	Uganda	Sierra Leone	Liberia	

**Table 4. Comparative national-level responses to COVID-19 by country (filled in means policy was implemented)**

### IV. Discussion of main findings, limitations, and next steps

South Africa has an estimated population of 59,308,690, with 2,963,679 cases and 89,843 deaths from COVID-19 as of November 29, 2021. During the study period, South Africa took a mitigation approach throughout their COVID-19 response, aiming primarily to “flatten the curve”.

South Africa created its policies in consultation with epidemiologists, scientists, and public health professionals. They employed a variety of policies such as lockdown, school closures, international travel bans, masking, and gathering limits. South Africa implemented a strict initial national lockdown and used that time to build healthcare capacity to accommodate future COVID-19 surges and to increase their testing capacity. Following their lockdown, they situated their approach as a risk-adjusted framework that designated alert levels based on COVID-19 transmission and healthcare capacity to respond. This framework ultimately aimed to prevent the healthcare system from being overwhelmed while balancing the social and economic effects of mitigation policies.

South Africa’s strategy shifted away from non-pharmaceutical interventions to emphasize vaccination later on in the pandemic. Early on, their vaccine rollout faced issues due to supply. South Africa’s vaccination strategy was based around attaining herd immunity in the population and occurred in phases beginning with health workers, frontline workers, adults over the age of 60, and adults living with comorbidities, before expanding eligibility to the population based on age.

Limitations to this report may exist because findings rely on availability of accurate, up-to-date documentation of policy responses by the media and government sources. In cases where policies were not implemented according to plan, there may be some discrepancies with the information reported here.

#### Conclusions

South Africa has used a variety of policies in their COVID-19 response; however, South Africa still experienced a large burden of COVID-19 cases and deaths, even with the public health measures they implemented. It will be important for South Africa to ensure they take action swiftly in response to future changes in the pandemic and to pay attention to long term effects of COVID-19.



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# Uganda physical distancing policies and epidemiology from January 2020 - November 2021: A case report

Policy Frameworks and Epidemiology of COVID-19  
Working Group

April 2022



**HEALTH SCIENCES**  
Health Research Methods,  
Evidence, and Impact



# Policy Frameworks and Epidemiology of COVID-19 – Uganda case report

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## Conflicts of Interest

No conflicts of interest were reported.

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### Links to supplementary materials

[Study proposal](#)

[Informed consent](#)

[Interview guide](#)

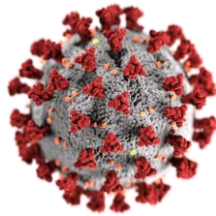
COVID-19 [Country characteristics database](#)



## I. Introduction and project description

### A new disease that spread around the world

On December 31, 2019, the World Health Organization (WHO) was notified of a cluster of individuals with pneumonia of unknown cause in Wuhan, China. (1) On January 12, 2020, China shared the genetic sequence of the novel coronavirus with other countries to help develop diagnostic tests. (1) Thailand reported the first known case of the novel coronavirus outside of China on January 13, 2020. WHO declared the novel coronavirus (2019-nCoV) outbreak a Public Health Emergency of International Concern on January 30, 2020 with 7,711 confirmed cases, 12,167 suspected cases, and 170 deaths in China and 83 cases in 18 countries outside of China. (1,2) The disease was later named COVID-19 for coronavirus disease 2019 and the virus referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). (1) WHO declared COVID-19 a pandemic on March 11, 2020. (1)



### Physical distancing policies and knowledge gaps

As an emerging infectious disease, there were originally no effective vaccines or preventive treatments for SARS-CoV-2. Therefore, governments have had to rely on the use of public policies to combat the spread of the virus. (1–4) Creating policies has been difficult due to the large amount of information and ongoing uncertainty around the characteristics of the virus and who it affects. (4) One of the most commonly used policies to mitigate (slow) the spread of the virus that causes COVID-19 centres on physical or social distancing, which relies on separating people to reduce the transmission of the virus. (5) However, it is still unclear when is the best time to institute such policies and what happens when distancing policies are eased in which contexts. There are many aspects of distancing, such as recommendations for maintaining a physical distance in public, banning group gatherings, or complete lockdowns, that complicate their assessment. (5) There are also many factors that have been attributed to people acquiring or having a worse outcome from COVID-19. (6–11) However, there was no harmonized database available with all the policies, epidemiology and contextual information that were needed in order to perform comparative analyses useful to informing policy making.



## Policy Frameworks and Epidemiology of COVID-19 – Uganda case report

### About this project

The Policy Frameworks and Epidemiology of COVID-19 Working Group was developed after a “CONVERGE Virtual Forum: COVID-19 Working Groups for Public Health and Social Sciences Research.” A group of international researchers convened to explore what physical distancing policies countries implemented and their effects on the epidemiology of COVID-19. The Working Group was further supported through an award from CONVERGE and the Social Science Extreme Events Research (SSEER) Network. CONVERGE is a [National Science Foundation](#)-funded initiative headquartered at the [Natural Hazards Center](#) at the [University of Colorado Boulder](#).

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# Policy Frameworks and Epidemiology of COVID-19 – Uganda case report

In collaboration with:



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JORDAN UNIVERSITY  
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AND TECHNOLOGY



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## Policy Frameworks and Epidemiology of COVID-19 – Uganda case report

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## II. Methods

### Research design

A qualitative embedded multiple case study research design was used to compare countries (or subnational jurisdictions, such as provinces, states or territories). The suite of public policies and resulting changes in the epidemiology of COVID-19 are examined within their specific country setting. Our cases start in January 2020. (Please see full [study proposal](#)). Research ethics approval was obtained by the Hamilton Integrated Research Ethics Board (HIREB) (Project # 11243).

### Data Collection

For each country, the setting, such as health systems, political systems and demographics were described to help with interpretation of findings and potential transferability, or the degree to which findings are applicable to other sites or future research.

Publicly available data were first collected on the jurisdiction following a standardized data collection form. Epidemiological data were drawn from publicly available data. WHO, World Bank, Central Intelligence Agency and other publicly available sources were used for timelines and country characteristics, where possible. Other sources of information included governmental and non-governmental websites, news articles, government reports, and peer-reviewed journals.

Next, key informant interviews were conducted to fill in gaps, verify information found through the documentary searches, and identify further participants and documentary sources of relevant information. (See [informed consent](#) and [interview guide](#)) Key informant interviews were conducted with policymakers, health workers, researchers and other stakeholders as appropriate to fill in knowledge gaps.

### Data Analysis and Presentation

Our [COVID-19 policies](#) and epidemiology databases harmonize data on setting characteristics, policies, demographic characteristics and epidemiological risk factors and outcome metrics. These will further be described in single country or jurisdiction case reports. Comparisons will be selected based on both literal and theoretical replication. Countries that have similarities in either policies or epidemiological trends can be considered literal comparisons, whereas countries that differ will be used as theoretical comparisons. These comparisons will be submitted to peer-reviewed journals for publication.



### III. Findings

#### A. Setting characteristics

##### Geographic, environmental, social, and economic contextual factors

Uganda is a country in the WHO African Region. (12) In 2020, Uganda had a population of 45,741,000, a land area of 200,520 km<sup>2</sup>, and a population density of 228.1 people per km<sup>2</sup>. (13–15) The population is distributed mainly in the central and southern areas of the country, close to Lake Victoria and Lake Albert. (16) As of 2020, 25% of Uganda’s population lives in urban areas. (17) In 2018, 48.3% of their urban population lived in informal settlements. (18)

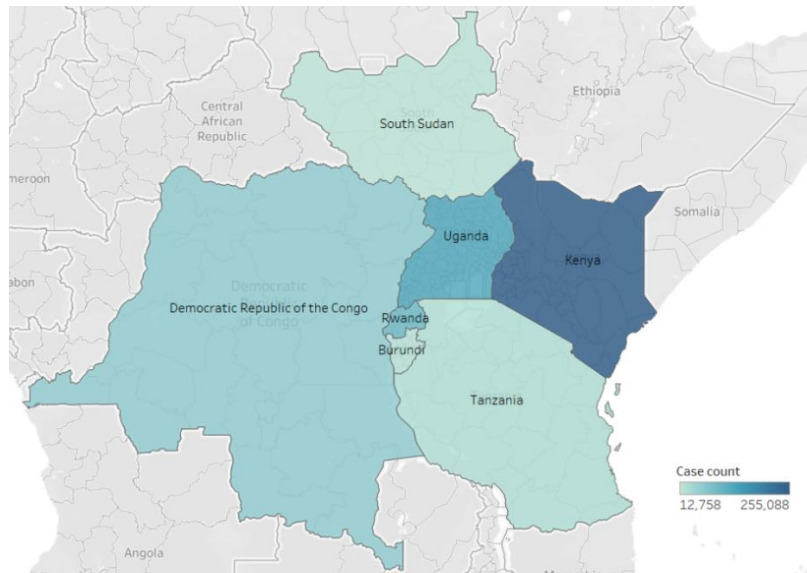


Figure 1. Heat map of total COVID-19 cases in Uganda and surrounding countries as of November 30, 2021 (19)

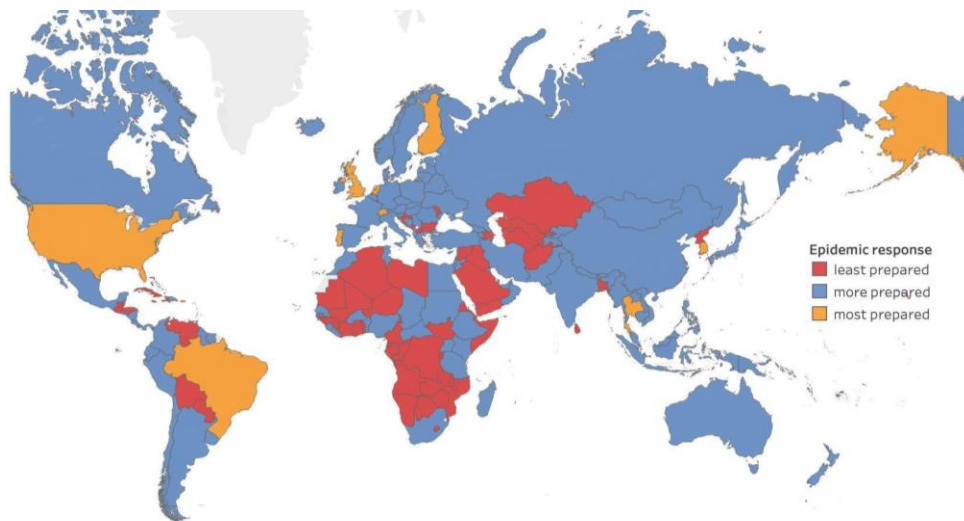


Figure 2. Global Health Security Index Epidemic Preparedness Rank Category (20)



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**Table 1. COVID-19 relevant contextual factors for Uganda**

Global Health Security Index, 2019 (Overall Index Score out of 100 and category) (20)	44.3—More Prepared
Global Health Security Index, 2019 (Epidemic Preparedness Index Score out of 100 and category) (20)	56.5—More Prepared
Particulate matter (PM2.5) air pollution, mean annual exposure, 2017 (micrograms per cubic meter) (21)	50.49
PM2.5 air pollution, population exposed to levels exceeding WHO guideline value, 2017 (% of total) (22)	100
International migrant stock, 2015 (% of population) (23)	1.92
Trust in national government, 2018 (% of population) (24)	55.49
Mobile cellular subscriptions, 2020 (per 100 people) (25)	60.53
Individuals using the internet, 2017 (% of population) (26)	23.71
Index of economic freedom, 2021 (Score and category) (27)	58.6—Mostly Unfree
World Bank classification, 2020 (28)	Low
Gini Index, 2016 (29)	42.8
GDP per capita, PPP, 2020 (Current international \$) (30)	2293.48
GNI per capita, PPP, 2020 (Current international \$) (31)	2260
Current health expenditure, 2019 (%) (32)	3.83
Vulnerable employment, total, 2020 (% of total employment) (33)	75.08
Vulnerable employment, female, 2020 (% of female employment) (33)	82.38
Vulnerable employment, male, 2020 (% of male employment) (33)	68.05
Homelessness (%) (34)	--
Adult literacy rate, 2018 (%) (35)	76.53
Literacy rate, adult female, 2018 (% of females 15 and above) (36)	70.84
Literacy rate, adult male, 2018 (% of males 15 and above) (37)	82.66
Primary school enrolment, 2013 (% net) (38)	95.49

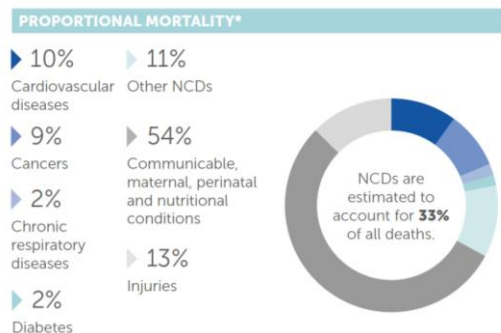
**GDP** - gross domestic product; **GNI** - gross national income; **PPP** - purchasing power parity



## Policy Frameworks and Epidemiology of COVID-19 – Uganda case report

### Population health characteristics

Life expectancy at birth in Uganda was reported to be 63.37 years in 2019. (39) For males, life expectancy at birth was 61 years, and for females it was 65.62 years in 2019. (40,41) Non-communicable diseases are believed to play a role in who develops severe symptoms of COVID-19. In Uganda, the proportional mortality from cardiovascular diseases was 10%, cancers 9%, chronic respiratory diseases 2%, and diabetes 2%. (42) (See Figure 3.) The probability of dying between ages 30-70 from cardiovascular disease, cancer, diabetes, or chronic respiratory disease was 21.9% for all adults, and 23.8% and 20.3% for males and females, respectively. (43)



**Figure 3. Proportional mortality from non-communicable diseases (NCDs)- Uganda, 2016 (42)**

**Table 2. Age and health characteristics for Uganda**

	Male	Female	Total
Population ages 0-14, total, 2020 (% of total population) (44-47)	10,619,291 (23.22)	10,428,837 (22.80)	21,048,125 (46.02)
Population ages 15-64, total, 2020 (% of total population) (48-51)	11,565,337 (25.28)	12,219,259 (26.71)	23,784,596 (51.99)
Population ages 65 and above, total, 2020 (% of total population) (52-55)	361,961 (0.79)	546,315 (1.19)	908,279 (1.99)
Current tobacco use prevalence, total, 2018 (%) (56)	15.5	4.0	9.8
Raised blood pressure (Systolic blood pressure $\geq 140$ or Diastolic Blood Pressure $\geq 90$ ), ages 18+, 2015 (%) (57)	20.0	19.0	19.5
Raised fasting blood glucose ( $>7.0$ mmol/L or on medication), ages 18+, 2014 (%) (58)	2.7	3.0	2.8
Prevalence of obesity among adults (Body Mass Index $\geq 30$ ), 2016 (%) (59)	1.5	6.8	4.1
Prevalence of Human Immunodeficiency Virus (HIV), 2020 (% of population ages 15-49) (60)			5.4
Bacillus Calmette-Guérin (BCG) Immunization coverage estimates, 2020 (%) (61)			91
Prevalence of undernourishment, 2018 (% of population) (62)			--



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### Governance and health systems

Uganda's government is a presidential republic, meaning that the President of Uganda is the Head of state and Head of Government. (63) The executive branch of government consists of the President, Vice-President, Prime Minister, and Cabinet. The legislative branch of government includes parliament.

Uganda has a multi-party system, with several major parties including the National Resistance Movement (NRM), the Forum for a Democratic Change (FDC), and the Democratic Party (DP), among others. (63) The NRM is the current party in power and is led by President Yoweri Museveni, who is serving his 6<sup>th</sup> term in office. (16) President Museveni has been in power since January 1986 and was re-elected on January 14, 2021.

Uganda relies on a mix of public and private (non-profit and for-profit) healthcare. (64) The Ministry of Health is the primary policy authority at the national level. Public sector healthcare has several levels of care provided through district level health services, regional referral hospitals, and national referral hospitals. District level health services encompass varying levels of primary care. Generally, individuals seeking care will go to lower-level facilities and receive a referral to higher level facilities depending on the complexity of care needed. Private sector services do not follow the same structure as the public system and are variable in the extent of the services they provide.

**Table 3. Political and health system indicators for Uganda**

Fragile States Index score, 2021 (maximum 120, higher is worse) (65)	92.90
Fragile States Index rank, 2021 (out of 179 countries, higher is better) (65)	24
Global Freedom score and status, 2021 (66)	34—Not Free
Internet Freedom score and status, 2021 (67)	49—Partly Free
World press freedom index, 2021, global score (0-100, lower is better) and rank (out of 180 countries, lower is better) (68)	41.19—125
Physician density, 2017 (physician/1,000 pop) (69)	0.17
Hospital bed density, 2010 (beds/1,000 pop) (70)	0.5



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### Pandemic experience and preparedness

Uganda has experience with many infectious diseases including Crimean Congo hemorrhagic fever, Marburg virus disease, Rift Valley Fever, Measles, Cholera, and Ebola, among others. (71)

The United States Centers for Disease Control and Prevention (CDC) has invested in Uganda's public health system in the past, which helped prepare them to address the COVID-19 pandemic. (72) The CDC established a site in Uganda in 2000 and has supported initiatives to prevent, control, and treat HIV/AIDS, tuberculosis, and malaria. The CDC worked with the Uganda Virus Research Institute (UVRI) on influenza surveillance, which was adapted for the COVID-19 response.

In 2018-2019, Uganda dealt with the threat of Ebola Virus Disease (EVD) spillover from the neighbouring Democratic Republic of Congo. (73) In response, the Uganda Ministry of Health mobilized the Public Health Emergency Operations Centre and the National Task force. The National Task Force created an Incident Management Team that supported District Task Forces on assessing preparedness in high-risk districts. With support from the WHO, the Ministry of Health worked with other government ministries and organizations to improve surveillance systems, risk communication, and EVD prevention and treatment capacity. A key-informant confirmed that systems established and activated for the EVD response were mobilized for the COVID-19 response.

Public laboratory services in Uganda are provided through a tiered system like the public healthcare system. (74) Laboratories are housed at different level facilities from district health facilities, regional referral hospitals, and national referral hospitals up to national specialized reference laboratories. COVID-19 testing started at the Uganda Virus Research Institute (UVRI) and was expanded to other facilities including the National Public Health Laboratory, Tororo General Hospital, Mutukula border point, Adjumani Hospital, and Makerere University laboratory. (75) Uganda also has private laboratories, which were allowed to support COVID-19 testing in Uganda, provided that they could pass accreditation standards.



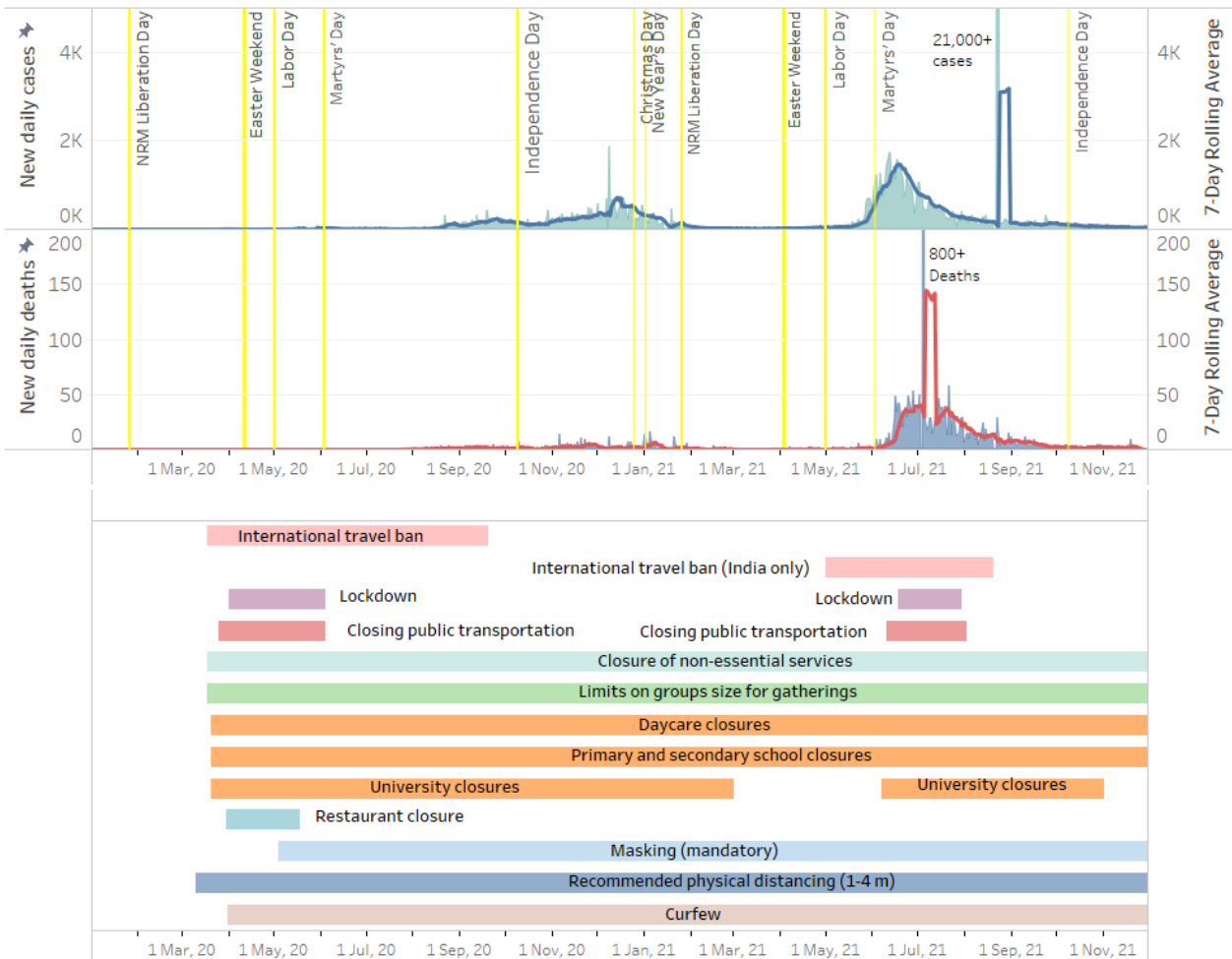


## B. Policies and epidemiology

### Cases and social distancing policies

Uganda’s first case of COVID-19 was recorded on March 21, 2020. A national state of emergency was not declared in Uganda. As of November 30, 2021 there were a total of 127,550 cases and 3,252 deaths recorded in Uganda. (76) Figure 4 shows the number of daily cases and deaths in Uganda, and dates for selected public health policies implemented from January 2020 to November 30, 2021.

Uganda COVID-19 cases, deaths, and physical distancing policies



NRM=National Resistance Movement

**Figure 4. Number of reported COVID-19 cases and deaths in Uganda with select policies from January 2020 to November 30, 2021**



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### Description of events in Uganda

President Yoweri Museveni was the primary spokesperson for the COVID-19 response in Uganda. The Minister of Health, Jane Ruth Aceng, among other Ministry of Health representatives, also provided COVID-19 updates. Uganda did not declare a State of National Emergency for their COVID-19 response. A key-informant confirmed that presidential directives were issued, which functioned as appendices to their Public Health Act that were legally binding.

Uganda's Ministry of Health developed a National COVID-19 Response Plan for March 2020-June 2021. The plan aimed to "provide a framework for coordination and control of COVID-19 by reduction of importation, transmissions, morbidity, and mortality in a bid to minimize the social economic disruption that might result from this outbreak". (71) The plan mobilized various stakeholders from the government, the private sector, and non-governmental organizations to provide a coordinated response. The general strategy revolved around eight COVID-19 response pillars. The Leadership and Stewardship pillar focused on providing overall direction and procuring resources for the pandemic response. The Surveillance and Laboratory pillar focused on early detection and confirmation of cases. The Case Management pillar focused on ensuring capacity to provide treatment for COVID-19. The Strategic Information, Research, and Innovation pillar focused on conducting research and using data to inform decision making. The Risk Communication and Social Mobilization Pillar was focused on raising public awareness. The Community Engagement and Social Protection Pillar was focused on meeting health and social needs of vulnerable populations. The Logistics Operations pillar was focused on proper storage and distribution of supplies needed for the pandemic response. The Continuity of Essential Health Services pillar was focused on maintaining health service provision for other ongoing epidemics and non-communicable conditions.

Uganda began implementing COVID-19 preparedness measures prior to detecting its first case. Uganda introduced screening measures of all arrivals at Entebbe International Airport beginning January 20, 2020, prior to the WHO declaring COVID-19 a public health emergency. (77)

Uganda initially took a containment approach to dealing with COVID-19 that aimed to prevent COVID-19 from entering the country by instituting travel-related measures. Uganda later switched to a mitigation strategy, marked by the relaxation of public health measures. While the government did not explicitly mention a change in strategy, in September 2020, Minister Aceng stated that Uganda had widespread community transmission of COVID-19 and that "we can only mitigate" as a response. (78) A key-informant explained that as community transmission took hold, the response shifted focus towards managing cases, infection prevention and control, and increased surveillance and testing. There were also possible economic reasons for this shift. Towards the end of the first lockdown, President Museveni explained that these measures could not be in effect indefinitely because of the need to keep the economy growing. (79)



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Uganda's efforts to educate the public on COVID-19 began early. On March 10, 2020, Minister Aceng tweeted out a set of guidelines on safe mass gatherings. (80) In these guidelines, the public was informed that mass gatherings increased the risk of transmission of COVID-19. Gathering organizers worked with health authorities to review their plans and assess risk. They were required to take measures such as providing proper handwashing facilities or hand sanitizer, preventing individuals with flu-like symptoms from attending their event, and provide information on COVID-19 prevention to participants. In general, Ugandans were advised by the Ministry of Health to follow proper hand hygiene, avoid hugs and handshakes, maintain a 1m distance from people who were coughing or sneezing, and to avoid public spaces or gatherings if presenting with flu-like symptoms. (81)

On March 11, 2020, Minister Aceng provided an update regarding measures to prevent COVID-19 from entering the country. (82) The Ugandan government categorized countries based on risk of importing COVID-19 into Uganda. These categories were based on the cumulative case count, the number of new confirmed cases in the past 24 hours, and the exponential increase in cases over the previous 7 days. The government then provided guidelines for travellers arriving from those countries. It was recommended that travellers from Category One countries postpone non-essential travel to Uganda. Travellers from Category One countries, including Ugandan citizens, were required to either self-quarantine or institutional quarantine in a designated health facility for 14 days upon arrival, regardless of their symptoms. Travellers from Category Two and Three countries would be subjected to screening upon arrival, with the Ministry of Health promising to continue monitoring these countries and to implement additional measures if necessary. (82)

### Wave 1

On March 18, 2020, President Museveni addressed the nation and announced a broad list of precautionary public health measures to prevent COVID-19 spread that would remain in effect for one month. (83) These measures were targeted towards preventing travel-related COVID-19 cases from entering the country and reducing movement and gatherings of Ugandan residents.

Uganda imposed a travel ban on Category One countries with a high number of COVID-19 cases effective March 18, 2020. (83) These countries included Italy, France, South Korea, China, USA, UK, Netherlands, Switzerland, Sweden, Belgium, Germany, Spain, Norway, Austria, Malaysia, Pakistan, and San Marino. While Ugandans were banned from travelling to these jurisdictions, foreign nationals were not, provided that they did not try to return to Uganda while the ban remained in effect. Ugandans returning from abroad were required to undergo mandatory quarantine in designated institutions, at their own cost. The President encouraged Ugandans unwilling to quarantine to remain abroad.

Uganda instituted several measures to prevent people from congregating in large numbers. (83) Schools were closed, including all pre-primary, primary and secondary schools, universities, and



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tertiary institutions starting March 20, 2020. Effective March 18, 2020, religious gatherings including prayers held in churches or mosques, open air prayers, and services on Fridays, Saturdays, and Sundays were suspended. Religious leaders were encouraged to deliver their services using TV or radio. Similarly, political, and cultural mass gatherings were forbidden, with a few exceptions. Weddings were allowed to take place but could only include individuals necessary for the event, up to a maximum of 10 people. Funerals were also allowed to continue, but it was recommended that they be conducted by nearby family members only. For suspected COVID-19 deaths, the state would take responsibility for the funeral without the family to prevent individuals from being infected. “Merry-making” was suspended, meaning that entertainment and recreational venues such as bars, dances, cinemas, concerts, and sports were prohibited. (83,84)

Uganda’s public transport methods include boda-bodas (commercial motorbikes), taxis, buses, mini-buses, and trains. The government recommended that the use of public transport be limited to essential travel only. (83) The Ministry of Health issued standard operating procedures (SOPs) for public transit companies including provision of hand sanitizer or handwashing facilities, masking for individuals with flu-like symptoms, and temperature screenings for passengers. (85) President Museveni announced that in the event of an outbreak, public transportation to affected areas would be banned to ensure isolation of the area. (83)

Non-agricultural workplaces such as factories, hotels, large plantations, markets, and taxi-parks were allowed to continue operations provided that they also followed Ministry of Health SOPs. (83) Hand-washing was required for anyone entering or leaving the facilities. Workplaces were not to permit individuals with symptoms of illness to enter and were to perform temperature checks of their employees. Crop and cattle farmers were allowed to continue their operations, provided that health and hygiene protocols were followed, however, they were not permitted to attend markets to sell their crops or livestock. They could continue to sell from the farms where they were operating.

On March 21, 2020, Uganda announced their first COVID-19 case, a 36-year-old male arriving from Dubai. (86) Ugandan officials did a temperature check, which revealed that the individual had a high fever. He was isolated at the airport and then sent to the hospital to have a nasal swab, which returned a positive COVID-19 test.

In addition to prior policies, Museveni announced that all entry into Uganda by air, land, or water would be prohibited effective March 21, 2020. (87) All passenger planes originating from outside Uganda would not be permitted to land at any Ugandan airports, with exception to cargo planes, planes involved in UN operations such as providing relief, or planes needing to land for emergency reasons. Domestic flights were permitted to continue. Entry into Uganda by land or water was also banned, except for drivers of cargo transport vehicles, up to a maximum of 3 people. Buses, mini-buses, cars, and boda-bodas were not permitted to enter Uganda, in addition to pedestrians or cyclists attempting to cross the border. Land border measures were



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enforced by Local Councils from border districts in collaboration with Ugandan security forces. Consequences for non-compliance could include imprisonment or a fine.

On March 25, 2020, Uganda registered 14 cases total, prompting the President to announce additional prevention measures. (88) Uganda banned public transport for 14 days starting from March 25, 2020 to minimize movement and contact between individuals. Included in the ban were taxis, minibuses, buses, trains, boda-bodas and tuktuks (tricycles) that carried passengers. Private vehicles could be used; however, they were only permitted to carry a maximum of 3 people including the driver. This rule applied regardless of family size. Public transport regulations did not apply to vehicles delivering cargo including essential commodities or food, provided that they did not carry any passengers. Hospital ambulances, police and security vehicles, and government vehicles necessary for provision of essential or sanitary services were also exempted from the transportation rules.

Markets were identified as a high-risk area because of the number of people congregating in them and difficulty in maintaining adequate physical distancing. (88) As of March 25, 2020, markets were allowed to remain open; however, they were limited to selling food only. Selling of non-food items was suspended in an attempt to reduce the number of people browsing markets. At the same time, non-essential government staff were also required to work from home for 14 days. (88)

By March 30, 2020, there were 33 confirmed cases. Notably, the majority of these cases occurred in Ugandans returning from the UAE, Europe, the USA, and Afghanistan. Only 3 people had contracted COVID-19 locally from returning travellers. (89)

President Museveni addressed the nation and stressed the need to take preventative action, citing how COVID-19 was overburdening hospitals in other countries with advanced medical systems and wanting to avoid a situation in which care would be triaged. (89) Uganda implemented strict additional measures. Ugandans were expected to stay at home during this time. Gatherings of more than 5 people were prohibited. (89) Museveni later clarified that people were not required to remain indoors and were allowed to go outside as long as they stayed on their own property. (90,91) Uganda also instituted a 7pm curfew beginning March 31, 2020, with exception to cargo vehicles. In situations of medical emergencies, it was possible to obtain permission to use private transportation to go to the hospital.

Following previously announced capacity restrictions, owners of private vehicles had begun transporting passengers from other households in exchange for a fee. (89) Given that the original policy was meant to prevent contact between individuals of different households, transportation via private vehicles was banned as of March 30, 2020.

Additional non-essential services were closed for 14 days beginning April 1, 2020. (89) Shopping malls and arcades, hardware stores, and other stores selling non-food items were closed. Only stores selling food, agricultural products, veterinary products, detergents, and pharmaceuticals



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were allowed to remain open. To prevent crowding at these locations, individuals were discouraged from congregating or forming lines. Instead, home deliveries were encouraged. Salons, lodges, and garages were closed. Supermarkets were allowed to remain open provided that health protocols were followed and that the number of people in the facility was limited at any given time. Essential services, defined as medical and veterinary services, fire services, financial institutions, door-to-door deliveries, media, private security, cleaning services, garbage collection, fire brigade, fuel stations, and agriculture, telecommunications, and water departments were allowed to continue working.

Food markets were allowed to remain open, provided that physical distancing of 4m could be maintained in all directions around each individual. (89) Market vendors had their movements restricted and were not permitted to go home. They were instructed to stay living nearby the market to prevent COVID-19 transmission from workers travelling to and from home. Given the closure of public transportation, there were reports of individuals staying overnight at the markets or else walking to work during the lockdown. (92) Factory owners and construction workers were also required to make arrangements for essential staff to camp at work or else suspend their operations during this period. (89)

Cargo transport was allowed to continue with restrictions on numbers of people. Cargo aircraft were only allowed to transport the crew. (89) Transport trucks were still only allowed a maximum of 3 people, including the driver.

A significant portion of the population was unable to work as the lockdown took effect, and many began expressing concerns about their ability to pay rent and utilities as a consequence. (93,94) In response to these concerns, on April 8, 2020, President Museveni announced an eviction ban to prevent individuals failing to pay rent from becoming homeless. (95) He stressed that landlords could collect rent payments once the lockdown was over.

On March 25, 2020, to preserve healthcare capacity during the pandemic, Ugandan medical doctors recommended suspension of non-emergency services, including cancellation of elective surgeries, to preserve supplies and prevent overburdening of national and regional referral hospitals. (96) Minister Aceng did not believe this measure was necessary, given that the government had identified isolation centres at hospitals such as Entebbe Grade B Hospital, among others, which would be used when COVID-19 cases increased. Still, days later, hospitals such as the publicly-funded Mulago Referral Hospital reported suspending non-emergency services to reduce congestion in the hospital. Hospitals could only respond to emergencies and life-threatening conditions, therefore individuals had to delay their appointments for non-emergency services. (97)

As of April 14, 2020, Uganda had registered 54 COVID-19 cases, but still no deaths. The lockdown was extended for an additional 21 days, with all previously announced policies remaining in effect until May 5, 2020. (98) Ugandans were still expected to remain at home during this period and all non-essential businesses remained closed. (99) Uganda was



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attempting to test all individuals who entered Uganda from a foreign country between March 7 and March 22, 2020, their contacts, symptomatic individuals, and anyone else who requested a test.

On April 28, 2020, President Museveni addressed the nation, reemphasizing the need to follow the existing public health measures—staying home if sick and isolating, even from family members, sanitizing surfaces and hand washing. (100) Essential services remained open through lockdown including hospitals and utility services; farms; factories, food markets, and construction sites (provided that workers could camp onsite or live nearby); and cargo delivery services within the country and from neighbouring countries.

By May 4, 2020, Uganda had 89 cumulative COVID-19 cases and no deaths. (101) President Museveni addressed the nation regarding the lockdown measures and announced that several sectors could resume operations. Whole sellers, hardware stores, garages, metal and wood workshops, and warehouses were allowed to reopen. Whole sellers were required to be 2m from their customers and wearing masks, customers were required to be 4m apart from each other, air conditioning was not permitted, and adequate ventilation was to be maintained by keeping windows and doorways open. Insurance providers were added to the list of essential services so that they could provide support to farms, factories, and stores. Restaurants were allowed to reopen for take-out only.

As of May 4, 2020, wearing cloth masks became mandatory in public places. (101) President Museveni also reiterated several protective measures including physical distancing of at least 4m, preventing symptomatic individuals from entering crowded areas, and sanitizing surfaces regularly. Rather than going to a health centre, individuals who were experiencing symptoms such as a fever were asked to remain at home and call their nearest health centre to request a staff member to take a sample for testing.

All other previously announced lockdown measures remained in effect for an additional 14 days. (101) Borders remained closed. Public and private passenger vehicles were still not allowed to operate. People were allowed to use bicycles or walk to work. School closures, suspension of public assemblies, and curfew continued.

Although some measures were lifted as of May 5, 2020, the lockdown continued, and scientists urged the government to proceed cautiously with the reopening. (102) While Uganda had yet to experience any COVID-19 deaths, gradual lifting of measures was recommended to prevent a surge in cases that would negate the effect of the lockdown.

Uganda had 100 cumulative COVID-19 cases by May 6, 2020. By May 18, 2020, Uganda had 260 cases and still no deaths. President Museveni gave another address where public health measures were supposed to be lifted further. (103) To facilitate a safe reopening, President Museveni announced that free cloth masks would be provided to everyone aged 6 or higher and would be distributed through the Local Council system at the district level. (103) In his



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address, President Museveni stated that the relaxing of public health measures should coincide with the distribution of masks, which he believed could occur as early as May 26, 2020.

During his May 18 address, President Museveni stated that public transport including minibuses, buses, and taxis would be allowed to resume at 50% of normal capacity. Border districts were an exception to this rule, and public and private transportation were not allowed for an additional 21 days due to concerns that cases could enter from nearby countries and spread to urban centres in Uganda. Boda-bodas and tuk-tuks were still not permitted to carry passengers; however, they were allowed to make deliveries. Cycling, walking, or driving a private vehicle were emphasized as the safest modes of transportation. People with private vehicles were allowed to drive but were limited to carrying up to 3 passengers including the driver. International borders and airports remained closed.

Stores would be allowed to open as long as they were not located in shopping malls or food markets where it was impossible to maintain social distancing. (103) Workers camping at markets were permitted to return home and commute to the markets daily. Hotels and restaurants were allowed to open provided that clients were distanced. Facilities were not allowed to be air conditioned. Non-essential services such as bars, night clubs, gyms, saunas, public swimming pools, and hair salons remained suspended for 21 days. All other restrictions including curfew remained in place for an additional 21 days.

President Museveni also announced that drivers of cargo vehicles transporting goods to Uganda would not be allowed to enter Uganda or leave the border area without being tested for COVID-19. (103) Gene-Xpert machines were used at border points to test drivers and returned results within an hour. Drivers with a positive test originating from other countries were turned away from the border while Ugandan drivers were referred to hospitals for treatment. (104)

However, the address from President Museveni also left the public confused about when the lifting of public health measures would actually go into effect. (105) For the sectors that were allowed to reopen, it was unclear whether individuals were required to wait on government distribution of masks before returning to work or whether they were allowed to resume immediately given that many had already purchased their own masks. President Museveni later clarified that private transport could resume May 26, 2020 and that public transport could resume on June 4, 2020. (106) President Museveni confirmed that shopping malls would also open on June 4, 2020, provided that physical distancing could occur. (107) While the initial intention was to link reopening with mask distribution, government mask distribution fell behind schedule, and reopening nonetheless took place on these dates. People without masks were expected to stay home.

The government had initially announced that schools would reopen June 4, 2020 for candidate classes at the end of an educational phase (Primary Seven, Senior Four, Senior Six, and final-year students in post-secondary programs). (103) However, in his address on June 1, 2020, President Museveni announced that the reopening of educational institutions was delayed due





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to inadequate risk assessment for reopening and a lack of capacity to test returning students on a biweekly basis. (107) The government considered distributing TVs or radios to provide educational support so that students could learn at home. All other public health measures also remained in place, including mosque and church closures, bans on public gatherings, and masking. Physical distancing of 2m was recommended in public.

On June 22, 2020, President Museveni gave another address, indicating that Uganda had a total of 774 COVID-19 cases, and that 631 had recovered. Uganda had still not had any COVID-19 deaths. (108) Ugandan truck drivers made up 373 of the total cases in Uganda. In his address, President Museveni explained the rationale behind certain public health measures that the public wanted eased. The 7pm curfew was causing traffic jams in the evenings. (109) President Museveni maintained the overnight curfew to encourage people to return home rather than interact with each other and to prevent overnight crime. Private vehicles were now allowed to have a capacity of 4 people including the driver. (108) Boda boda businesses wanted to be allowed to resume carrying passengers, however due to the inability of drivers to remain physically distant from their passengers, the government continued to only allow boda bodas to carry deliveries. Places of worship, including churches and mosques, remained closed because it was difficult to enforce physical distancing, because these settings were indoors where risk of transmission was higher in comparison to outdoor settings, and because contact tracing would be difficult. Shopping arcades were kept closed because they were poorly ventilated multi-story buildings with a large concentration of people where physical distancing would be challenging. Mobile markets were kept closed because they would attract people from different districts which would make contact tracing difficult. Salons providing services such as hair dressing or massages were kept closed because of the close contact between service providers and customers. Restrictions on international travel were also maintained.

President Museveni noted certain districts that had high COVID-19 cases. (108) In these areas, public and private transportation remained closed. While public health measures were lifted in most areas, hotspot districts that were at high risk and had evidence of community spread were kept in lockdown for longer. (110)

Museveni stated that educational institutions would remain closed. Instead, the government implemented a long-distance radio education program, and confirmed that they would be distributing free radios to households, in addition to printed educational materials. (108)

Several notable groups were pushing the government to lift public health measures. (111) While there was initially public support of lockdown measures, this sentiment later changed. Once public transportation had resumed, religious leaders began calling for reopening of places of worship, which they believed should also be allowed to operate while following appropriate health and safety protocols. Shopping arcade owners also pushed back against their ongoing closures, believing that scientists were misleading the President about whether physical distancing could be maintained in these facilities.



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President Museveni announced the relaxation of additional public health measures beginning July 22, 2020. Shopping arcades were allowed to reopen provided that they could maintain physical distancing, ensure hand washing and masking, conduct temperature screenings, and prevent patrons from congregating in corridors, entrances, or on roadsides. (112,113) Salons could also reopen under similar conditions as shopping arcades, provided that service providers wore face shields in addition to masking. Curfew was changed from 7pm to 9pm and ended at 5:30am. Boda bodas were allowed to begin carrying passengers again as of July 27, 2020, provided that drivers wore masks and helmets, passengers remained masked, and operations ceased at 6pm. Other measures remained in place—Entebbe international airport, schools, and places of worship remained closed. (112)

As the pandemic wore on, Ugandan public opinion changed around following public health measures. A national survey conducted by Kampala-based Whitehead Communications found that 75% of respondents from a poll taken between July 6 and July 15, 2020 initially approved the government's decision to implement a lockdown. (114,115) However, up to 78% of participants polled no longer feared COVID-19 and were more likely to violate public health measures. Scientists noted that Ugandans were becoming complacent about following COVID-19 measures and called for people to take the pandemic seriously. (116)

With the lifting of the lockdown, COVID-19 cases and deaths increased in Uganda. (79) While acknowledging that the public health measures instituted beginning in March 2020 had controlled spread and prevented deaths from occurring, President Museveni still justified continued lifting of public health measures because of the need to grow the economy and because the government had already communicated individual behaviours to prevent transmission.

On September 20, 2020, President Museveni announced the relaxation of many remaining public health measures. (79) Schools would open for finalist classes who were scheduled to finish an educational level in public schools, tertiary colleges, and universities beginning on October 15, 2020. Other students were required to continue distance learning while additional plans were being made for these students to return to classes in January 2021.

Places of worship were also allowed to reopen, with a gathering limit of 70 people, including for congregate prayers on Sundays and Fridays, as of October 15, 2020. (79,117) Night prayers were still prohibited. Sunday school for children was not allowed.

Outdoor sporting activities were allowed to take place without spectators, provided that athletes were tested for COVID-19 72 hours prior to the event. (79) Indoor sporting activities including gyms and other leisure activities that took place in enclosed, high-risk spaces including casinos, cinemas, and bars remained closed because physical distancing was hard to maintain. There were concerns that inebriated individuals would not follow public health measures. Restrictions on public and private transportation in border districts were also relaxed. Other



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measures remained in place. Curfew remained in effect at 9pm. Mobile markets remained closed. Mass gatherings were still prohibited.

International airports and land borders reopened for tourists on September 20, 2020, provided that visitors could present a negative COVID-19 test taken 72 hours prior to arrival in Uganda, and provided that tour operators did not allow tourists to interact with Ugandans. (79) Tourists were required to travel straight from the airport directly to their destinations or designated hotels. (118) Travellers who could present a negative COVID-19 test were not required to quarantine as of October 1, 2020. Travellers without test results had to pay to be tested upon arrival and for the cost of quarantine until their test results were returned.

On September 30, 2020, the Ministry of Health provided an update, stating that Uganda was experiencing widespread community transmission that came alongside lifting of the lockdown and incomplete compliance with public health guidelines. The Ministry noted an increasing number of gatherings related to the upcoming election, burials, and house parties, crowding on public transportation, and improper masking as contributing factors to the increasing case numbers. (118) The Minister of Health also commented on a shift in the COVID-19 response objectives of the government. Initially, the response had focused on stopping cases from entering Uganda via returning travellers and truck drivers and involved institutional quarantine for travellers, their contacts, and confirmed cases. With community spread taking off, the response became focused on mitigating the number of confirmed cases to prevent overwhelming the health system, reducing deaths in the community, and using early case detection to reduce the number of people who became severely ill.

Uganda changed requirements around discharge of individuals in institutional quarantine and chose to shift away from using a negative COVID-19 test to allow people to leave. They previously had to test negative twice, 24 hours apart to be considered recovered. (119) Instead, the Ministry of Health chose to discharge individuals based on severity of illness and whether or not they were immunocompromised. (118) For mild and moderate cases, individuals were allowed to leave 10 days after symptom onset provided their symptoms had improved and they had not had a fever in the previous 24 hours. Asymptomatic individuals were allowed to leave 10 days after their initial positive COVID-19 test if they remained asymptomatic. Uganda also began allowing individuals to self-isolate, provided that they were able to follow specific home-based isolation guidelines and that they could keep their families safe. (118)

As of November 9, 2020, the Ministry of Health provided another update regarding lifting COVID-19 measures. (120) Mass gatherings including prayers, political rallies, meetings, and weddings could resume on certain conditions. Gatherings were limited to a maximum of 200 people, and individuals were required to mask and maintain 2m physical distance in all directions from other attendees. (120) Cinemas, gyms, casinos, gaming outlets, and mobile markets were allowed to reopen on November 14, 2020 provided that they followed gathering limits and physical distancing requirements. Bars and clubs remained closed.



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With an impending election in January 2021, the Ministry of Health also had specific guidelines around political rallies and processions. (120) The general guidelines including the gathering limit of 200 people, masking, and 2m physical distancing were to be maintained. Political candidates participating in a procession were advised to avoid making stops to speak to voters and to remain seated in their vehicles rather than waving to the public from their vehicles to prevent attracting crowds in excess of the 200-person limit. (120) Later, the electoral commission suspended campaign meetings in areas with high COVID-19 transmission. (121)

In December 2020, the Ugandan government began discussing plans to vaccinate the population against COVID-19. Health experts were concerned that the government did not have a clear plan or budget for vaccine procurement, and concerns remained over Uganda's ability to access vaccines in a timely manner. (122) The Ministry of Health announced that Uganda had applied to the WHO's COVAX facility for vaccinations. (123) The COVAX facility was expected to provide approximately 18 million doses to vaccinate 9 million people. The first shipment was expected to arrive in May or June 2021, with additional deliveries during the remainder of the year. The COVAX facility was expected to support vaccination of 20% of the population. Upon arrival of the vaccines, the Ugandan government planned to prioritize health workers, the elderly, and individuals with comorbidities.

As of December 20, 2020, Uganda had recorded an average of 3600 cases per week, a significant increase in COVID-19 cases since November 22, 2020 where the average was 1,900. (123) The Ministry of Health noted that patients were experiencing more severe illness from COVID-19 than earlier, and that the health system was being strained as a result. Some hospitals were reporting a lack of oxygen in public facilities. The government was attempting to expand intensive care capacity, particularly in the Greater Kampala Metropolitan Area, where there was the greatest need. (123) Despite increases in cases and deaths, no new public health measures were imposed, although bars, night clubs, and concerts remained closed. The Ministry of Health also recommended against travelling during festive season from Kampala and visiting elderly relatives from hotspot areas such as Kampala. (123)

In January 2021, cases for COVID-19 were decreasing; however, there were concerns that the reason for the decline was a reduction in tests being conducted compared to earlier in the pandemic. (124) The reduction in testing was potentially due to a shortage in testing kits, as well as a decrease in individuals willing to come forward for testing. Despite concerns around testing expressed in the media, the Ministry of Health announced that the reduction in case numbers in January and February 2021 reflected that the first wave was coming to an end. (125)

On February 4, 2021, President Museveni announced that schools would be reopened starting on March 1, 2021 for semi-candidate classes including Primary 6, Senior 5, and Senior 3 and would attend in cohorts to reduce risk of COVID-19 transmission. (126) The rationale was that finalist classes were expected to complete their schooling, thereby making space in facilities for



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semi-candidate classes and preventing overcrowding. Other classes continued distance learning using the radio. Universities and other tertiary institutions were also allowed to have a phased reopening beginning March 1, 2021. (127)

In his address, Museveni also talked about the vaccination campaign in Uganda. (128)

Vaccination was anticipated to begin at the end of February 2021 or the beginning of March 2021. Uganda expected to receive 3.5 million vaccines from the COVAX facility and was aiming to purchase 18 million doses from the Serum Institute of India. The government of Uganda initially chose to begin their vaccination efforts using the Astra-Zeneca and Chinese vaccines because they were easier to store, whereas mRNA vaccines could not be refrigerated easily in Uganda. The Astra-Zeneca vaccine was only recommended for adults over the age of 18, which raised concerns about vaccinating children aged 0-17, who were known to be spreaders of the virus and made up approximately 55% of the population according to the Uganda National Bureau of Statistics. (129)

On February 23, 2021, the Ministry of Health reported that 400,000 doses of the Astra-Zeneca vaccine from the Serum Institute of India were scheduled to arrive mid-March 2021, with additional doses being delivered incrementally. (130) The COVAX facility had allocated 3,552,000 doses of the Astra-Zeneca vaccine to Uganda, of which 864,000 doses were to arrive by mid-March 2021. (131) Uganda was also expecting additional donations of Astra-Zeneca and CoronaVac (Sinovac) vaccines from the Indian and Chinese governments, respectively. (132,133) The Ministry of Health also elaborated on how the vaccines would be allocated to priority groups. (134) Health care workers in public, non-profit, and private health facilities were to receive their vaccinations first, both to protect them from severe illness and death, and to motivate them to continue to provide care. Teachers would be the second group to receive vaccines, in order to support safe school reopening. Adults over 50 would be the third group to become eligible, followed by adults aged 18-50 with health conditions including hypertension, diabetes, cancer, and other diseases including liver, kidney, or heart disease. Uganda also planned to vaccinate refugees. (135) The Ministry of Health ran a mass media campaign in English and other local languages to provide information to the public on vaccines and address misinformation. (134)

Vaccination in Uganda began on March 10, 2021 beginning with health workers, teachers, and security personnel. (136) Adults aged 70+ were prioritized next for vaccination given that they were considered a high-risk group. As of April 8, 2021, Uganda opened up vaccination to everyone over the age of 50, in addition to adults aged 18-50 with comorbidities. (136)

In addition to public provision of COVID-19 vaccines, corporations were approved to purchase vaccines for their staff. (137) The Ministry of Health received requests for corporate organizations to import vaccines for their employees. Corporations were allowed to import vaccines as long as the organizations did not sell the vaccines to their final recipients and as long as the vaccines were approved by the WHO for emergency use. Allowing private



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corporations to procure vaccines raised concerns around fake vaccines being sold which could potentially go undetected by regulatory authorities. (137)

### Wave 2

On April 17, 2021, President Museveni updated Ugandans on COVID-19 measures. Uganda aimed to keep case counts low by maintaining curfew from 9pm – 5:30am. Certain non-essential closures also continued and entertainment venues and activities such as bars, clubs, concerts, and performing arts remained suspended until certain vaccination thresholds were met. (138,139) These thresholds included vaccination of 80% of the elderly population and vaccination of an additional 2 million individuals under 50, including those with comorbidities.

Uganda experienced an increase in reported COVID-19 cases, doubling from 130 cases in the last week of March and first week of April 2021 to 260 cases by mid-April. (140) This increase in cases marked the beginning of Uganda's second wave.

As of April 30, 2021, the Ugandan Virus Research Institute noted that several COVID-19 variants were present in Uganda, including the delta variant. India was categorized as a Category 1 country, and all flights from India to Uganda were suspended as of May 1, 2021. (141) Travellers arriving from India or who travelled through India within the past 14 days were also not allowed entry into Uganda.

The Ministry of Health developed a COVID-19 resurgence plan which aimed to control COVID-19 spread and to reduce the long-term socioeconomic impact of the ongoing COVID-19 response. (141) The National COVID-19 Resurgence Plan June 2021 – June 2022 was meant to build on past experience from implementing the COVID-19 Preparedness and Response Plan March 2020- June 2021. (142) The Resurgence Plan dictated interventions based on control, alert, and action trigger levels with specific criteria. The Alert threshold was defined as a 10-20% increase in average incidence of COVID-19 cases over a 7-day period within a specific geographic location. (142) The Alert threshold signaled that the risk of a resurgence was high and that intervention would be required to prevent resurgence from occurring. If the increase in COVID-19 incidence remained less than 10% over the 7-day period, then the region could be move back to the Control level. If the incidence increased by less than 20%, then the area would trigger the Alert threshold. The Action threshold was defined as an increase of more than 20% in average incidence over a 7-day period within an area. (142) Intervention revolved around the response pillars that were developed for the COVID-19 Preparedness and Response Plan at the beginning of the pandemic.

In an update from the Ministry of Health on May 27, 2021, it was reported that 550,626 people had received the Astra-Zeneca vaccine. (143) The Ministry of Health recommended that people who had received their first dose should get a second dose after 8-12 weeks. The government began administering second doses on May 21, 2021.



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On May 29, 2021, President Museveni addressed the nation regarding the second wave of COVID-19. (144) The government was most concerned about Kampala, where cases were most concentrated. In contrast, Ugandan villages were not presenting with many cases. As a consequence, people from villages were asked not to visit Kampala unless necessary. Originally, the government believed that focusing vaccination on high-risk individuals prior to lifting restrictions would be sufficient; however, President Museveni acknowledged in his address that they would need to vaccinate the general population to return to complete normal.

Since May 29, 2021, the COVID-19 situation had changed significantly. As of June 4, 2021, Uganda had 1,259 confirmed daily new cases, which was the highest number of cases recorded in a single day. (145) President Museveni addressed the nation and announced a list of directives to manage the second COVID-19 wave, with most taking effect June 7, 2021. (145) All schools and universities were fully closed for 42 days effective June 7. All teachers were required to be vaccinated before being able to return to school. Markets selling non-food items were closed. Non-essential services such as bars, discos, concerts, and cinemas remained closed. Agricultural activities were allowed to continue. Certain non-agricultural activities could also operate including factories, construction sites, shopping malls, and supermarkets while observing health protocols. In the event of non-compliance with health protocols, these businesses could face complete closure. Essential services including ambulances, security vehicles, and garbage collection were allowed to operate normally. Where possible, work from home was encouraged. Sporting events were allowed to continue without spectators as long as players could present negative PCR tests. (145) All public spaces (markets, offices, shopping malls) were directed to follow strict hygiene protocols such as sanitizing hands before entering, physical distancing, and appropriate use of face masks at all times.

Places of worship were closed, and outdoor prayers were suspended. (145) Public and cultural gatherings, and conferences were suspended. Social gatherings including weddings, parties, and funerals were allowed to continue, but limited to a maximum of 20 people, and subject to mandatory masking and physical distancing. House parties were banned.

Public transportation including buses, taxis, and boda-bodas between districts was suspended for 42 days starting June 10, 2021, with the exception of cargo trucks, registered tourist vehicles, and essential or emergency service vehicles. (145) Public transport within districts was allowed with observance to appropriate health protocols. Private vehicles were not allowed to carry more than 3 people.

On June 18, 2021, President Museveni addressed the nation and emphasized the need to limit community transmission and the need to prevent overwhelming the hospital system or exhausting the oxygen supply. (146) President Museveni updated directives based on issues that had come up since his previous address. These updated measures took effect June 18, 2021 and marked the beginning of a second lockdown that was in place for 42 days.



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Public and private transportation remained prohibited between districts, except for tourist vehicles, emergency vehicles, and essential worker vehicles. (146) Entebbe International Airport remained open, but vehicles were not allowed to cross the land borders, with the exception of cargo trucks and tourist vehicles.

Schools and places of worship remained closed. (146) Non-agricultural activities including food markets, factories, and construction sites were allowed to operate, but where possible, workers were required to stay at the workplace rather than commute home. Non-essential services including bars, nightclubs, casinos, cinemas, and sporting events remained closed. Essential sectors were defined as agriculture, manufacturing, tourism, health and medical services, police and army, utilities, banking, waste management, retail and markets, and cargo transport. All other services not explicitly stated were required to close. Burials were limited to family members only, to a maximum of 20 people. Curfew was changed to 7pm – 5:30am. Everyone was required to be home during these hours except police forces and other essential workers.

July 30, 2021 marked 42 days since the lockdown was instituted on June 18, 2021. (147) The lockdown facilitated a reduction in daily cases, hospital admissions, and deaths. Daily cases had peaked at 1,735 and the public health measures had brought this number down to a low of 71 cases. Daily hospital admissions had peaked at 204 and were reduced to less than 50. As a result, President Museveni announced revised regulations and relaxed certain public health measures. Shopping malls and business centers were allowed to reopen. Restaurants and salons were permitted to operate during the lockdown and could remain open. Inter-district travel by private vehicles was allowed. Public transportation was allowed to resume at 50% capacity as of August 2, 2021.

Other measures remained in effect. (147) Curfew was still from 7pm- 5:30am. Burials and weddings were only allowed a maximum of 20 people. Schools and places of worship were still closed. President Museveni announced that schools would remain closed until sufficient vaccination of the current eligible population, in addition to children aged 12-18. Certain non-essential closures also continued. Indoor sports, gyms, casinos, theatres, cinemas, concerts, bars, saunas, and steam baths were still banned from operating.

On August 20, 2021, the Ministry of Health provided an update. (148) India was no longer considered a Category 1 country, meaning that travellers from India were now permitted to enter Uganda provided that they were able to present a negative COVID-19 PCR test 72 hours prior to arrival and that they took a mandatory PCR test upon arrival.

The Ministry of Health also provided an update on vaccine procurement, which was expected to occur through purchase or donation of vaccines from the COVAX facility, African Union, and directly from manufacturers. (148) From the COVAX facility, 18 million doses of Sinopharm were expected to arrive in October 2021. Nine million doses of Johnson and Johnson were expected to arrive from the African Union beginning in September 2021.





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By September 22, 2021, COVID-19 cases continued to decline, although several hotspot districts including Kampala, Kalungu, Kabale, Kumi, Soroti, Tororo, Gulu, Nwoya and Yumbe still had high levels of transmission. (149) The daily average number of confirmed cases in the country had declined to 124 from a peak of 1,445 during the second wave. President Museveni announced that the COVID-19 response would be focused on vaccination going forward. (149) Uganda was aiming to increase vaccination for eligible adults over the age of 18 and added students in post-secondary institutions to the list of eligible populations.

In response to declining cases, several sectors were reopened. (149) Places of worship were allowed to open with a limit of 200 people provided that 2m distancing could be maintained. Other gatherings including weddings, funerals, or other social events could also occur with a limit of 200 people. Some non-essential services were allowed to resume including casinos and gyms, while others including bars, concerts, nightclubs, beaches, and cinemas remained suspended pending vaccination of priority populations.

Post-secondary institutions were allowed to open beginning November 1, 2021, provided that all teachers and staff were vaccinated. (149) President Museveni also encouraged vaccination of 330,000 post-secondary students over the age of 18 occur as quickly as possible.

In his update on October 28, 2021, President Museveni announced that Uganda would be able to vaccinate 12 million people by the end of December 2021, out of the targeted total of 22 million people over 18. (143,144) The goal was to vaccinate teachers and staff in educational institutions, frontline workers including police, health workers, and market and bar workers, post-secondary students, adults over 50, and adults below 50 with comorbidities by the end of December so that schools and the rest of the economy could be reopened in January 2022.

As of November 5, 2021, vaccine uptake was low. (150) To increase vaccine coverage, the Ministry of Health expanded the vaccination program from health facilities, and began including other community locations such as villages, churches, taxi parks, and markets.

By November 20, 2021, Uganda had procured 15,541,890 doses of different vaccines and were expecting additional shipments totaling 31,982,740 doses. (151) With the vaccine supply, there were enough doses to fully vaccinate all Ugandans over the age of 18 years, and this population was eligible to be vaccinated. As of December 9, 2021, Uganda had fully vaccinated 2.73% of the total population with a complete initial protocol and 11.11% of the total population had been partly vaccinated. (152)

### Relief Programs

During the first lockdown, the government planned to distribute food packages to people to support those experiencing food insecurity. (89) Food packages included items such as maize flour, beans, powdered milk, sugar, and salt. Food distribution began on April 4, 2020 for people living in Kampala and Wakiso. Distribution was done via home delivery to prevent



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congregation of individuals at pick-up locations, with the support of Local Councils. (153) Food distribution was reserved for people the government believed to be most vulnerable to the effects of the lockdown. (93) Individuals qualifying for food support were required to have their income affected by government public health measures during the lockdown and also could not be growing their own food. (98)

During the second lockdown, the government took a different approach to supporting vulnerable people, instead opting to provide direct payments using mobile phones. (154) For those without mobile phones, a voucher system would be used instead. The financial relief program was only set up to support 501,107 vulnerable people with cash transfers of UGX100,000 and consequently left out more than 7.7 million other people living in poverty. (155) The majority of the beneficiaries were concentrated in western and central regions of the country, despite the eastern and northern regions having a higher proportion of poor people. Government officials believed that while the people not included in the program were poor, they were not necessarily vulnerable given that they lived in rural areas and could produce their own food on their farms.

### Disproportionately affected populations

Truck drivers have been disproportionately affected by COVID-19 in Uganda. Early in the pandemic, Uganda noted many of its new cases arising from truck drivers being tested at border points, and most community cases were also linked to long distance truck drivers. (156,157) Ugandans were concerned by the possibility of spread via truck drivers and wanted authorities to keep the truck drivers at the borders until their COVID-19 status was known. (158) Truck drivers protested quarantine regulations, citing concerns about the personal expenses they would incur to support themselves, and demanding food be provided to them. (159)

The prison population in Uganda were at high risk of contracting COVID-19 and anxiety around becoming infected prompted inmates to escape from two different prisons. (160) Notably, with the criminalization of violating lockdown policies, prisons were experiencing an increase in the number of people incarcerated. President Museveni allowed for the release of people arrested for defying public health measures to reduce the number of people in prisons.

The lockdown had a disproportionately negative impact on women. The Center for Domestic Violence Prevention noted that women had lost income, experienced food insecurity, and had limited access to health and social services. (161) Gender-based violence (GBV) also increased in Uganda during the lockdown alongside socioeconomic difficulties. As of April 17, 2020, Ugandan police had reported that 328 cases of domestic violence cases had occurred during the first month of the lockdown.



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### Successes and Challenges in Uganda's Pandemic Response

Key informants identified several successes and challenges in Uganda's COVID-19 response. Lockdown measures were cited as being effective in keeping cases and deaths low in Uganda. Policies including border closures and limits on public and private transportation were also identified as helpful to mitigate transmission. One key-informant felt that there was an appropriate balance of public education initiatives and police service involvement to enforce COVID-19 policies such as curfew. The response was coordinated successfully between different arms of the taskforce.

Key-informants commented on Uganda's ability to mobilize resources to support the response. Private sector resources could have been mobilized earlier for activities such as testing. Once government-provided services were overwhelmed in capacity, the private sector was able to play a more active role in the response; however, one key-informant felt that they could have been included from the beginning. Uganda's mobilization of human and material resources, including through donations from individuals and institutions, was commended. One key-informant noted that Uganda was aware of epidemic response system shortcomings from past evaluations that were not addressed by the time that the COVID-19 pandemic began. A recommendation is that these systems be maintained and that limitations be addressed to ensure system readiness for response in the future. A key-informant also provided feedback around early action to contain COVID-19. In retrospect, they felt that the best option would have been to completely close borders to prevent entry of any cases into the country; however, completely barring entry would have gone against international law. They elaborated to say that if everyone internationally had closed borders to prevent any cases from leaving or entering, COVID-19 would not have spread, and that international health regulations should be looked at given how they became a problem during the pandemic.



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## Comparison with other country responses

There are many concerns in trying to compare countries’ responses to COVID-19. This is shaped by limitations of the data itself and differences in contextual factors. A separate paper by this working group describes limitations of COVID-19 data. (Submitted) Table 4 presents a list of African countries included in our work and their use of different social distancing policies.

Government	State of Emergency	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Case Management	Separation of cases or suspected cases within institutions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	Recommended self-isolation for symptoms					
	Recommended self-isolation for contacts					
	Recommended self-isolation for cases				<input checked="" type="checkbox"/>	
	Recommended self-isolation after travel					
Closure	Suspended elective medical/dental procedures	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
	Restaurant closure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
	Non-essential service closure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Detection	Surveillance systems	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Mass fever screening in public transportation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	Drive through testing centres	<input checked="" type="checkbox"/>				
	Contact tracing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Assessment centres	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Economics	Housing economic relief	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Economic relief policies for individuals/families	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Economic relief policies for businesses	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Anti-price gouging	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
	Anti-hording	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		
Education	University closure	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	School closure- high school	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	School closure- elementary school	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	School closure- daycare	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Health Workforce	LTC Health workers allowed to only work at one site					
	Health workers allowed to only work at one site					
Healthcare Resources	Telehealth access to prescription medication	<input checked="" type="checkbox"/>				
	Audio/video telehealth	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Physical Distancing	Work from home/remote work	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	Required use of masks/PPE for public	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Recommended use of masks/PPE for public	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Quarantine orders for contacts	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
	Quarantine orders for cases	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Quarantine orders after travel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Quarantine for "at risk" or priority neighbourhoods	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	Physical distancing recommendation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Lockdown	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Isolation for vulnerable populations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Ban on group size	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Public Decontamination	Public decontamination transit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
		Public decontamination streets				
Travel bans	Screening at airports/borders	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	International bans for non-essential travel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Closing public transportation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
		South Africa	Uganda	Sierra Leone	Liberia	

**Table 4. Comparative national-level responses to COVID-19 by country (filled in means policy was implemented)**



### IV. Discussion of main findings, limitations, and next steps

Uganda has an estimated population of 45,741,000 with 127,550 cases and 3,252 deaths from COVID-19 as of November 30, 2021. Uganda initially tried to contain the pandemic by preventing travel-related cases from entering COVID-19 and later, once widespread community transmission took hold, shifted to a mitigation strategy focused on preserving the economy.

Uganda employed a variety of policies such as lockdown, school closures, international travel bans, masking, physical distancing, and limits on gathering. Uganda began implementing mitigation measures for COVID-19 prior to the detection of their first case. Uganda implemented their first lockdown in March 2020 which was progressively lifted over the following months, primarily for economic reasons. The lockdown delayed Uganda's first wave, which only saw its peak between November 2020 and January 2021. The second wave began in April 2021 and Uganda responded with a second, strict lockdown once cases began taking off rapidly.

Later in the pandemic, Uganda began ramping up vaccination of their population. Uganda faced challenges with vaccine rollout due to supply issues and because their population was made up of a large proportion of individuals 17 or younger, for whom vaccines were not immediately approved.

Limitations to this report may exist because findings rely on accurate, up-to-date documentation of policy responses by the media and government sources. Several policy announcements were not consistent in announcing start and end dates for certain business closures. In cases where policies were not implemented according to plan, there may be some discrepancies with the information in this report.

#### Conclusions

Uganda has used a variety of policies in their COVID-19 response. Uganda has ultimately been successful in using strict lockdowns to reduce cases and deaths and mobilizing their existing epidemic response system to address COVID-19. In the future, it will be important for Uganda to ensure that their epidemic response and health systems are appropriately resourced to deal with future epidemics.



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