HOW COVID-19 CONTINUES TO AFFECT LIVELIHOODS IN KENYA

RAPID RESPONSE PHONE SURVEY

ROUNDS 1 TO 5

10/16/2021

WORLD BANK GROUP
Poverty & Equity

Acknowledgement

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Abbreviations

CAPI	Computer Assisted Personal Interview
GoK	Government of Kenya
HH	Household
KCHS	Kenya Continuous Household Survey
KIHBS	Kenya Integrated Household Budget Survey
KNBS	Kenya National Bureau of Statistics
KSh	Kenyan Shilling
NEDI	North & North Eastern Development Initiative
NGO	Non-Governmental Organization
pp	Percentage points
PwSD	Person with Severe Disability
RDD	Random Digit Dialing
RRPS	Rapid Response Phone Survey
SES	Socioeconomic Survey
UNHCR	United Nations High Commissioner for Refugees
VAT	Value Added Tax

EXECUTIVE SUMMARY

Understanding the socioeconomic impact of the COVID-19 pandemic is important to inform policy responses. The arrival of COVID-19 disrupted lives across all countries and communities, creating unprecedented challenges. As of August 2021, there have been more than 200 million cases globally, with more than 4 million deaths. Throughout the pandemic, governments have adopted measures to curb the spread of the virus, which inadvertently resulted in socioeconomic impacts. To shape and accelerate the recovery, it is important to better understand the implications of the pandemic and its associated restrictions.

The strict containment measures that were put in place in response to the COVID-19 pandemic in Kenya had negative socioeconomic impacts. With the onset of the COVID-19 pandemic in Kenya in March 2020, a range of containment measures were introduced by the Government of Kenya (GoK). These included the promotion of social distancing practices, restrictions on public gatherings, night curfews, shutting down learning institutions, and limits on public transport passenger capacities. Despite this, the number of cases reached 200,000 in August 2021, with more than 4,000 deaths. People were facing job losses, rising food insecurity, and worsening health and education outcomes. Understanding and quantifying the repercussions of the pandemic, particularly on different sub-groups of the population, can help to inform policies and improve targeting.

The Kenya COVID-19 Rapid Response Phone Survey (RRPS) aims to fill socioeconomic data gaps by providing evidence to inform targeted policy and programmatic response. With face-to-face data collection no longer a feasible option due to high infection rates and government restrictions, phone surveys emerged as an alternative for rapid and frequent data collection. The World Bank in collaboration with the Kenya National Bureau of Statistics (KNBS), the United Nations High Commissioner for Refugees (UNHCR) and researchers from the University of California, Berkeley, are implementing Rapid Response Phone Surveys for (i) Kenyan and refugee households, (ii) micro-enterprises run by young entrepreneurs, and (iii) formal enterprises. This note provides findings and makes policy recommendations based on five waves of data collection for Kenyan and refugee households.

Early in the pandemic livelihoods were adversely affected, particularly in urban areas, while school closures reduced access and limited learning. This was accompanied by a sharp increase in short-term poverty.

Many Kenyans lost employment early in the COVID-19 pandemic with a large share becoming inactivity, however, for most households receiving remittances the value increased. The share of working-aged adults (18-64) in employment decreased from 71 percent at the end of 2019 to 50 percent a few months into the pandemic. Most Kenyans who lost employment became inactivity resulting in 4 in 10 working-aged adults being outside the labor-force, while a smaller share moved into unemployment. Furthermore, those in wage employment saw a decrease in hours worked and their earnings decline by just under a quarter. Urban areas were worse affected, with only 4 in 10 adults working compared to over 5 in 10 adults in rural areas. While very few households received assistance (less than 10 percent of households reported receiving remittances), most households receiving remittances saw an increase in the amount compared to before the pandemic.

The closure of schools adversely affected students' ability to access their teachers and reduced engagement in learning. Most children did not have access to their teachers after schools closed. The school closures also caused disparities, with around one-quarter of private-school students being able to access their teachers compared to less than 10 percent of public-school students. However, around two-thirds of both private- and public-school students had engaged in some learning activity. In younger

children, the job insecurity associated with the pandemic impacted households' ability to provide nutrition to young children. Finally, Kenyan's ability to access health check-ups was negatively impacted, with less than three-quarters stating they could go for check-ups as frequently as before the pandemic.

In response to the pandemic households implemented coping mechanisms, however, food insecurity was common and short-term poverty increased. To adjust to the negative shock of the pandemic, many households implemented coping mechanisms. The most common approach was to rely on savings or reduce food consumption (38 percent of households), while 1 in 5 households reported doing nothing. Furthermore, poorer households were more likely to sell assets, while richer households more often took a loan. Of concern is the large share of women-headed households selling assets (over 20 percent) and using family transfers (25 percent) to cope with the pandemic. Despite these approaches almost half of households reported going hungry due to a lack of food, while food insecurity was more common in rural and poor households. During the early stage of the pandemic there was a large increase in short-term poverty, with around half of the population in poverty. The increase was greater in urban areas resulting in similar levels of short-term poverty in rural and urban households.

Despite signs of improvements in the labor market in the second half of 2020, continued school closures saw a worsening in access and engagement in learning, and there was a large increase in poverty across the year.

The labor-market started to demonstrate signs of recovery in the second half of 2020. The share of working-aged individuals in employment continued to improve across the second half of the year, reaching over 60 percent towards the end of 2020. Men saw a sustained improvement in employment while the employment rate among women stagnated towards the end of 2020, however, employment remained below pre-pandemic levels for both men and women. Compared to early in the pandemic, unemployment had increased while inactivity had returned to its pre-pandemic levels suggesting a share of the working-aged were seeking but unable to find work likely due to a lack of employment opportunities. Unemployment was particularly high in urban areas, with one-quarter of the working-aged in unemployment. Further encouraging signs included the improvement of job quality for wage employees and returns to pre-pandemic levels in hours worked and earnings. Non-labor income remained unchanged with very few households receiving assistance, but the majority of those receiving remittances continued to receive larger amounts than before the pandemic.

While schools remained closed for most, access to teachers and the share of children engaged in learning activities declined. Schools remained closed across the second half of 2020 for most students. Access to teachers converged across private- and public-schools with just over 15 percent of students having access. Engagement in learning also worsened to less than 60 percent, with most citing a lack of motivation as the reason for non-engagement. Disparities also existed in the quality of learning engagement undertaken, with under-privileged children less often engaging in remote learning (online, radio and TV programs). Furthermore, girls from poor households were less likely to learn remotely and also reported spending double the amount of time of household chores than boys from poor households. The lack of access and differences in quality of learning engagement may exacerbate pre-existing inequalities. Access to health followed a similar pattern to the number of COVID-19 cases and worsened towards the end of 2020.

Kenya's poverty reduction has been set back by the COVID-19 pandemic, which increased poverty by over 7 percentage points. Fewer households used savings to cope with the pandemic towards the end of 2020, while an increasing share reduced non-food consumption, relied on credit or assistance from family and friends. The greater reliance on a range of coping mechanisms suggests households were still being adversely affected. Food insecurity, as measured by the share of households who reported going hungry

due to a lack of food, decreased in the second half of 2020, likely due to seasonal changes. The high short-term poverty rates persisted across the second half of 2020, although while rural short-term poverty stagnated, urban short-term poverty declined. Across 2020, poverty increased by 7 percentage points, or an additional 3.5 million Kenyans became poor (Figure 0-1). The GoK's policy response prevented half a million additional Kenyans becoming poor, however, a cash transfer targeted to the poor would have prevented a further 0.6 million Kenyans from falling into poverty. Those newly poor households display different characteristics to the poor prior to the pandemic, being younger, smaller in size, more often urban, and better-educated. Urban areas were worse affected with poverty increasing by a larger amount than rural poverty (9 versus 7 percentage points). Finally, the severity of poverty and inequality also worsened across 2020. However, poverty remained concentrated in the counties in the NEDI region (Figure 0-2).

Figure 0-1: Projected poverty headcount change - 2020   *Figure 0-2: Poverty headcount - 2020*
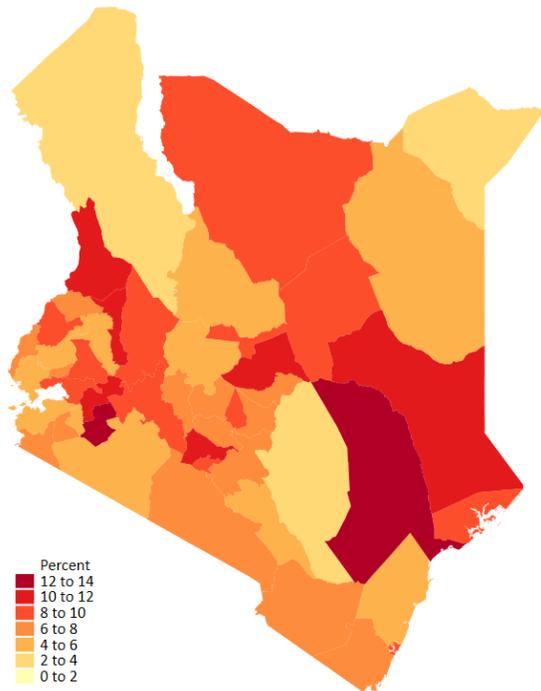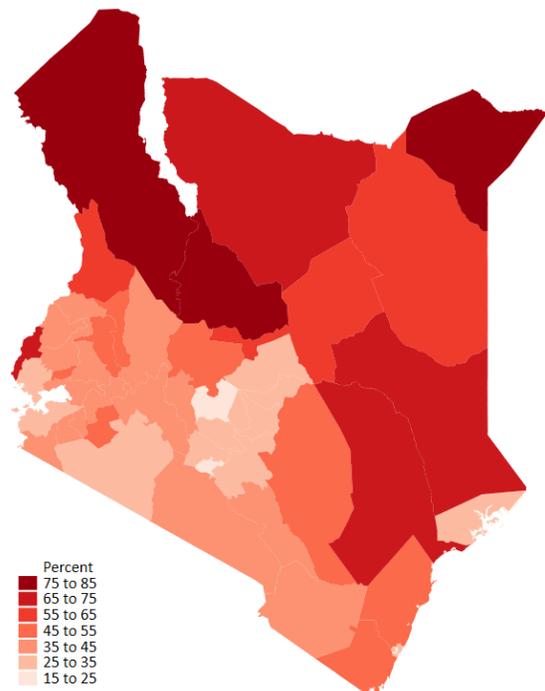
In the first half of 2021 Kenya continued to recover from the on-going pandemic, although remains vulnerable to future outbreaks with low vaccination rates.

While the share of working-aged adults in employment continued to improve, the quality and vulnerability of work is a concern. Across the first half of 2021, unemployment and inactivity continued to decline, while employment surpassed its pre-pandemic level. Even among urban areas, employment had recovered by the middle of 2021. Around three-quarters of the growth in wage employment between mid-2020 and mid-2021 came from 6 sectors (utilities and construction, agriculture, transport and storage, wholesale and retail trade, manufacturing, and accommodation and food services). However, the employment recovery showed signs of vulnerability: a growing share of individuals were working multiple types of jobs (wage, household enterprise, or agriculture); job stability as measured by having a permanent contract declined; hours and wages for wage employees decreased; and the growth in wage employment for women was reliant on sectors that are vulnerable to future containment measures. Towards the middle of 2021 the share of households receiving remittances increased to around 1 in 5.

However, for around half of these households the amount was lower compared to pre-pandemic amounts.

As schools reopened access to teachers and engagement improved. At the start of 2021 school reopened for all students which resulted in almost all students having access to their teachers and engaging in learning activities. However, among younger children (3-6) 15 percent did not reenroll in early January 2021, with cited reason including fear of COVID-19, and a lack of money, among others. One-fifth of the young children who were out of school experienced some sign of behavioral change compared to 5 percent of young children in school.

8 out of 10 individuals were willing to take the COVID-19 vaccine if it is available at no cost. The willingness to receive the COVID-19 vaccine has increased across the first half of 2021 and reached 80 percent towards the middle of the year. Willingness was greater among the better educated and urban individuals. The main reason cited for hesitancy was concern about potential side-effects, however, individuals would be more willing if the vaccine was recommended by a doctor or scientist. By the end of June 2021, less than 1 percent of Kenyans have been fully vaccinated. The GoK has procured COVID-19 vaccines from COVAX as well as other countries.

While short-term poverty has reduced across 2021, many households remain food insecure and continue to employ coping mechanisms. 9 out of 10 households continued to use coping mechanisms towards the middle of 2021. The most common mechanisms used are decreasing food and non-food consumption, relying on savings, and seeking extra income generating activities. Women-headed households remained as reliant on family transfers as early in the pandemic and an increasing share of poor households took loans to cope. Food security worsened in the first half of 2021 but remained below levels earlier in the pandemic. In the first half of 2021, short-term poverty was lower compared to 2020. However, while short-term poverty continued to decline in urban areas, it has stagnated in rural areas. Although short-term poverty remained above pre-pandemic poverty in both rural and urban areas.

Policies in response to the pandemic need to support vulnerable households in dealing with the on-going negative consequences, while also ensuring no longer-term damage remains.

Social protection programs can be used to help mitigate the increase in poverty caused by the impact of COVID-19. Expanding cash transfer programs targeted to the poor and most affected households in both rural and urban settings is essential to help offset the negative impact of the pandemic. Effective targeting will be vital to ensure that cash transfer programs reach the households most in need, including the 'newly' poor, as they may not be covered by existing safety nets. The GoK did implement some social assistance programs and tax relief to support households affected by the pandemic. However, such approaches were often limited in transfer size and coverage, and as a result did little to offset the increase in poverty. A poverty targeted cash transfer would be more effective at offsetting the increases in poverty. Furthermore, it is important that social assistance programs continue for the duration of the pandemic as households continue to be negatively affected in 2021. Policies, such as school feeding programs, that cater to children are also crucial as they can be particularly affected by the lack of sufficient and adequate food.

Provision of business loans can help recovery on both the intensive and extensive margins, while further digitalization of work can help minimize job losses from future shocks. Many Kenyans lost their employment and became unemployed or were pushed out of the labor force in the early months of the pandemic. With the gradual re-opening and phasing out of movement restrictions, labor force participation and employment have bounced back in 2021. However, while the extensive margins of work have recovered, problems persist on the intensive margin like hours worked and earnings for wage employees. Results from the World Bank report on the Impacts of COVID-19 on Kenyan firms show that

easy access to loans at subsidized interest rates will help reopen household enterprises that had closed due to government mandates and support enterprises to return operations to pre-pandemic levels. Digitalization of work through training of business owners and employees during the phased opening of workplaces can promote a work from home environment and may lead to lower job losses in case of future stay-at-home requirements. This can be done through campaigns on social media, online courses and courses provided through TV/radio programs. In the long-run, universal access to electricity as well as good network coverage across the country will be key to ensure the possibility of digital continuation of work in times of future crises.

Provision of additional funds can help schools and teachers to provide support to students to effectively catch up on learning while following safety protocols. A limited number of children participated in learning activities and even fewer had access to their teachers in 2020. To bridge the associated learning gaps developed from school closures, emphasis on extracurricular activities will provide the necessary support for learners who have fallen behind. Additionally, as educational institutions safely reopen, schools will need additional funding to implement and maintain new health and safety measures as well as continue supporting families who opt for home-schooling through strengthened communication channels.

More preparation and investment in remote learning options is needed to ensure that access to education remains high in case future school closures are necessary. Teachers need to receive adequate training and support for distance learning. Provisional support, such as airtime and mobile data, needs to be provided not only to teachers, but also to children – in particular to those from underprivileged households – to expand learning possibilities and help reducing inequality in access to education. Additional investment in the development of content and infrastructure to support remote learning can be an important tool to maintain engagement in learning activity during periods of school closures. This includes investment in educational programs broadcasted through radio channels that are an essential means to reach children that have no access to internet.

Young children have been particularly vulnerable during this crisis and as the recovery goes on special approaches are required. Young children face unique challenges during the on-going COVID-19 crisis and require targeted interventions as part of larger recovery efforts. Young children need adequate access to early stimulation, nutrition, healthcare and protection from stress during their first five years, when substantial brain development occurs. As Kenya continues the road to recovery, strategic investments in early childhood development are essential to Kenya's COVID-19 response plan, in order to protect this generation of young children. Learning opportunities have been severely interrupted and as re-enrollment campaigns continue, pre-primary needs to be included in the efforts. As health and nutrition services re-open, platforms need to ensure families with young children are prioritized to receive prevention healthcare and food support.

High take-up of COVID-19 vaccines is key to helping Kenya reduce the impact of future waves of the COVID-19 pandemic. Along with regular check-ups, people also need to be encouraged to get a COVID-19 vaccination once sufficient doses are available to the public, so that the spread of COVID-19 can be controlled further. Vaccination drives to villages along with easy accessibility of vaccination centers will help ensure that everyone has access to COVID-19 vaccines. Furthermore, increasing the visibility of medical professionals in the vaccine campaign can help mitigate vaccine hesitancy.

Given Kenya's current fiscal space, it will be important to prioritize policy responses and consider the fiscal cost of implementation. Given the on-going fiscal constraints faced by Kenya, it is important that policy options are prioritize both by need and urgency. Furthermore, careful consideration of the cost of each option needs to be taken into account alongside prioritization to ensure that policy responses to the pandemic are not at the detriment of longer-term fiscal sustainability.

Table 0-1: Recommendations

Recommendation	Comment/Explanation	Time-Period
Continued use of social protection is needed to help mitigate the impact of the pandemic.	It is important that social assistance programs continue for the duration of the pandemic as households continue to be negatively affected in 2021. Social assistance via cash transfers should also be expanded to include the newly poor and most vulnerable households. Additionally, it is vital to continue operating programs such as the school feeding programs to reduce the impact of COVID-19 on children's nutritional uptake.	Immediate
Provision of business loans.	Despite a recovery on the extensive margin of work, problems persist on the intensive margin. Results from the World Bank report on the Impacts of COVID-19 on Kenyan firms show that easy access to loans at subsidized interest rates will help reopen household enterprises that had closed due to government mandates and support enterprises to return operations to pre-pandemic levels.	Immediate
Provision of additional funding to schools to help student catch up on learning.	To bridge the associated learning gaps developed from school closures, emphasis on extracurricular activities will provide the necessary support for learners who have fallen behind. Additionally, as educational institutions safely reopen, schools will need additional funding to implement and maintain new health and safety measures.	Immediate
Additional funding for expansion of healthcare facilities to ensure universal access.	Additional funding to establish healthcare centers to ensure universal access to healthcare. Setting up tele-health services may help with delivering routine health services even in case of future lockdowns. Moreover, in order to prevent teen pregnancies, access to reproductive and sexual health information and services is important.	Immediate
Continued effort on the vaccine roll-out to ensure universal access.	People also need to be encouraged to get a COVID-19 vaccination once sufficient doses are available to the public, so that the spread of COVID-19 can be controlled further. Vaccination drives to villages along with easy accessibility of vaccination centers will help ensure that everyone has access to COVID-19 vaccines. Furthermore, increasing the visibility of health professionals in the vaccine campaign can help mitigate vaccine hesitancy.	Immediate

Multifaceted support is needed for young children to continue their early childhood development.	As Kenya continues the road to recovery, strategic investments in early childhood development are essential to Kenya's COVID-19 response plan, in order to protect this generation of young children. Learning opportunities have been severely interrupted and as re-enrollment campaigns continue, pre-primary needs to be included in the efforts. As health and nutrition services re-open, platforms need to ensure families with young children are prioritized to receive prevention healthcare and food support.	Immediate / medium-term
Further digitalization of work.	Digitalization of work through training of business owners and employees during the phased opening of workplaces can promote a work from home environment and may lead to lower job losses in case of future stay-at-home requirements.	Medium-Term
Greater preparation to ensure educational uptake remains high in case of future school closures.	Teachers need to receive adequate training and support for distance learning. Provisional support, such as airtime and mobile data, needs to be provided not only to teachers, but also to children – in particular to those from underprivileged households – to expand learning possibilities and help reducing inequality in access to education.	Medium-Term

A. INTRODUCTION

1.   The COVID-19 pandemic reached Kenya in March 2020, with total case numbers continuously increasing through the first half of 2021. The COVID-19 pandemic started in early 2020 in Kenya, with the first case reported on March 13, 2020. This prompted the imposition of several restrictions on gatherings and travel as well as closure of all learning institutions. These restrictions were in place until June 2020, at which time they were partly relaxed. The fall in the number of infections led to a further review of the containment restrictions in September. However, the relief was short lived as the positivity rate hit 17 percent in October and 20 percent in November 2020.[1] With the reversal of some of the relaxation measures, the positivity rate settled at below 5 percent in January 2021. The third wave of COVID-19 hit Kenya in March 2021, with the positivity rate jumping to 22 percent. With new restrictions once again in place, the infections were brought under control by May 2021. The total number of cases since the beginning of the pandemic has crossed the 200,000 mark in August 2021, with more than 4,000 deaths across the country.[2] The Case-Fatality-Ratio in Kenya was 1.94 percent as of August 1, 2021 as compared to 2.54 percent in Africa.[3]

2.   Strict containment measures in 2020 initially reduced mobility, but movement started increasing in July 2020 as restrictions eased. The government had adopted several containment measures following the outbreak of COVID-19. These included promotion of social distancing practices, restrictions on public gatherings, night curfews and limits on public transport passenger capacities. Since then, some restrictions have been eased. Domestic flights resumed on July 15, 2020 and international travel on August 1, 2020. Schools were closed on March 15, 2020. The re-opening was done in phases, with the first group of learners returning in October 2020 and schools fully re-opening on January 4, 2021. Based on the Oxford Stringency Index, a composite measure of the severity of policy response in nine areas, Kenya has consistently had more stringent policies in place than other countries in Sub-Saharan Africa.[4] Mobility fell for all locations (except residential areas) at the beginning of the pandemic in response to the containment measures. With the easing of restrictions, mobility started increasing in July 2020 and has since been trending upwards, despite some fluctuation in movement in 2021 (Figure A-1).

3.   A second lockdown was announced in 5 counties on March 24, 2021, after Kenya recorded a strong increase in the number of COVID-19 infections. As the positivity rate increased to 22 percent in March 2021, the government renewed the suspension on in-person meetings and all teaching activity including that in universities, and imposed an 8pm to 4am curfew in 5 counties.[5] All domestic rail, road and air travel was also banned to and from these 5 counties. However, on May 2, 2021, the lockdown was lifted again allowing for openings of bars and restaurants, religious services, and schools as infection reduced. With the detection of 3 new COVID-19 variants, restrictions were again put in place on in 13 counties in western Kenya on June 17, 2021.[6] These restrictions include longer curfew hours, a 30-day closure of livestock and nonfood markets, and a ban on public gatherings. Despite the restrictions, Kenya crossed 200,000 recorded cases of COVID-19 in August 2021 (Figure A-2).

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[1] The positivity rate is defined as the percentage of all coronavirus tests performed that are positive, ie. (positive tests)/(total tests) x 100%
[2] Data on COVID-19 cases in Kenya can be found on COVID-19 Dashboard from CSSE at John Hopkins University at https://www.arcgis.com/apps/dashboards/bda7594740fd40299423467b48e9ecf6
[3] Our World in Data. Data downloaded on August 2, 2021 https://ourworldindata.org/coronavirus/country/kenya
[4] The nine areas are school closures, workplace closures, cancellation of public events, restrictions on public gatherings, closure of public transport, stay-at-home requirements, restrictions on internal movement, public information campaigns and international travel controls.
[5] These 5 counties were Nairobi, Kajiado, Kiambu, Machakos and Nakuru
[6] These 13 counties are Busia, Vihiga, Kisii, Nyamira, Kakamega, Trans Nzoia, Bungoma, Kericho, Bomet, Siaya, Kisumu, Homa Bay and Migori

Figure A-1: Google mobility data and Oxford stringency index[7]
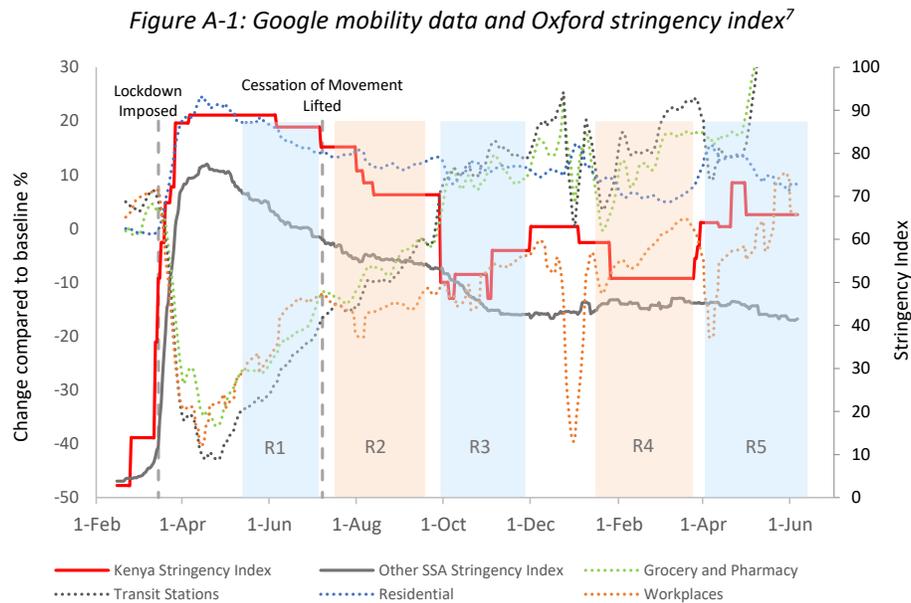
Note: Dotted lines indicate Google Mobility Data and bold lines indicate Oxford Stringency Index
Source: Oxford Stringency Index, Google Mobility Data.

Figure A-2: COVID-19 cases and RRPS timeline in Kenya
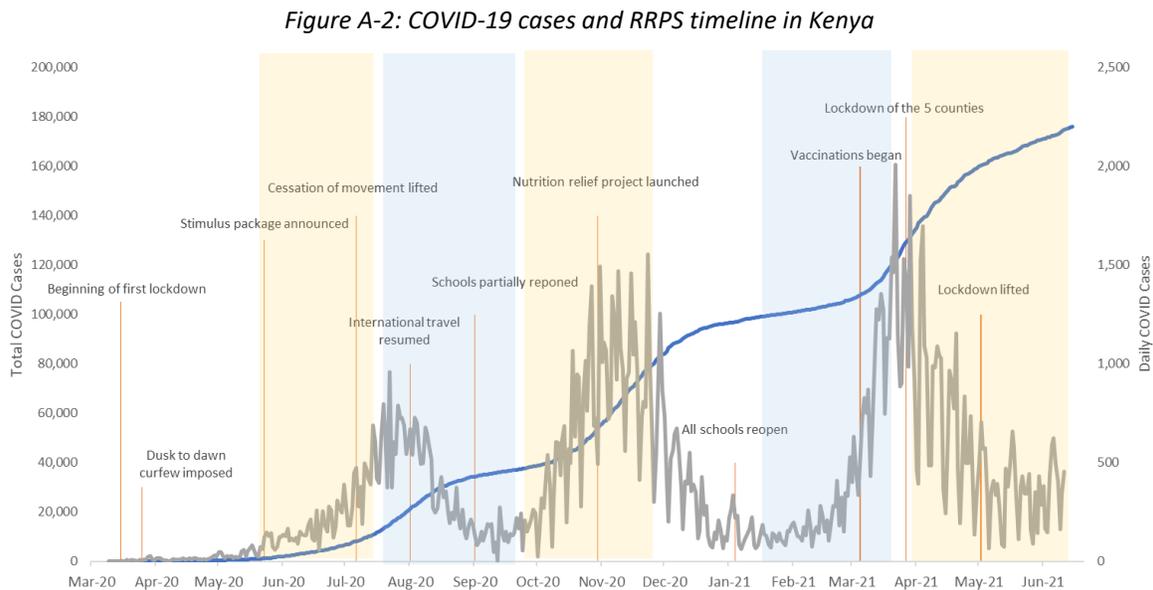
Source: Our World in Data.[8]

4. **Kenya is receiving COVID-19 vaccine doses under the COVAX initiative.** On March 3, 2021, Kenya received just over 1 million doses of the AstraZeneca vaccine under the global COVAX initiative and by

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[7] The baseline, as defined by the Google Mobility Reports is, "A normal value for that day of the week. The baseline value is the median value from the 5-day period between January 3- February 6, 2020"

[8] Our World in Data. Data downloaded on June 14, 2021 https://ourworldindata.org/coronavirus/country/kenya?country=~KEN..

May 12, 2021, about 930,000 Kenyans received their first dose of vaccine (Figure A-3).[9,10] Due to shortage of vaccine doses, Kenya decided to shift the timeline for the second dose of the vaccine from eight to 12 weeks after the first dose. People who received their first jab in the beginning of March received their second dose in the beginning of June. Kenya received an additional 72,000 doses of AstraZeneca vaccine on May 29, 2021.[11] Kenya has also ordered 30 million doses of the Johnson and Johnson vaccine from South Africa, of which 10 million are expected to arrive by August 2021.[12] Less than 1 percent of the Kenyan population has been fully vaccinated by June 15, 2021, out of which 56.4 percent are men and 43.6 percent are women. [13]

Figure A-3: Vaccination in Kenya, 2021
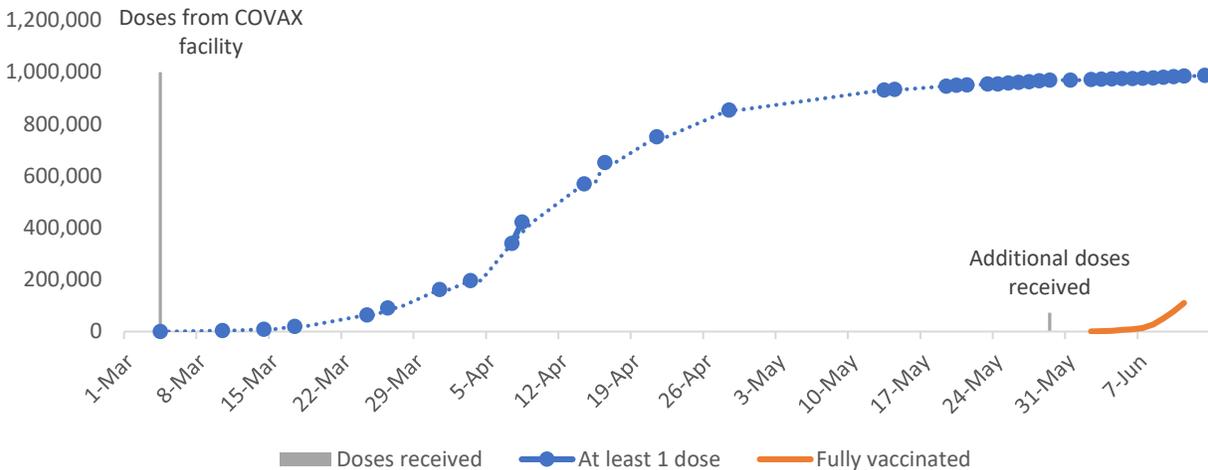
Source: Our World in Data.[14]

Box 1: RRPS Data
Data from the RRPS helps to inform timely and appropriate policy response. With the onset of the pandemic, face-to-face surveys were no longer feasible due to the risk of infection as well as mobility restrictions. However, phone surveys can be used to collect data without visiting households or firms, they can be implemented rapidly, and be adapted swiftly to changing circumstances. Therefore, phone surveys are highly suited for frequent data collection under very rapidly changing conditions like the COVID-19 pandemic and can be used to inform policy response and ensure efficient allocation of resources.
An online dashboard displays weekly results of the RRPS since the first week of data collection.[15] The dashboard shows the impacts of COVID-19 on behavioral changes, access to services, livelihoods, food

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[9] Mwaniki, "Kenya Completes Its First Round of COVID-19 Vaccinations."

[10] COVAX is led by the WHO and CEPI to provide rapid and equitable access of COVID vaccines to low- and middle-income countries. WHO. https://www.who.int/initiatives/act-accelerator/covax.

[11] South Sudan had returned these vaccines to the COVAX initiative as they feared vaccine expiration due to logistical challenges.

[12] Government of Kenya, "Government to Begin Vaccination of the 2nd Dose of Covishield."

[13] For access to press statement by Government of Kenya: https://www.health.go.ke/wp-content/uploads/2021/08/Press-Statement-on-Covid-19-15th-June-2021.pdf

[14] Our World in Data. Data downloaded on June 14, 2021. https://ourworldindata.org/coronavirus/country/kenya#how-many-covid-19-vaccine-doses-are-administered-daily

[15] For access to the real-time dashboard please visit: https://www.kenyacovidtracker.org/rrps

security and perceptions, disaggregated by location, poverty and refugee status of households. Maps are provided to disaggregate the data spatially (Figure A-4).

Figure A-4: Weekly results dashboard
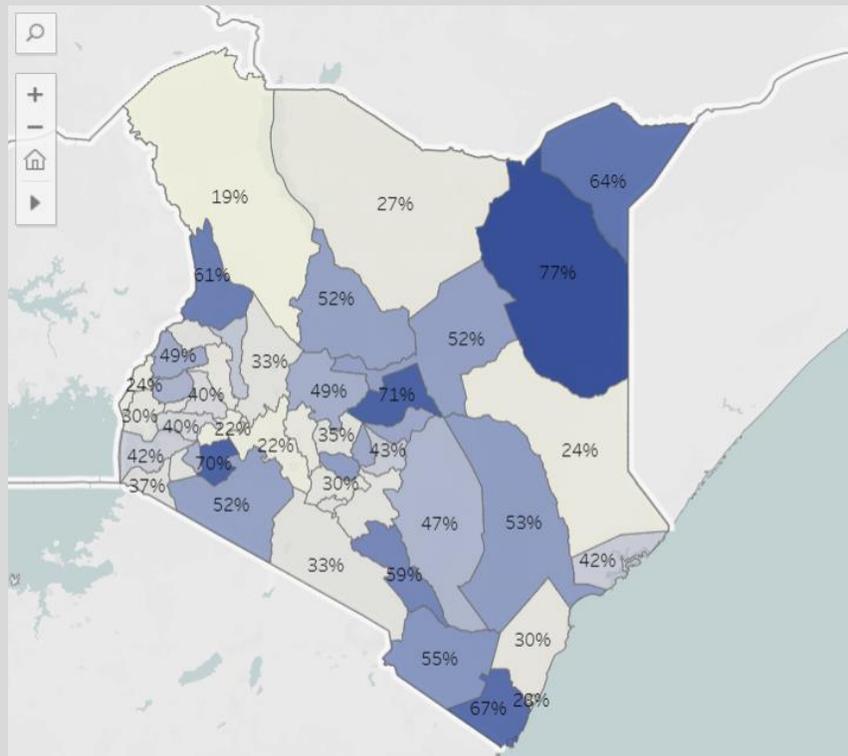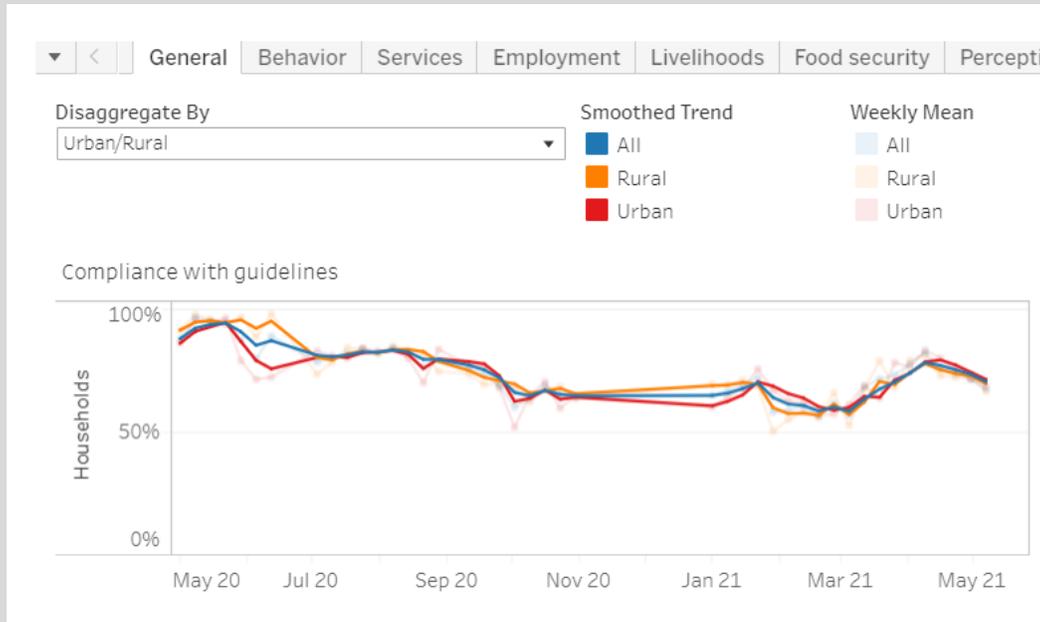
Source: Kenya COVID-19 RRPS.

B. THE POVERTY IMPACT OF COVID-19

1. Channels of Impact

5.   COVID-19 can impact households through changes in labor and non-labor income, changes in prices, additional health expenditures, and disruption to essential services such as education. The containment measures introduced to limit the spread of COVID-19 resulted in economic consequences for Kenyan households. Due to lower economic activity many households lost their labor income completely through job losses or experienced a reduction in earnings due to fewer working hours, lower pay, or absence due to illness. Furthermore, given the international nature of the pandemic, non-labor income sources such as remittances were also affected. The reduction of income results in a smaller budget for household consumption. In addition, the pandemic can directly impact consumption through price changes and necessary additional expenditures on services such as out of pocket healthcare should they contract COVID-19. Finally, the pandemic can impact the delivery of key services such as healthcare and education, which has long-run welfare impacts such as lower levels of human capital (Figure B-1: Potential welfare impact channels of COVID-19Figure B-1).

Figure B-1: Potential welfare impact channels of COVID-19
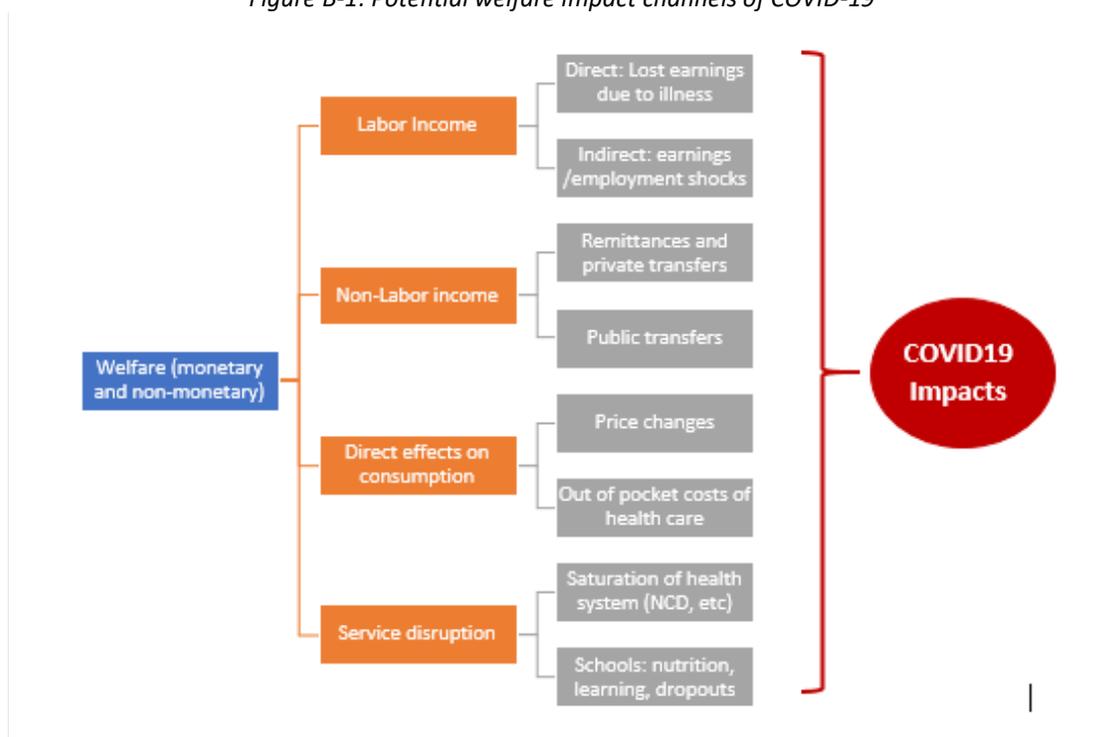
	Box 2: Microsimulation methodology
	Consumption and poverty in 2019 are used as a baseline scenario for the estimate of the welfare impact. Consumption and poverty can be forecast to 2019 using the KIHBS data and projected growth in consumption. The updated household consumption for 2019 is then used as a baseline scenario for the micro-simulations.
	Real-time data collection is used to make a partial equilibrium estimate the welfare impact of COVID-19. Starting from the baseline scenario, the microsimulations adjust consumption using the changes caused by the impacts of COVID-19. The size of the impacts is estimated using the five waves of RRPS data collection, in which the questionnaires were designed cover the proposed channels of impact from

COVID-19. These four channels include: 1) changes in wage earnings, 2) changes in self-employment earnings, 3) changes in agriculture earnings, and 4) changes in remittances and cover different months across 2020 and 2021. This allows for estimates of the size of the welfare impact from each of the simulated channels at different points in time. These estimates do not allow for behavioral change such as gaining or losing income sources. Monthly consumption is then annualized and poverty rates are updated. [16] Consumption and poverty are estimated for three scenarios: 1) no response, 2) the GoK's responses, and 3) an alternative cash transfer response (Table E-1).

Table B-1: Alternative scenarios[17]

		Details
1.	**No Response**	No policy response is considered. This acts as the counterfactual for the other policy scenarios.
2.	**GoK Response**	This policy response adjusts consumption according to the personal income tax (PIT) and VAT adjustments, as well as the emergency cash transfers, Kazi Mtaani, and the expansion of the persons with severe disability cash transfer.[18]
3.	**Alternative Cash Transfer**	Using the same budget as the PIT and VAT adjustments (KSh50 billion) an alternative cash transfer response of a one-off transfer of 20,000KSh to 2.5 million households is simulated. Beneficiaries are distributed across counties based on counties share of the new poor after the impacts of COVID-19 in 2020. Within counties, beneficiaries are sampled using the current PMT formula for social protection programs.

2. Impact on Poverty and Inequality

6.   Poverty has increased over the period of the COVID-19 pandemic, removing the last 10 years of poverty reduction and increasing the number of poor by over 3.5 million. The COVID-19 pandemic had a large impact on poverty in 2020, increasing the national poverty headcount by over 7 percentage points (to 41 percent). The inclusion of the GoK's policy response reduces the size of the poverty impact by 1 percentage point. However, if the KSh50 billion used to fund the PIT and VAT changes had been used for a one-off cash transfer that targeted the poor, poverty would have increased by 1.5 percentage points less compared to the GoK's response and prevented over half a million Kenyans becoming poor (Figure B-2). Despite the GoK's response, rural poverty increased by over 7 percentage points in 2020, with no statistical difference between the GoK's policy response and no response. The alternative cash transfer

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[16] The microsimulations rely on both the RRPS data and the KIHBS 2015/16 dataset. Within the RRPS data the percentage change in the four channels is calculated by comparing values during each wave to pre-COVID levels. Using the RRPS data, the direction and magnitude of the changes from the four channels is imputed in the KIHBS 2015/16 data. Furthermore, the ratio of income to consumption in the KIHBS data is calculated. Once the total income change from the four channels is calculated for each household, consumption is then adjusted using the ratio of income to consumption. For 2020 the RRPS survey ways cover 6 months (Wave 1 – May to June, Wave 2 – July to September, and Wave 3 – October to November). For the months not covered by the RRPS survey, pre-COVID consumption is assumed. Monthly per adult equivalent consumption is summed up and divided by 12 to produce an annualized average per adult equivalent consumption amount for each household. This adjusted consumption level is then used to estimate poverty.

[17] Greater detail of the simulated scenarios can be found in annex 3.

[18] See Table F-6 for a detailed description of the GoK's policy response and how they are simulated.

was more effective, reducing the poverty increase by a further 2 percentage points when compared to the GoK's response. Urban poverty increased by 9 percentage points even with the GoK's policy response. There was no statistical difference in the increase in poverty across the GoK's policy response, the alternative cash transfer, and no policy response. The alternative cash transfer was more effective in rural areas as it targeted the poor, who are still predominately in rural areas (Figure B-3). By 2021, poverty remained over 3 percentage points above pre-COVID levels and at similar levels to 2015/16, highlighting the need for continued support to help households recover and move back out of poverty.

Figure B-2: National poverty headcount changes	*Figure B-3: Rural/urban poverty headcount changes*
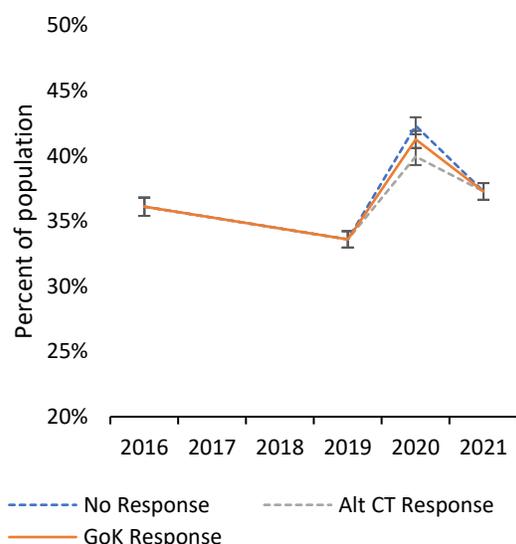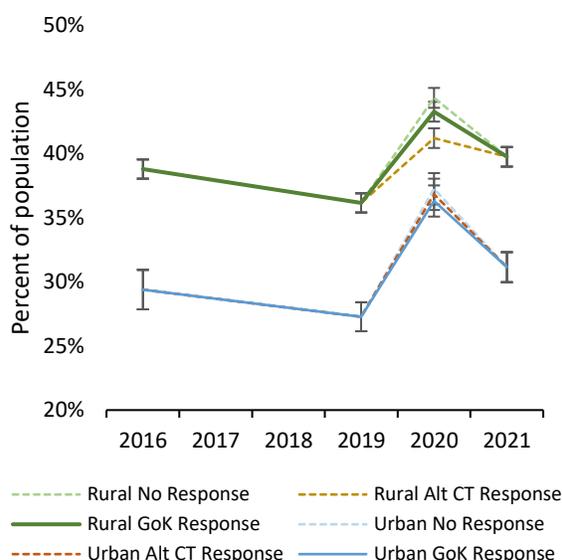
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

7.   The poverty impact was larger in the early stages of the pandemic and has gradually decreased. The short-term poverty impact was largest in the early months of the pandemic, likely due the economic consequences of the stricter containment measures. For instance, in June 2020 short-term poverty had increased by over 16 percentage points compared to pre-pandemic levels. Over time the impact has decreased, with short-term poverty over 8 percentage points above pre-pandemic levels in June 2021, however, the recovery has stalled (Figure B-4).[19] Urban areas were worse affected early in the pandemic but have recovered faster, especially in 2021. However, both rural and urban areas continue to experience higher poverty over a year into the pandemic, while rural poverty is no longer decreasing towards pre-pandemic levels (Figure B-5).

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[19] It should be noted that treating each wave independent assumes that there is no accumulated effect from previous waves and is used to provide a sense of the individual impact in each wave.

Figure B-4: National poverty impact by wave
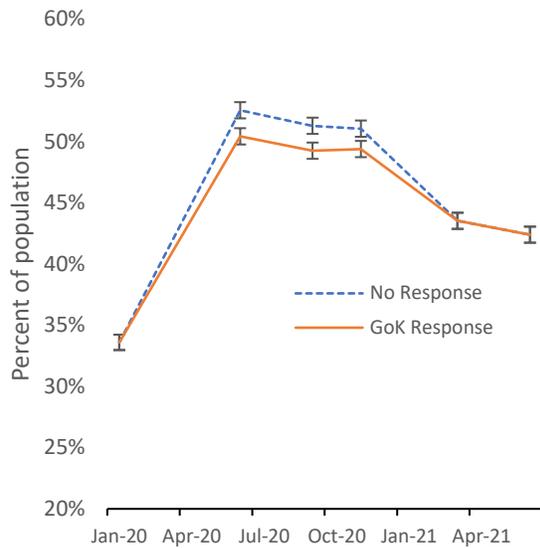
Figure B-5: Rural/Urban poverty impact by wave
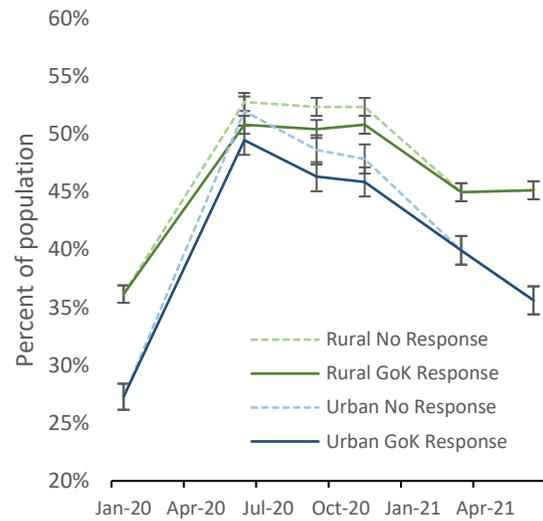
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

8. **The impact of COVID-19 also worsened the severity of poverty, with a larger impact in urban areas.** The severity of poverty has also worsened throughout the COVID-19 pandemic, increasing the poverty gap by over 2 percentage points in 2020. While there is no statistical difference between the GoK's response and no response, the alternative cash transfer would have reduced the increase in the severity of poverty to a percentage point. The initial increase in the severity of poverty was similar across rural and urban areas. Once again, the alternative cash transfer was more effective at offsetting the increase in the severity of poverty in rural areas. In 2021, the severity of poverty was over half a percentage point above pre-COVID levels, nationally as well as in rural and urban areas (Figure B-6 and Figure B-7).

Figure B-6: National poverty gap changes
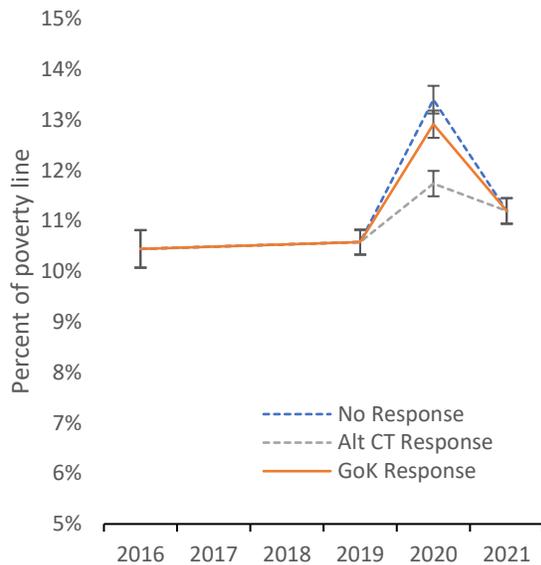
Figure B-7: Rural/Urban poverty gap changes
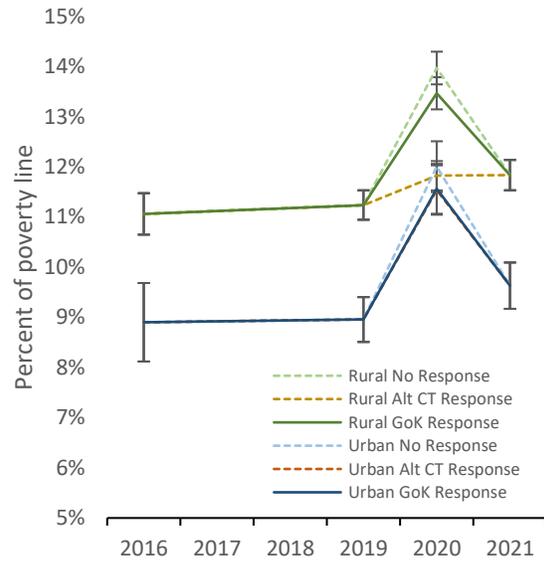
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

9.   Inequality has also worsened during the COVID-19 pandemic, with a larger increase in urban areas. The GoK's policy response did not offset any of the increase in inequality caused by the pandemic. For instance, with the GoK's response the Gini index increased by half a percentage point in 2020. In contrast, the alternative cash transfer reduced the Gini index by 1 percentage point due to its focus on poor households (Figure B-8). The increase in inequality is more than twice as large in urban areas compared to rural areas, increasing by 1 and a half percentage points in 2020 (Figure B-9). The GoKs' response increased inequality in urban areas greater than no response, suggesting the GoK's response did not reach the poorest. The alternative cash transfer reduced inequality in rural areas by just under a percentage point, while it had little impact in urban areas. With the end of the GoK policy response the Gini index remained just under half a percentage point above pre-COVID levels in 2021.

Figure B-8: National Gini index changes
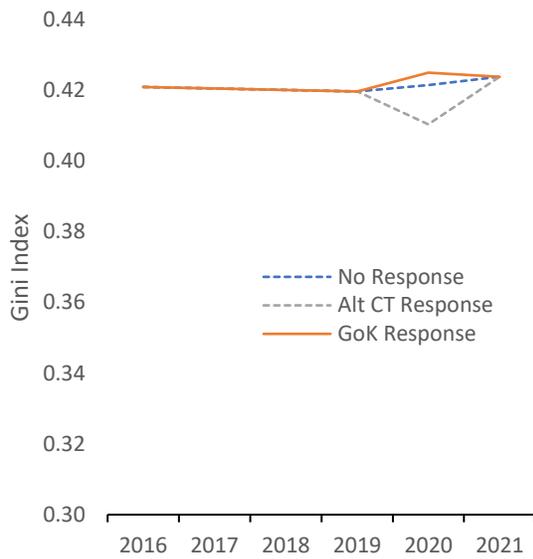
Figure B-9: Rural/Urban Gini index changes
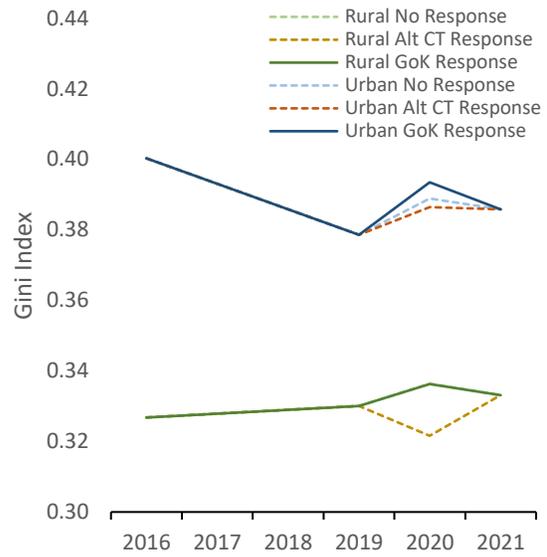
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

10.   The probability of falling into poverty halved from 2020 to 2021. In 2020 a household had an 8 percent chance of becoming poor.[20] Urban households were twice as likely to become poor compared to rural households in 2020, while households with tertiary education were less at risk. Furthermore, households with an income source from self-employment faced the greatest risk of falling into poverty compared to those with income from agriculture or wage employment. By 2021, the probability of becoming poor had halved to 4 percent, but remained much larger for urban households (Figure B-10).

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[20] This is using consumption with the GoK's policy response.

Figure B-10: Probability of becoming poor
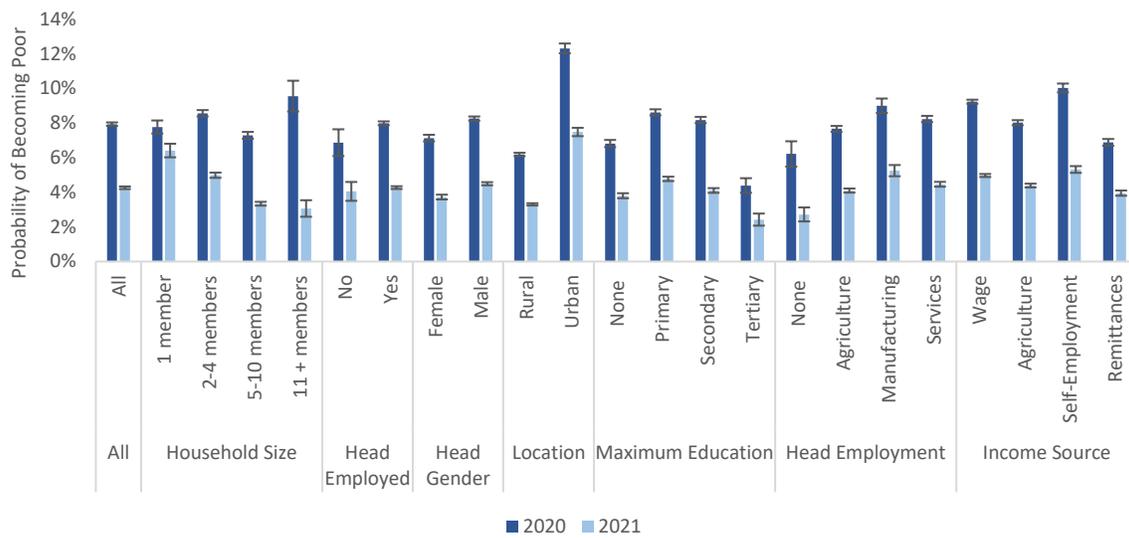
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

11. **The 'new' poor households are smaller in size, more often urban, and better educated than the 'existing' poor.** Comparing the characteristics of households who became poor after the impact of COVID-19 (the 'new poor') to those who were poor prior to the impact of COVID-19 can assist in targeting policy and program response. Household heads of the 'new' poor households in 2020 were on average 4 years younger, had fewer household members and a smaller share of dependents. They also were more likely to be in urban areas and have on average 2 extra years of education. However, households that remained poor in 2021 were slightly less educated than the 'new poor' in 2020 (Figure B-11).

Figure B-11: Profiles of the existing and new poor
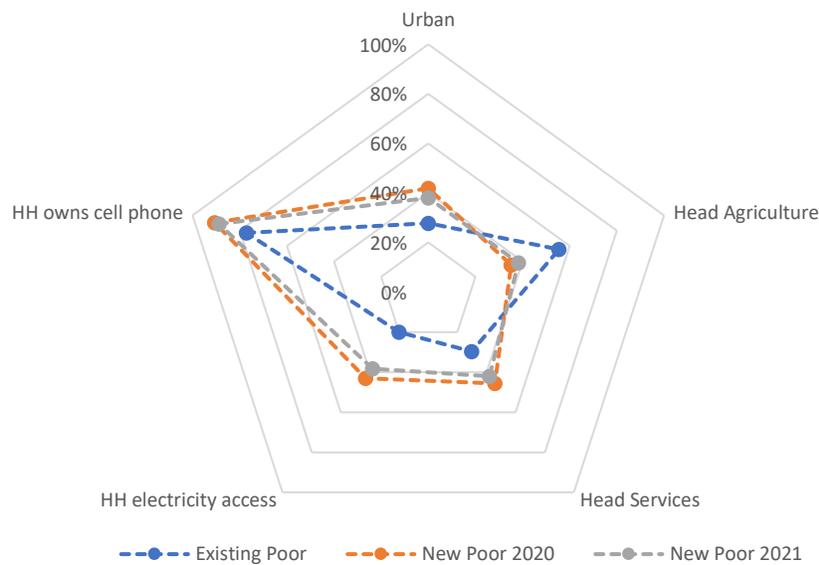
Source: Authors' calculation based on the Kenya COVID-19 RRPS and KIHBS 15/16

12. **'Newly poor' households are predominately reliant on the services sector, while the 'existing poor' mainly rely on agriculture.** The sector of employment for the household head can provide an indication of the main source of income for the household. Over half the 'existing poor' are reliant on agriculture compared to over a third in the 'newly poor' in 2020 and 2021. In contrast, just under half of the 'new poor' households are reliant on the services sector, further suggesting that the service sector is the worst affected. Finally, labor-force inactivity is less common among the household heads of the 'newly poor' (Figure B-11and Table B-2).

13. **'Newly poor' households have greater asset ownership, access to electricity, and access to improved water and sanitation.** The 'newly poor' households have better access to water, sanitation, and electricity, likely due to a large proportion residing in urban areas. Furthermore, 'newly poor' households have greater asset ownership in 5 of the 7 listed assets. This once again emphasizes the difference in profile of those households who became poor through the impact of COVID-19 and those who were poor before the pandemic (Figure B-11and Table B-2).

14. **Despite COVID-19 worse affecting the counties in central and western Kenya, poverty remains concentrated in the North and North Eastern counties.** The impact of COVID-19 on poverty was larger in the central and western counties, for instance, the largest increase in poverty in 2020 was in Bomet (13 percentage points) (Figure B-12). Over time, the size of the impact declined across counties with the average poverty increase decreasing by half between 2020 and 2021 (Figure B-13). However, poverty still remains concentrated in the NEDI counties (Figure B-14, Figure B-15). While the response to COVID-19 needs to be targeted to the new poor, they are different both in terms of characteristics and location to the existing poor, who also continue to need support.

Figure B-12: Projected poverty headcount change – 2020
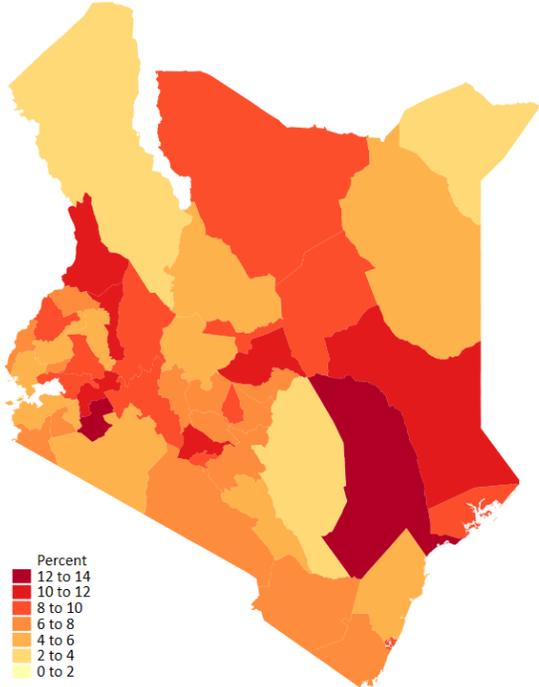
Figure B-13: Projected poverty headcount change – 2021
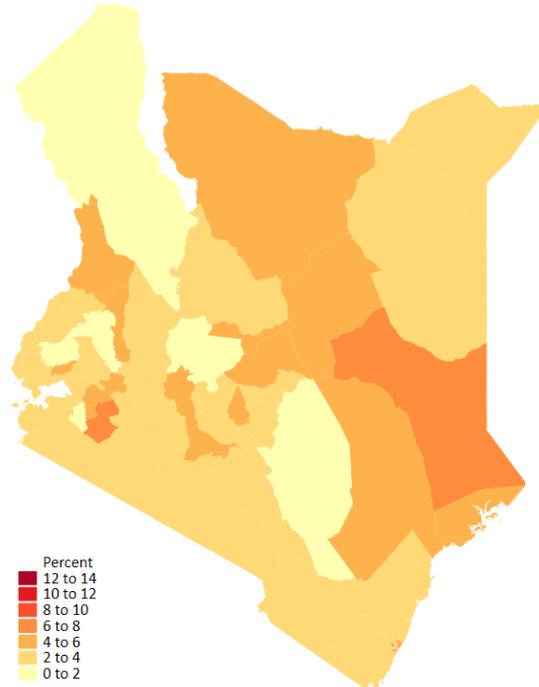
Figure B-14: Projected poverty headcount – 2020
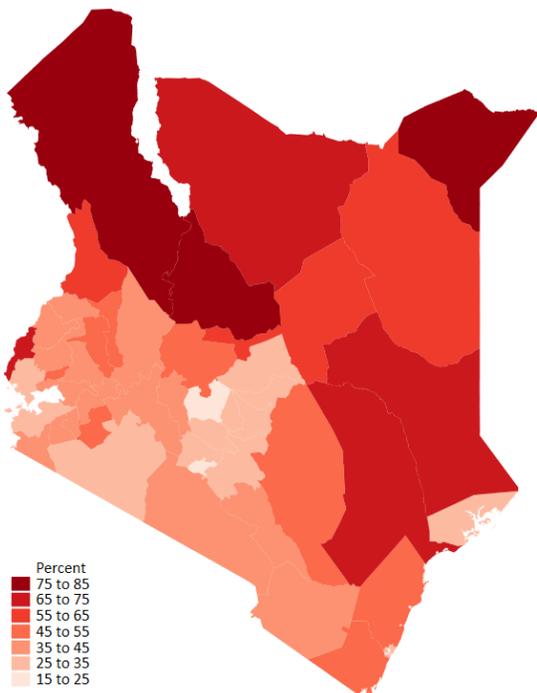
Figure B-15: Projected poverty headcount – 2021
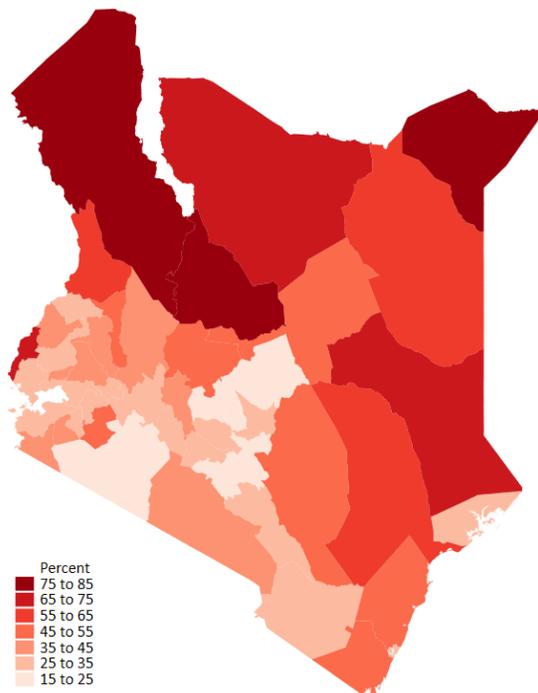
C. LIVELIHOOD IMPACTS, COPING STRATEGIES AND FOOD INSECURITY

1. Employment

15. **Many Kenyans lost their employment during the COVID-19 pandemic in 2020, though employment has since recovered.** The COVID-19 pandemic has affected the livelihoods and welfare of the Kenyan population through reduced earnings and job losses. Unemployment had quadrupled from 4 percent in the last quarter of 2019 to 16 percent of the population in October-November 2020.[21] Alongside the increase in unemployment, more workers became discouraged from searching for work and thus left the labor force between May and September. Since then, with the easing containment restrictions, labor force participation has improved, and employment has shown promising signs of recovery. The unemployment rate fell to 9 percent in January-March 2021, and 7 percent in April-June 2021 (Figure C-1).

Figure C-1: Labor force statistics (18-64 years)
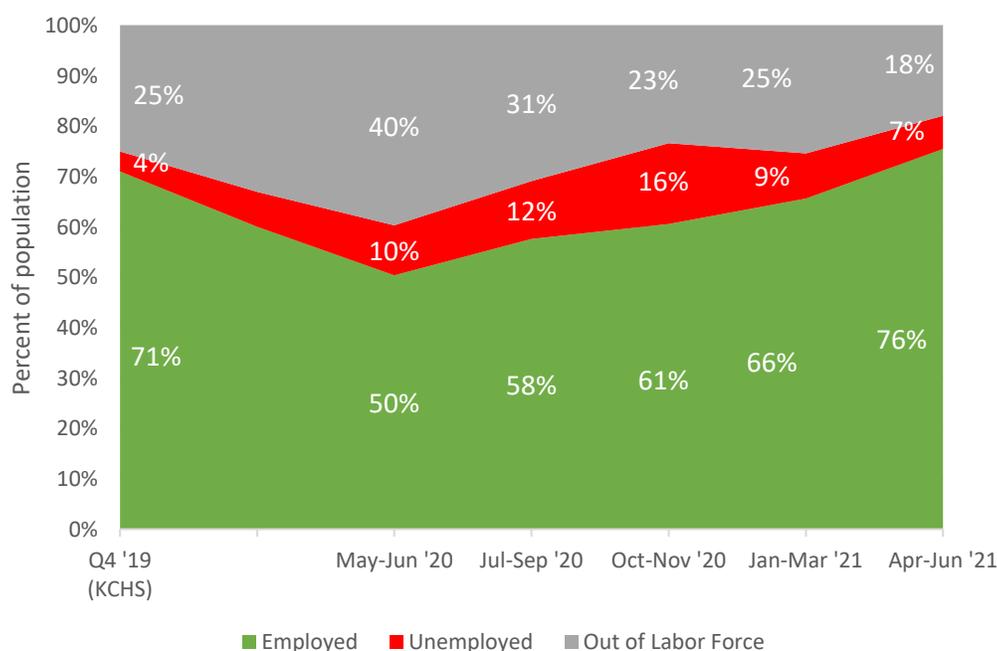
Source: Kenya COVID-19 RRPS, 2019 Kenya Continuous Household Survey.

16. **Urban employment has particularly suffered during the COVID-19 pandemic.** The impacts during the COVID-19 pandemic have been felt disproportionately by some sections of society. Unemployment reached 24 percent in urban areas in October-November 2020, 12 percentage points higher than in rural areas. There has been a continued recovery in both rural and urban areas with the employment rate recovering to be 6 percentage points higher than its pre-COVID level by April 2021, while for urban areas it is comparable to the pre-COVID level. Labor force inactivity also remains much higher

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[21]Given the mode of data collection, the phone surveys have a less comprehensive labor module than the KCHS survey (used to produce the quarterly labor indicators released by the KNBS). Furthermore, the KNBS does not include refugees in their labor force statistics. The presented statistics based on the KCHS data also differ from the official labor force statistics published by the KNBS as the latter uses a different age group (15-64). Therefore, the labor results from the RRPS are meant to provide an indication of the on-going labor trends.

in urban areas (23 percent), while the inactivity is much lower in rural areas (16 percent) due to the dominance of agricultural employment (Figure C-2).

Figure C-2: Employment (18-64 years)
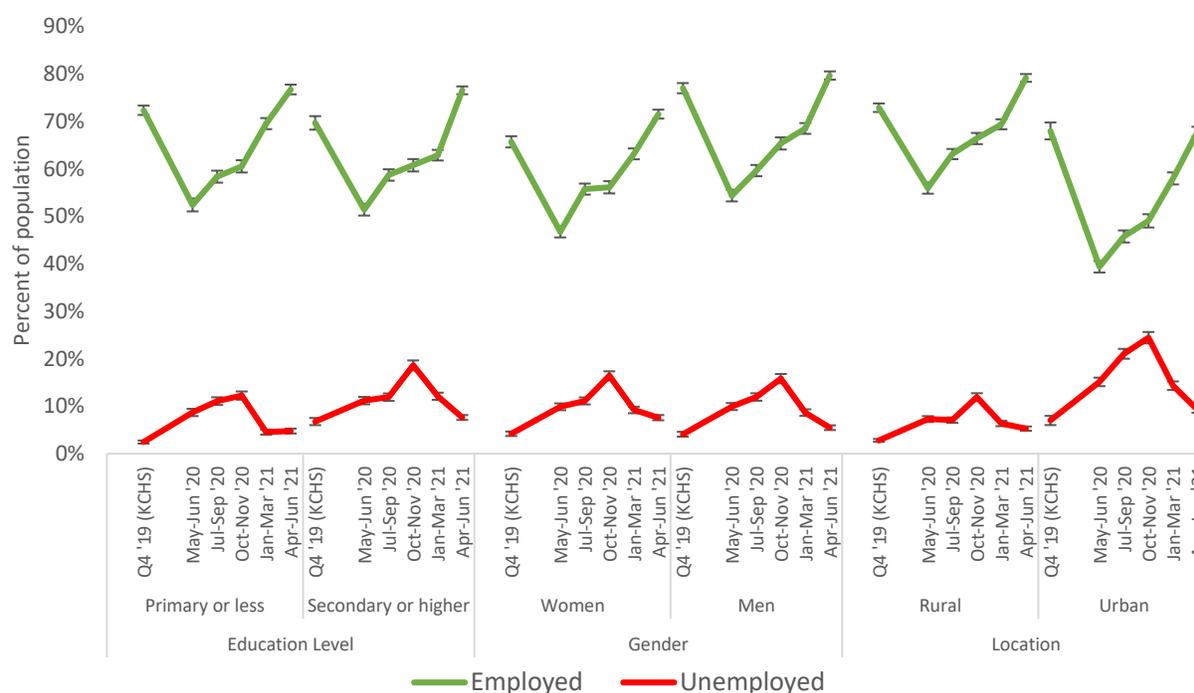
Source: Kenya COVID-19 RRPS, 2019 Kenya Continuous Household Survey.

17.   Employment recovered to pre-pandemic shares faster among women, rural dwellers, the less educated and younger individuals. Women and men saw a similar sized reduction in the share of the population in employment at the start of the pandemic (just under 20 percentage points (pp)). However, by the start of 2021 the share of women in employment had recovered to its pre-pandemic level, while for men the share remained lower (Figure C-3). Across locations the initial reduction in employment was much larger among individuals in urban areas (24 pp) compared to those in rural areas (15 pp). Furthermore, employment recovered slower in urban areas (Figure C-4). The reduction in the share of the population was similar across education level, however, it recovered to pre-pandemic levels quicker among those with primary education or less (Figure C-5). Finally, the reduction in the share in employment was much larger among older individuals (24 percentage points) compared to younger individuals (9 percentage points). The employment share had rebounded for younger individuals by the second half of 2020 (Figure C-6). By the middle of 2021 the share in employment for all groups had exceeded pre-pandemic levels, except for older individuals. The faster recovery in some groups may show a greater urgency to return to work or reflect greater job creation in different sectors among which these individuals are concentrated.

Figure C-3: Employment to population ratios by gender
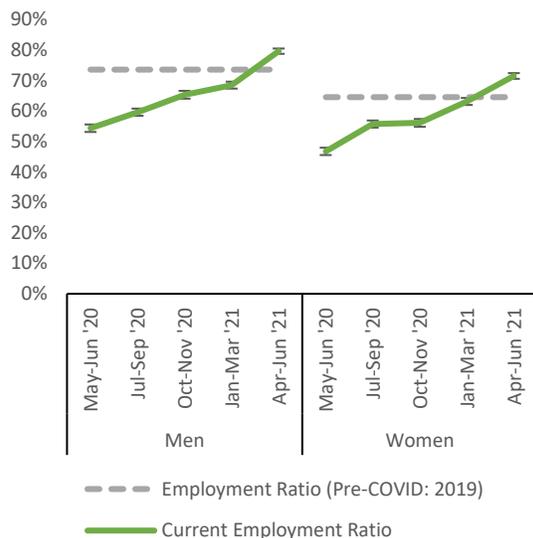
Figure C-4: Employment to population ratios by location
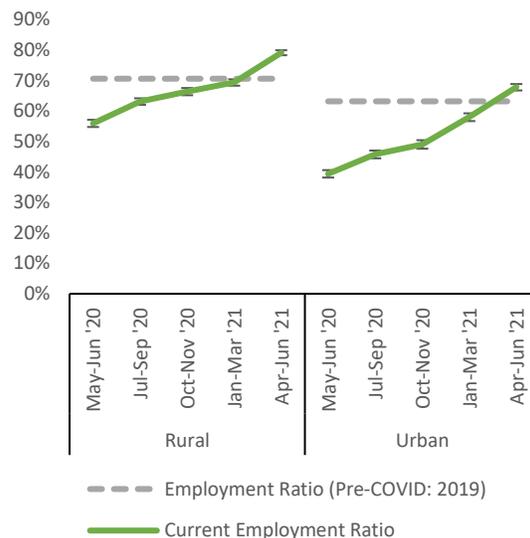
Figure C-5: Employment to population ratios by education
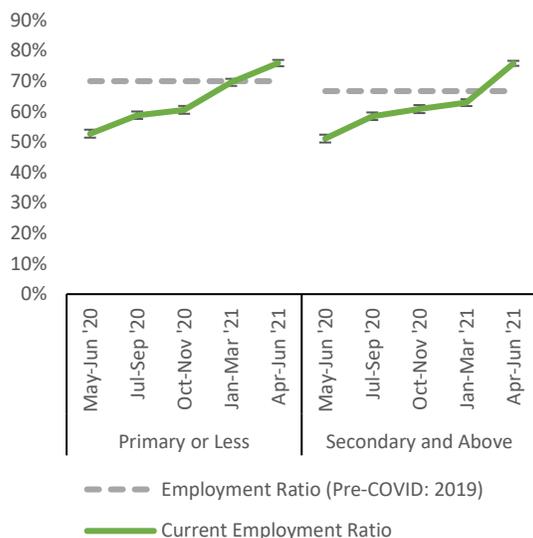
Figure C-6: Employment to population ratios by age
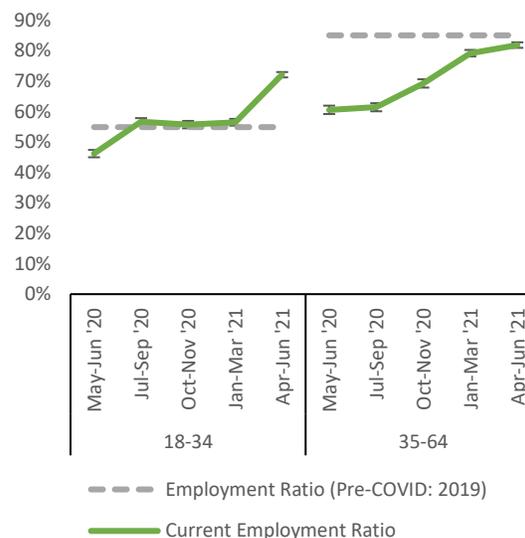
Source: Kenya COVID-19 RRPS.

18.   The recovery in employment between 2020 and 2021 was largely driven by increases in wage employment. An additional 7.5 million jobs were created between mid-2020 and mid-2021.[22] The majority of employment growth was among the youth (65 percent) and in rural areas (67 percent). These groups were also generally less affected by the initial loss in employment at the start of the pandemic. Over half of the growth in employment was in wage employment (over 4.5 million jobs), one-third from

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[22] An individual can work in multiple types of employment i.e., wage and enterprise employment. Each type of employment is considered as a new job created i.e., if an individual starts working in wage employment and a household enterprise, this would be considered as 2 jobs created. However, the survey methodology does not allow the calculate of whether an individual is working multiple jobs within the same type of employment i.e., two wage jobs.

non-wage agricultural employment (over 2 million), and a small share in household enterprises (less than 0.5 million) (Figure C-7). Employment growth was predominately in wage employment for men (71 percent), while a larger share of growth was in non-wage agricultural employment for women (37 percent). Across age groups, while wage employment was the main driver of employment growth, a larger share of younger adults worked in household enterprises (8 percent versus 1 percent for older adults). Finally, among employment growth in rural areas was almost equally split between wage employment and non-wage agricultural employment, while urban areas relied heavily on wage employment growth (85 percent) (Figure C-8). While the overall employment growth is encouraging, the increasing reliance on potentially lower quality jobs (household enterprises or non-wage agricultural employment) among groups that are often worse off in the labor market (women, youth, rural dwellers) is concerning and could worsens existing labor market inequalities.

Figure C-7: Growth in employment between May-June 2020 and April-June 2021
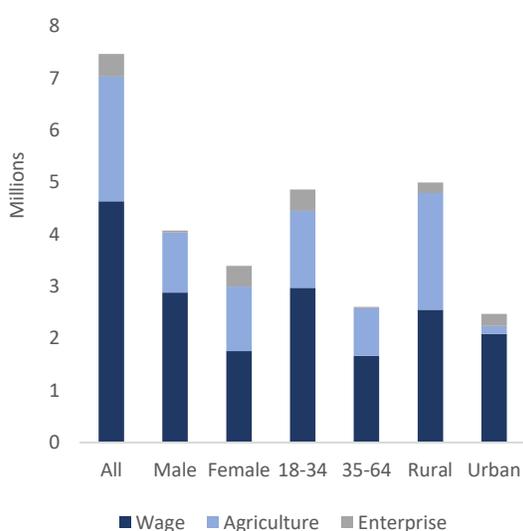
Source: Kenya COVID-19 RRPS.

Figure C-8: Share of growth in employment between May-June 2020 and April-June 2021
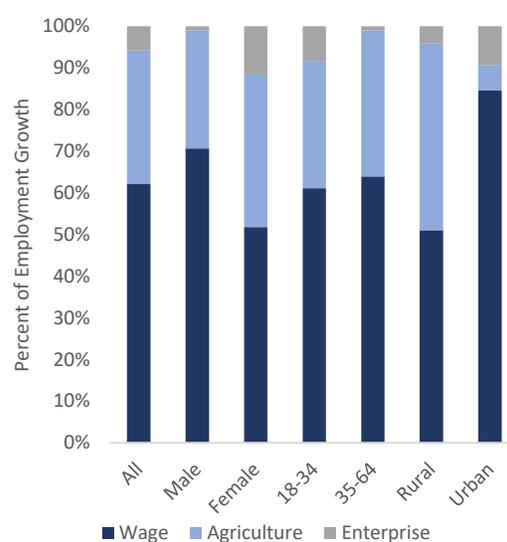
Source: Kenya COVID-19 RRPS.

19.   The share of individuals working multiple jobs has increased over time. The share of individuals working in more than one type of employment has doubled over the duration of the pandemic (from 7 percent to 15 percent). This has become more common in 2021, with the share of individuals working in multiple types of employment increasing by 50 percent between January-March and April-June. Working in multiple types of employment is more common for men, older individuals and the better educated (Figure C-9). While this suggests that individuals are finding different economic opportunities, it may also suggest that individuals require additional income generating activities to sustain their well-being. This is further supported by the increase in individuals seeking additional income generating activities as a coping mechanism (Figure C-33).

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Figure C-9: Share of employed individuals working in multiple types of jobs
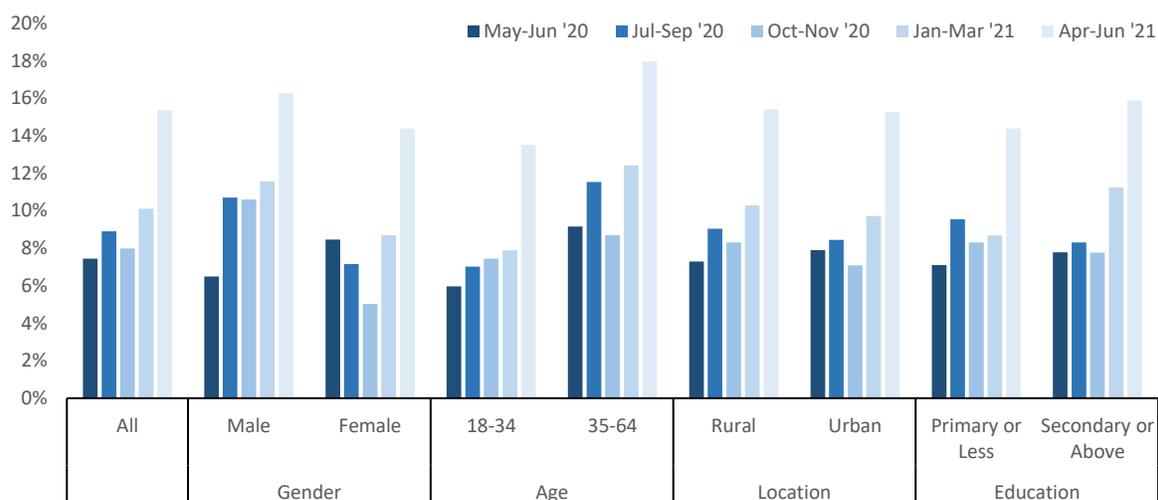
20.   Between May-June 2020 and the middle of 2021 the number of individuals with wage employment increased by over 4.5 million. Wage employment growth was distributed across sectors, with the utilities and construction accounting for just under one-fifth of all wage employment growth. Agriculture, transport, manufacturing, trade, and accommodation all contributed 10 percent or more towards wage employment growth. Wage employment growth for men was reliant on the utilities and construction sector, with over one-quarter of created wage employment in this sector. Wage employment growth for women was more reliant on services such as retail trade (21 percent) and accommodation and food services (15 percent). These sectors are potentially more vulnerable to future restrictions which may put these jobs at risk. Wage employment growth for younger adults is more diversified across sectors, while older adults relied on sectors such as agriculture (21 percent), and utilities (21 percent). While the utilities and construction sector was important in both rural and urban areas, rural wage growth relied on agriculture while urban wage growth focused on services such as accommodation and food (Table C-1). Across all groups utilities and construction has played a key role in wage job creation, although such jobs are typically insecure due to their informality.

Table C-1: Sector growth in wage in wage employment between May-June 2020 and April-June 2021

		All	**Male**	**Female**	**18-34**	**35-64**	**Rural**	**Urban**
Agriculture	#	622,766	460,448	162,318	275,610	347,156	402,079	220,687
	%	13%	16%	9%	9%	21%	16%	10%
Mining	#	23,370	19,900	3,470	12,553	10,817	907	22,463
	%	1%	1%	0%	0%	1%	0%	1%
Manufacturing	#	443,541	281,427	162,114	255,951	187,590	155,811	287,730
	%	10%	10%	9%	9%	11%	6%	14%
Utilities	#	878,073	779,334	98,739	524,213	353,860	504,413	373,660
	%	19%	27%	6%	18%	21%	20%	18%
Trade	#	451,750	85,102	366,648	345,690	106,060	280,046	171,705
	%	10%	3%	21%	12%	6%	11%	8%

Transport	#	554,667	564,117	-9,450	280,099	274,567	393,766	160,901
	%	12%	19%	-1%	9%	16%	16%	8%
Accommodation	#	452,607	191,644	260,963	342,933	109,674	136,013	316,593
	%	10%	7%	15%	12%	7%	5%	15%
ICT	#	68,889	43,835	25,054	52,479	16,410	13,164	55,725
	%	1%	2%	1%	2%	1%	1%	3%
Finance, real-estate	#	211,376	87,190	124,186	227,581	-16,205	63,418	147,958
	%	5%	3%	7%	8%	-1%	3%	7%
Prof. and Admin.	#	440,224	278,644	161,580	226,012	214,212	287,732	152,493
	%	9%	10%	9%	8%	13%	11%	7%
Social Services	#	284,331	66,907	217,424	191,424	92,907	165,544	118,787
	%	6%	2%	12%	6%	6%	7%	6%
Other Services	#	209,920	36,000	173,853	237,229	-27,309	121,540	88,380
	%	5%	1%	10%	8%	-2%	5%	4%

21. Job quality among wage employees initially worsened before improving and remaining constant across 2021. Early in the pandemic over half of all wage employees met less than 2 dimensions of job quality (income, benefits, satisfaction, and stability).[23] While this share remained constant in the second half of 2020, the proportion of wage employees meeting none of the quality dimensions increased to 30 percent. The average quality improved towards the end of 2020 and has remained relatively constant in 2021. However, the share of wage employees meeting all four dimensions has declined throughout 2021 (Figure C-10). Around one-quarter of wage employees didn't earn an amount greater than the national poverty line throughout the middle of 2020, however, this share has reduced over time. Job satisfaction, measured by hours worked, has remained relatively constant across the pandemic, while the share receiving benefits has gradually increased. Finally, job stability fluctuated in 2020 before sharply declining in 2021, with less than one-quarter having a permanent contract (Figure C-11). Overall, despite improvements from the early stage of the pandemic half of wage employees don't meet more than 2 of the job-quality dimensions and the lack of job stability raises questions surrounding the sustainability of the recovery in employment.

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[23] Job quality is measured by 4 dimensions of quality: income, benefits, satisfaction, and stability (Brummund, P, et al. 2018). If an individual's salary does not exceed the poverty line, the job quality index is set to 0. For a detailed description of the indicators used for each dimension, see Annex F.5.

Figure C-10: Job Quality Index (JQI) Across Waves
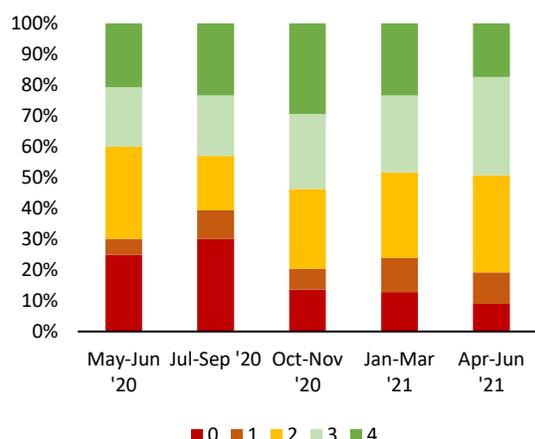
Figure C-11: Changes in Each Dimension of Quality
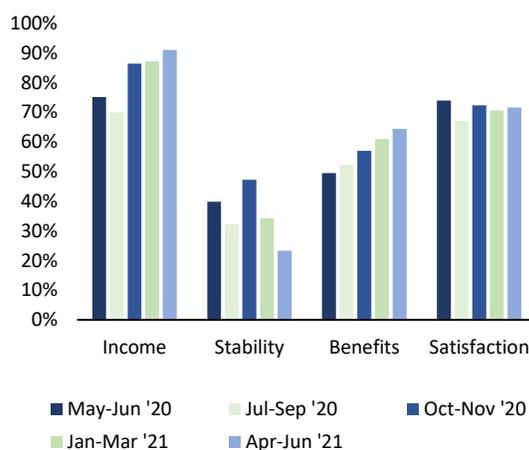
Source: Kenya COVID-19 RRPS.

22. Job quality was worse among urban, lower education, and agricultural wage employees. Urban wage employees experienced low job quality early in the pandemic, with over one-third not meeting any dimensions of job quality. Rural wage employees were initially less affected, before average quality converged between rural and urban wage employees in the second half of 2020 and have followed a similar trend since (Figure C-12). Urban wage employees had a lower share earning a monthly salary above the poverty line between May-June 2020 (Figure C-13). Lower educated wage employees saw a large worsening of job quality in the second half of 2020 (July to September), which seems to coincide with a worsening of quality among agricultural wage employees (Figure C-14 and Figure C-16). This deterioration appears to be driven by a large decline in the number of wage employees earning an income above the poverty line which may partly be due to the seasonal nature of agriculture (Figure C-15 and Figure C-17). Job quality is on average higher among the better educated and those working in the services sector. The lack of stability is noticeable among the less educated, and those working in either agriculture or industry, however, it has also worsened among the better educated and those working in services throughout 2021. If certain disadvantaged groups are employed with less security, these groups are likely to be worse affected by future waves of the pandemic given their greater vulnerability.

Figure C-12: JQI by Location
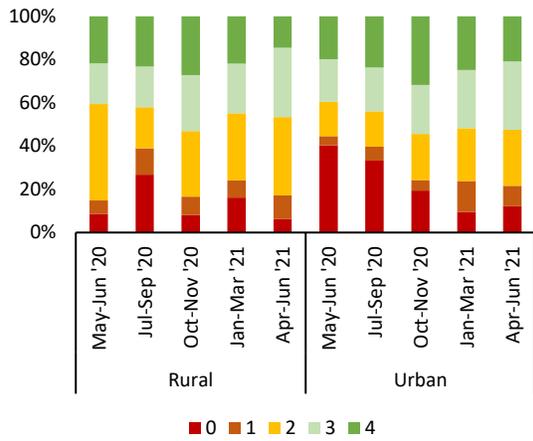
Figure C-13: Quality Dimensions by Location
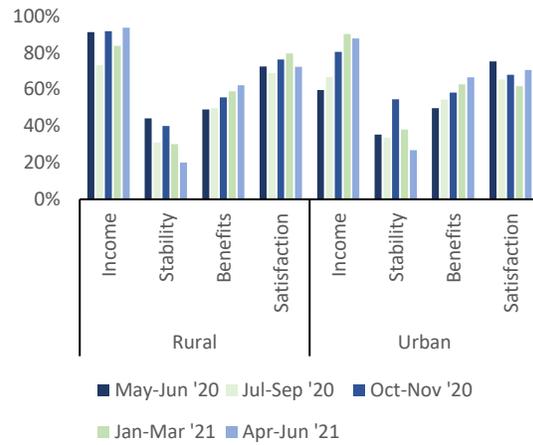
Figure C-14: JQI by Education
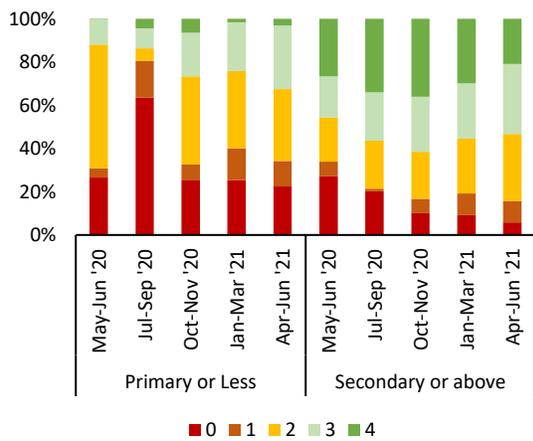
Figure C-15: Quality Dimensions by Education
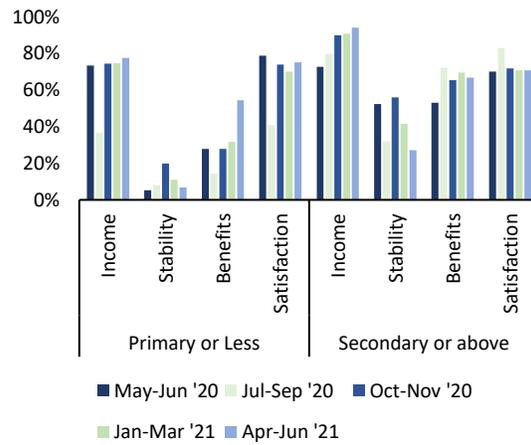
Figure C-16: JQI by Sector
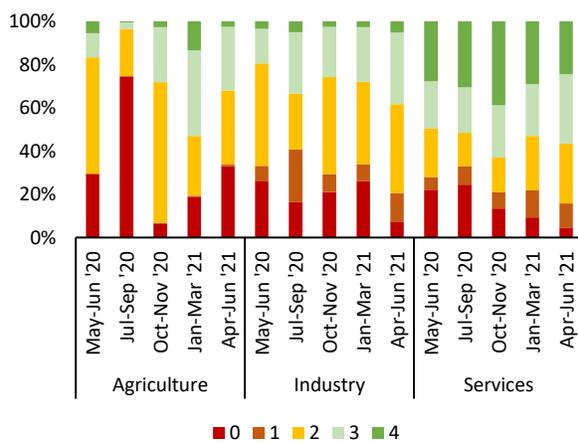
Figure C-17: Quality Dimensions by Sector
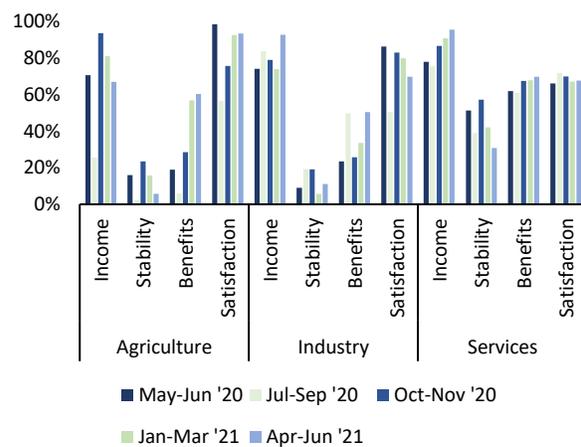
Source: Kenya COVID-19 RRPS.

23. **Wage earnings and hours worked worsened again for wage workers in 2021, after a period of recovery in late 2020.** Hours worked for wage workers declined drastically in the early months of the pandemic falling from 45 hours per week in February to 39 in May-June (**Error! Reference source not f ound.**). Women were particularly affected, experiencing a decline of 9 hours worked per week (20 percent) compared to 4 hours for men (9 percent). As the economy gradually re-opened, hours worked returned to their pre-pandemic levels in the late months of 2020. However, with the second lockdown in early April 2021, hours worked by wage workers have fallen again. Similarly, average earnings of wage workers had also gradually improved after initially falling by 28 percent in first few months of the pandemic (Figure C-19). Wage earnings increased for 6 percent of the households and remained the same for 91 percent of the households in October-November 2020 as compared to February 2020 (Figure C-21). Again, women's wage earnings were more strongly affected by the pandemic, with average earnings initially falling by 46 percent compared to 15 percent for men. With a lockdown in place and school closures, women disproportionately bear the burden of childcare and household responsibilities and there is a need to build resilience for women. In January-March 2021, women spent 46 hours on an average on childcare while the same was 34 hours for men (Figure C-20).

Figure C-18: Hours worked by wage workers (last 7 days)
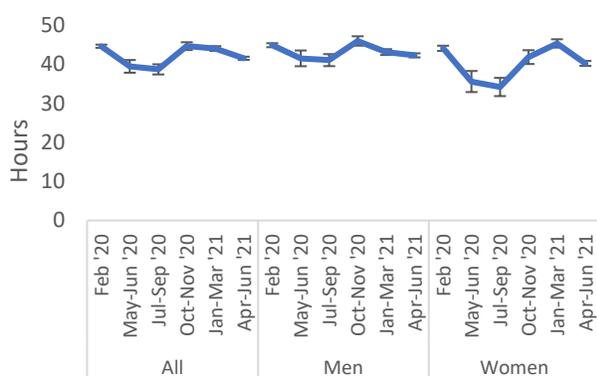
Figure C-19: Earnings of wage workers (last 14 days)
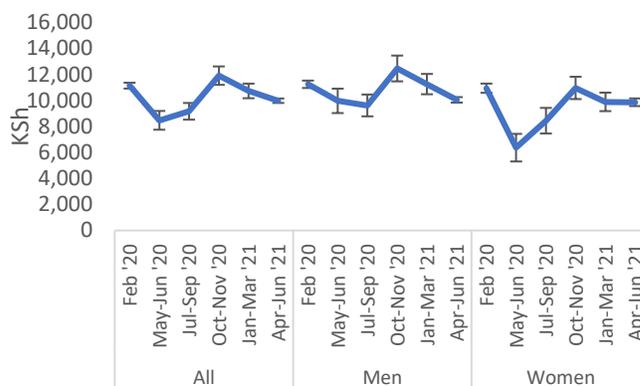
Figure C-20: Hours spent on childcare past week
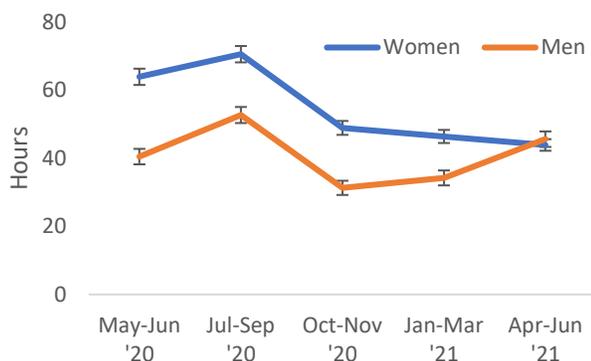
Figure C-21: Change in wage income compared to February 2020
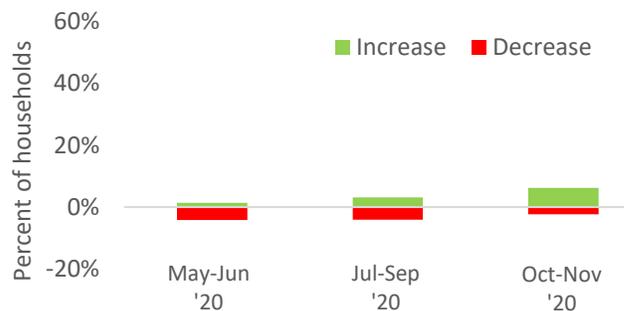
Source: Kenya COVID-19 RRPS.

24. **Women and younger adults more often stop working at most stages of the pandemic.** Over one-fifth of women in employment in May-June 2020 had stopped working by July-September 2020 compared

to 16 percent of men. The share of employed women stopping work also remained higher in each subsequent wave with a difference of around 5 percentage points compared to men. While there does not appear to be a difference across location, those with less education more often stopped working between January-March 2021 and April-June 2021. However, this trend has not been consistent across waves, with a greater share of better educated individuals stopping work between October-November 2020 and January-March 2021. Finally, while at the start of the pandemic (May-June 2020) there was no difference across age groups, over the duration of the pandemic younger adults more often stop working (Figure C-22, Figure C-23). However, it is not clear whether these individuals opted to stop working due to other responsibilities such as childcare, or whether they lost their jobs due to the worsen economic conditions.

Figure C-22: Share of employed stopping work by gender and location
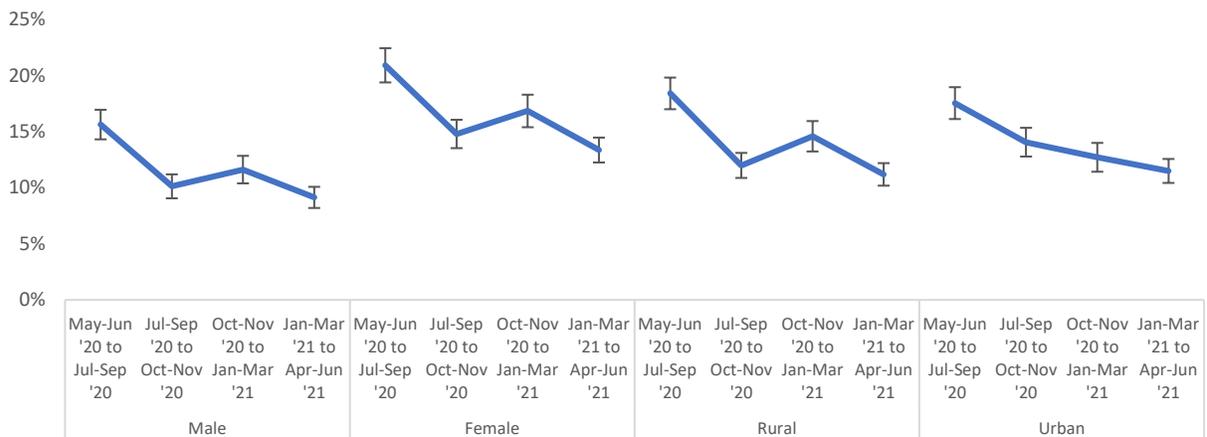
Figure C-23: Share of employed stopping work by education and age
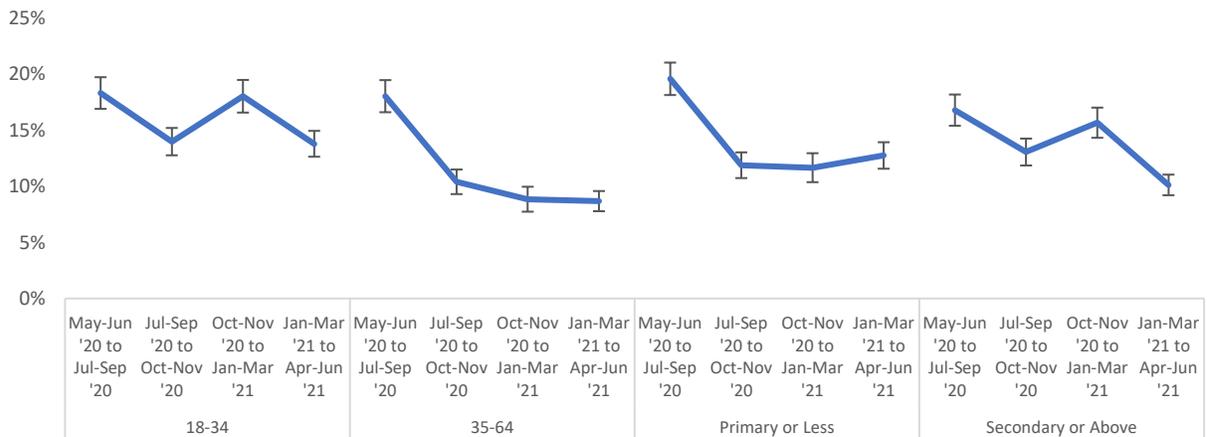
Source: Kenya COVID-19 RRPS.

25.   The immediate adverse effects during the pandemic on employment and work-stoppages were more strongly felt in urban areas. At the beginning of the pandemic, urban dwellers were more likely to work than their rural counterparts. Just under two-thirds were working in either wage labor, agriculture or other household businesses compared to just over half of rural individuals in February 2020. However, with the imposition of a nation-wide lockdown in March, employment rates in urban areas dropped significantly. Between May-November 2020 the employment rate for urban areas never exceeded 43

23

percent and was consistently around 10 percentage points lower than rural areas. Even among individuals who were working before the pandemic, urban dwellers were significantly more likely to be out of work than their rural counterparts between May-November 2020. After January 2021, both the employment and work stoppage rate of urban dwellers improved significantly, reducing any significant difference between both groups (Figure C-24, Figure C-25).[24] These results highlight the larger negative initial impact of the pandemic in urban areas.

Figure C-24: Probability of being employed	*Figure C-25: Probability of not working, conditional on having worked in Feb'20*
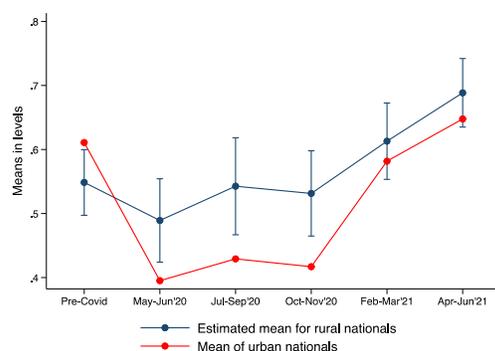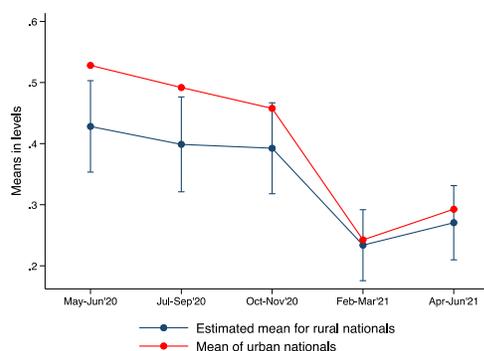
26.   Agricultural income has remained constant for majority of the households. Agricultural income reduced for 7 percent of the households at the onset of the pandemic and increased for about 2 percent during May-June 2020 as compared to the previous year. However, the share reporting improvements in earnings increased by mid-2021 (Figure C-26).

Figure C-26: Impact of COVID-19 on agricultural income compared to the same time last year
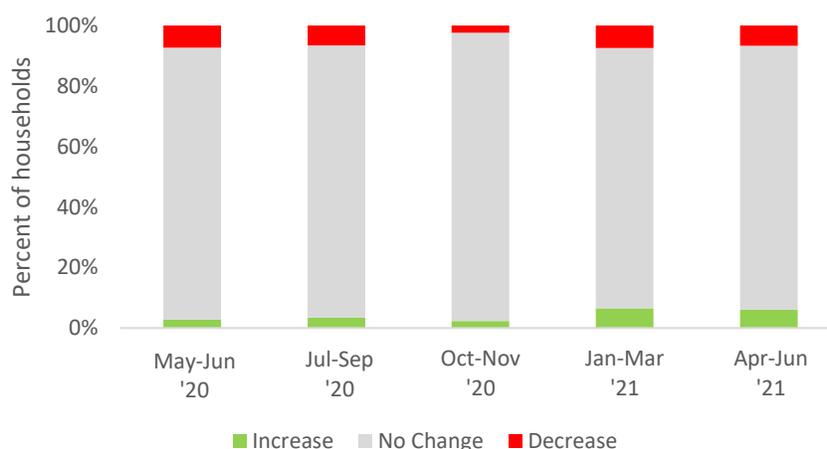
Source: Kenya COVID-19 RRPS.

27.   As people moved out of employment, those in urban areas, the better educated and younger individuals more often continued looking for work. Most individuals who lose employment do not look

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[24] Figure C-24 and Figure C-25 plot the mean employment and work-stoppage rate[24] for urban nationals and the implied mean for rural nationals if they had the same age, gender, educational attainment and if they lived in the same county as urban nationals. We define work stoppage as the share of the population that stopped working conditional on having worked in February 2020.

for work and leave the labor force (between 51 and 78 percent). The main exception is between July-November 2020 where around half of individuals losing employment started to look for work. More men looked for work after losing employment towards the end of 2020 and at the start of 2021 compared to women. In urban areas, individuals more often continue to look for work compared to those residing in rural areas which may be explained by the high cost of living in urban areas or fewer employment opportunities in rural areas (Figure C-27). Older adults less often searched for a job after losing employment compared to younger adults. Likewise, the better educated more often searched for work after losing employment when compared to the less educated (Figure C-28).

Figure C-27: Looking for work after leaving employment by gender and location
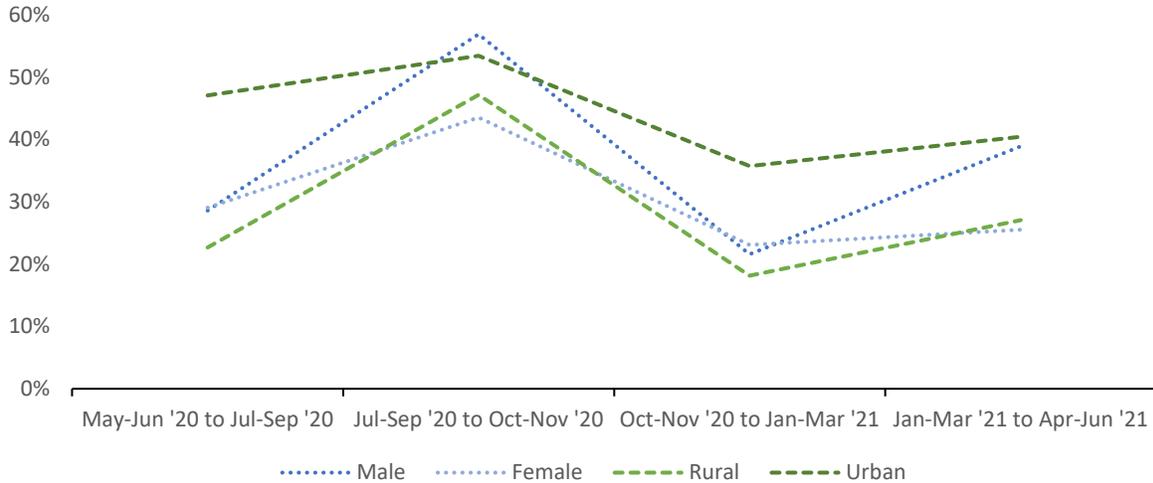
Figure C-28: Looking for work after leaving employment by education and age
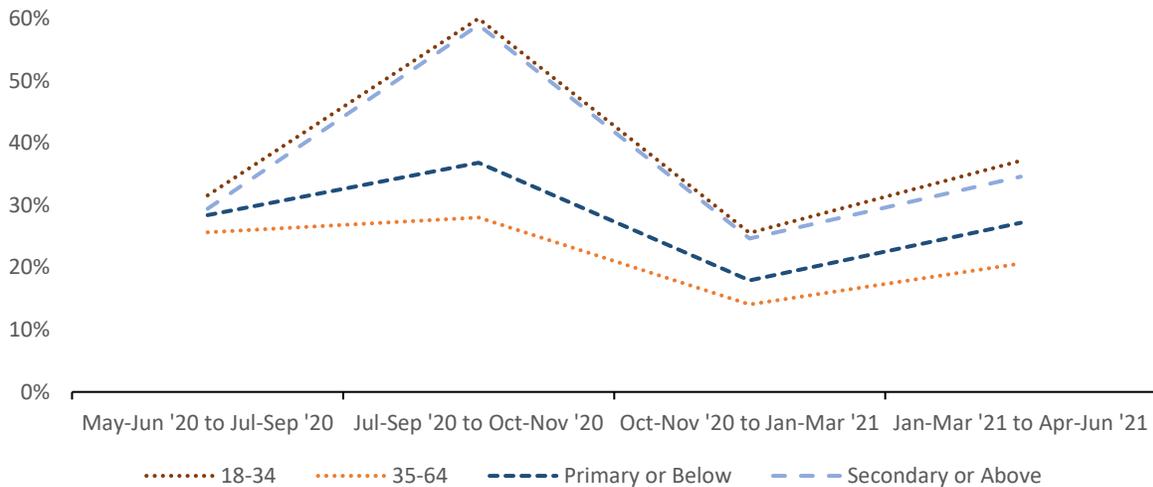
Source: Kenya COVID-19 RRPS.

2. Non-labor income

28.   More households are receiving external support in 2021 than last year with remittances being the most common source of assistance. External assistance to households has doubled from the early

months of the pandemic with 1 in 4 households receiving some assistance in the months of April-June 2021 (Figure C-29). Remittances continue to be the most common source of help with 22 percent of households receiving remittances in April-June 2021. Most households receive remittances from within Kenya (21 percent), while less than 1 percent received remittances from outside the country (Figure C-30). On the other hand, less than 5 percent of households report any assistance from the government or NGOs. Reported government assistance was very low in Kenya, at only 3 percent in the initial months of the pandemic and has fallen even further to 1 percent in October-November. In 2021, assistance from government has expanded slightly, with 4 percent of households receiving support. Expanding government assistance, either in the form of cash or in-kind transfers, can be highly useful in helping households recover from the severe impacts of the pandemic on livelihoods. The coverage of the government assistance should also increase to include the newly vulnerable and poor, such as members of the urban population particularly affected by job losses.

Figure C-29: Assistance received by households
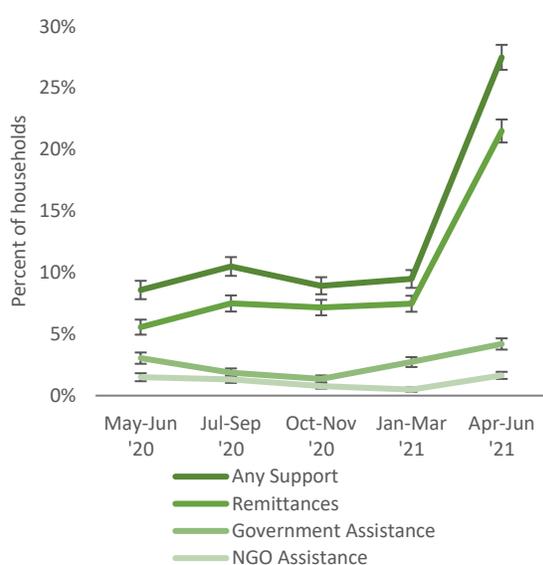
Figure C-30: Domestic and international remittances
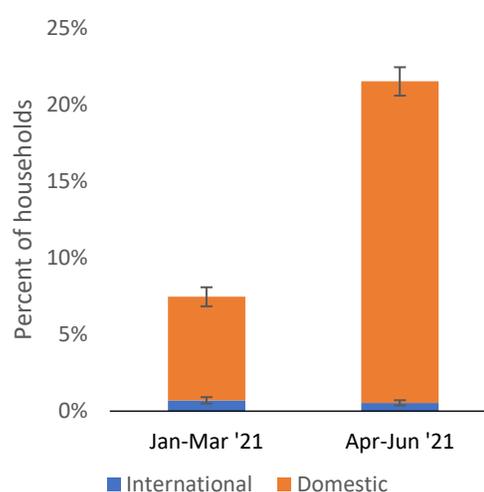
Source: Kenya COVID-19 RRPS.

29.   Despite more households receiving remittances, fewer are seeing an increase in the remittance amounts when compared to February 2020. At the beginning of the pandemic, the few households that did receive remittances mostly received higher amounts than they were receiving before the pandemic. In 2021, although more households are receiving remittances, a lower portion are seeing higher remittance values as compared to February 2020. Only one-third see an increase in remittance value in April-May 2021 as opposed to three quarters in 2020 (Figure C-31). Half of the households receiving remittances experienced a fall in the value of remittances received as compared to February 2020.

Figure C-31: Changes in remittance value received compared to February 2020
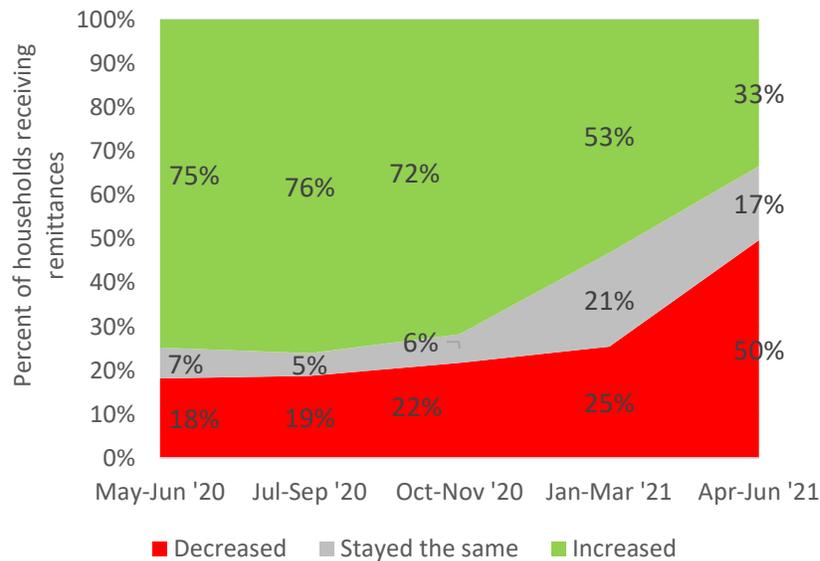
Source: Kenya COVID-19 RRPS.

30.   International remittances received by Kenya has increased in 2021 as compared to the start of the pandemic. Overall, the inflow of international remittance has increased by 27 percent from $229 million during March 2020 to $291 million during March 2021 (Figure C-32). The US remains the largest source of these inflows, accounting for over 60 percent of remittances in April 2021. Remittances from US increased from $122 million in April 2020 to $182 million in April 2021, representing a 50 percent increase since the start of the pandemic. In contrast, remittances from Europe are the second largest source (21 percent) but have grown at a slower rate since the start of the pandemic (29 percent).

Figure C-32: Diaspora remittances by sender region[25]
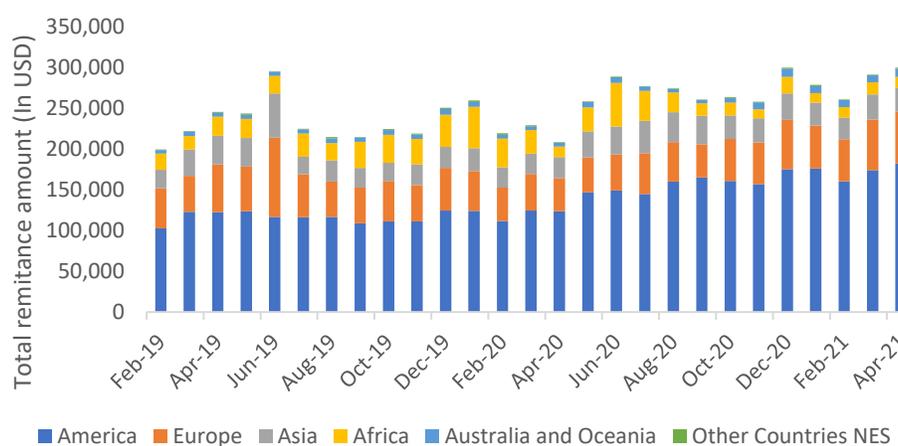
Source: Central Bank of Kenya

3. Coping strategies

31.   More households were using one or more coping mechanisms in 2021 than in 2020, with more households now engaging in additional income generating activities and using savings. 9 in 10 households had to employ one or more coping mechanisms in April-June 2021, up from just under 7 in the late months of 2020. While most households continue to reduce their consumption levels, an increasing number of households are also using their savings or engaging in additional income generating activities (Figure C-33). The reduction in food consumption can have negative impacts on the health and well-being of the population, while worse nutrition and health can lead to a loss of human capital.[26] More households relied on their savings which could lead to a reduction in the ability to manage future crises. Similarly, the sale of productive assets can have a negative long-term impact on a household's welfare. However, the proportion of households selling assets has declined over time, with only 8 percent of households doing so in April-June 2021, down from 11 percent in May-June 2020. Additionally, fewer households are taking a loan or borrowing from friends and family in 2021.

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[25] Data downloaded on June 10, 2021. More information can be accessed on: https://www.centralbank.go.ke/diaspora-remittances/
[26] Food Research & Action Center: The Impact of Poverty, Food Insecurity and Poor Nutrition on Health and Well-Being, 2017

Figure C-33: Strategies employed to cope with the impact of the crisis (multiple answers possible).
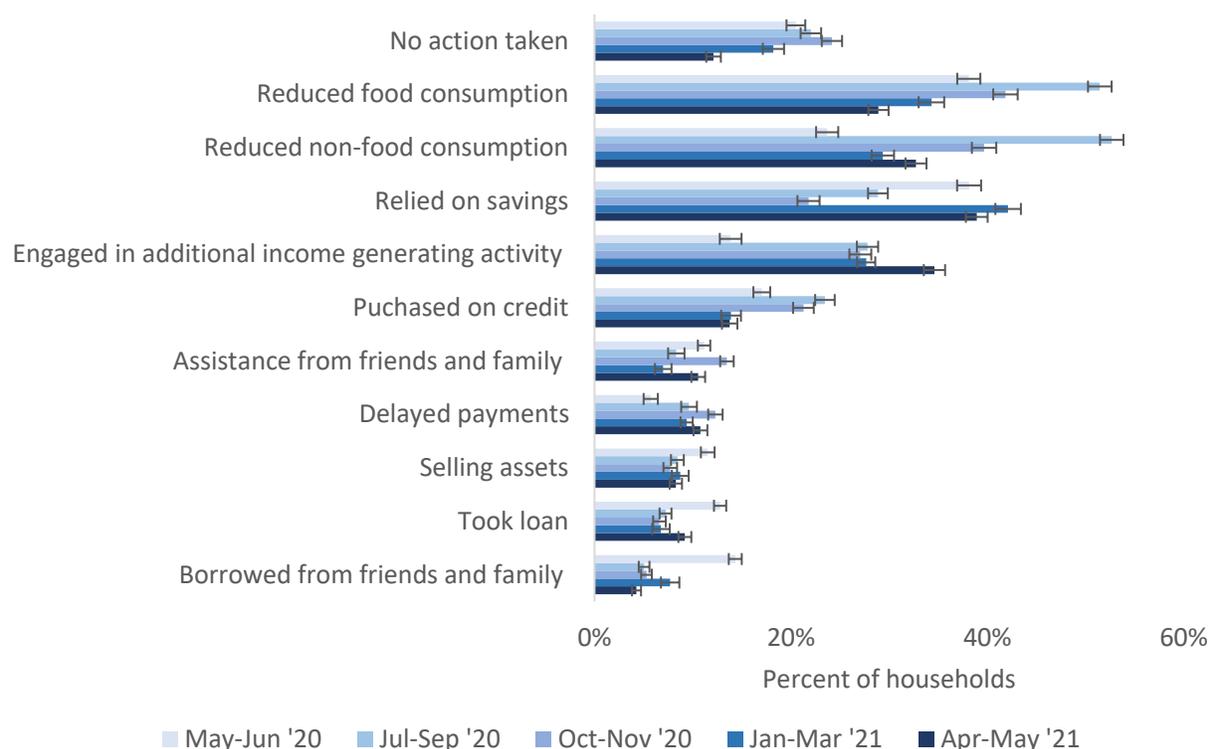
Source: Kenya COVID-19 RRPS.

32.   Men-headed households were more likely to cope using household internal resources while women-headed ones relied more on social networks. Households headed by men were more likely to sell assets (10 percent of households in April-June 2021) to cope with COVID-19 as compared to those headed by women (6 percent) (Figure C-34). At the same time, 14 percent of households headed by women received any transfers or remittances from family members as compared to only 8 percent of men-headed households (Figure C-35). Such gender differences in coping strategies were observed in all the five survey waves and when controlling for other household characteristics, with women-headed households being 3 percentage points less likely to sell assets or take loans but 5 percentage points more likely to receive assistance from friend or family as compared to men-headed households (Table C-2). This could be the case because men-headed households were relatively richer, had less childcare burden, and had a higher livestock value on average. Therefore, men-headed households had more resources in the household to cope with COVID-19. Women-headed households were more dependent on social networks even before the COVID-19 outbreak, and thus they were more likely to depend on social networks to cope with the crisis. However, no gender differences in using external funds or assistance, for example, from governments and NGOs, were observed between men-headed and women-headed households, as these strategies are generally rare.

Figure C-34: Sale of assets to cope with COVID-19 impacts by household head gender
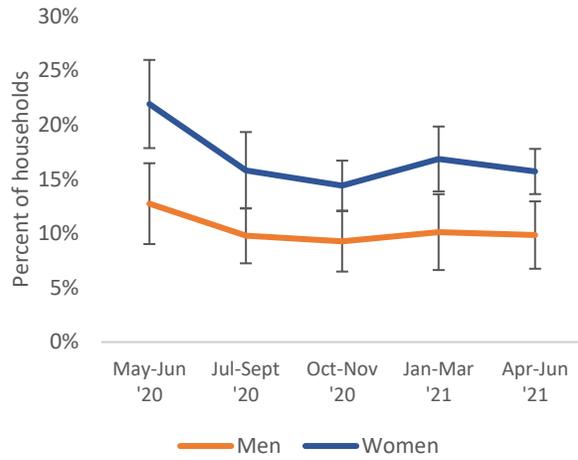
Source: Kenya COVID-19 RRPS.

Figure C-35: Use of family transfers to cope with COVID-19 impacts by household head gender
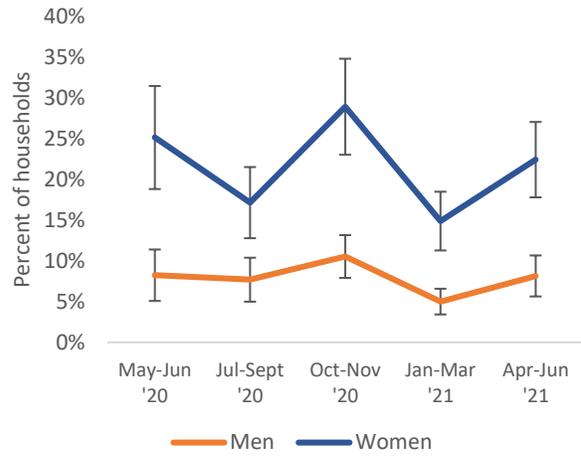
Source: Kenya COVID-19 RRPS.

Table C-2: COVID-19 coping strategies employed by household head gender

	Sell	Use	Generate	Sell	Take	Buy with	Delay	Reduce Consumption		Friend / Family		Assistance				No
	Asset	Savings	Income	Harvest	Loan	Credit	Repayment	Food	Non-Food	Assist	Borrow	NGO	Employer	Gov	Insurance	Actions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Female Head (=1)	-0.031***	-0.010	0.000	-0.012	-0.025**	0.025	0.015	-0.005	-0.008	0.053***	0.013	-0.002	-0.005**	0.004	0.005	-0.018
	(0.009)	(0.020)	(0.013)	(0.009)	(0.010)	(0.018)	(0.011)	(0.016)	(0.024)	(0.012)	(0.015)	(0.003)	(0.002)	(0.003)	(0.006)	(0.015)
Household Head Age	-0.000	-0.001	-0.001*	0.001**	-0.001**	0.000	-0.000	0.001	0.001	0.002***	-0.001***	-0.000	-0.000	0.001**	0.000*	0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
ln Household Size	0.023	0.058***	0.032	0.014	-0.014	0.037**	0.024	0.085***	0.066***	-0.052***	0.028***	-0.002	-0.005	-0.008	-0.005	-0.025
	(0.015)	(0.019)	(0.027)	(0.011)	(0.015)	(0.016)	(0.015)	(0.025)	(0.024)	(0.016)	(0.011)	(0.004)	(0.004)	(0.009)	(0.007)	(0.024)
Child-Adult Ratio	-0.001	-0.038***	-0.013	-0.001	-0.007	-0.011	-0.015*	0.030	0.010	0.003	-0.008	0.004	0.000	0.007	-0.002	-0.014
	(0.013)	(0.013)	(0.021)	(0.008)	(0.007)	(0.014)	(0.008)	(0.020)	(0.016)	(0.016)	(0.013)	(0.004)	(0.003)	(0.010)	(0.005)	(0.014)
Urban (=1)	-0.023*	-0.010	-0.000	-0.008	-0.018	-0.010	0.012	0.016	0.020	-0.015	-0.033***	-0.005	-0.003	-0.004	-0.001	0.005
	(0.011)	(0.018)	(0.023)	(0.006)	(0.015)	(0.015)	(0.010)	(0.016)	(0.013)	(0.011)	(0.010)	(0.005)	(0.005)	(0.003)	(0.005)	(0.011)
Dirt Floor (=1)	0.010	0.023	-0.022	0.016	-0.034***	0.021	-0.010	0.017	-0.001	0.003	-0.026	0.004	-0.007***	-0.000	-0.017**	-0.017
	(0.015)	(0.018)	(0.018)	(0.010)	(0.012)	(0.019)	(0.012)	(0.020)	(0.019)	(0.014)	(0.016)	(0.004)	(0.002)	(0.003)	(0.006)	(0.019)
Observations	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446	31,446
R-squared	0.025	0.053	0.043	0.040	0.030	0.030	0.022	0.060	0.069	0.040	0.043	0.089	0.024	0.041	0.033	0.034

Note: Regressions pool observations from waves 1 to 5. County, wave, strata fixed effects were included in all regressions. A dummy indicating whether the floor is made of dirt was used as a proxy for poverty. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Kenya COVID-19 RRPS.

33.   Poorer and richer households have different coping strategies. Poorer households were more likely to sell assets to cope, especially at the start of the pandemic. Richer household were more likely to take loans (Figure C-36 and Figure C-37). This might be because credit institutions have strict regulations that make it difficult for poor households to be qualify for formal loans and thus have limited access to them. This negative economic shock may cause long term poverty and vulnerability for poor households as the sale of assets can severely impact welfare and productivity in the long run.

Figure C-36: Cope with COVID-19 by selling assets by deprivation as determined by the floor material[27]
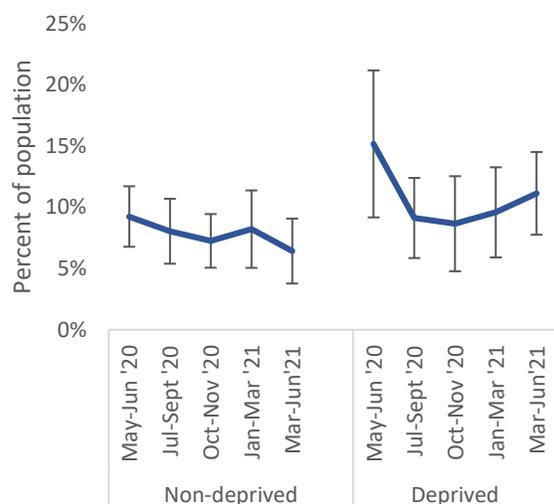
Figure C-37: Cope with COVID-19 by taking loans by deprivation as determined by the floor material

Source: Kenya COVID-19 RRPS.
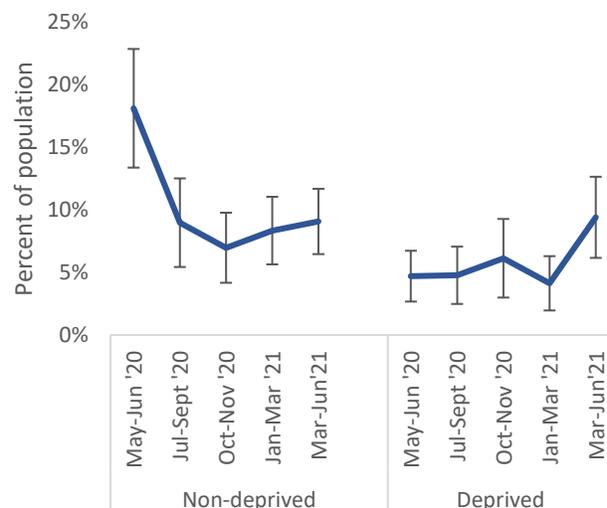
Source: Kenya COVID-19 RRPS.

4. Food security

34.   Food insecurity still affects almost half of all households in 2021, despite some improvement in the late months of 2020. Between 2016-2018, just over 56 percent of the population was moderate or severely food insecure, while 19 percent of the population was severely food insecure.[28,29] In the early months of the pandemic, just under half of all households were suffering from hunger due to a lack of food. While the situation improved towards the end of 2020, food security has worsened again with 42 percent of households going hungry in mid-2021 (Figure C-38). The situation is worse for rural households (48 percent) compared to urban households (34 percent), however there is no significant difference between poor and non-poor households.[30] The increase in food insecurity in 2021 came at a time when there were renewed restrictions due to COVID-19, along with a below average long rain season between

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[27] If the floor material of the dwelling is made of dirt, the household is categorized as poor for this analysis.

[28] FAO, *Safeguarding against Economic Slowdowns and Downturns*.

[29] According to the FAO, severe food insecurity is associated with the concept of hunger, while moderate food insecurity is associated with uncertainties about the ability to obtain food, or households that have been forced to compromise on the quality or quantity of the food consumed.

[30] Only the households sampled from KNBS are taken to disaggregate between the poor and non-poor. Total consumption expenditure from CIHBS 2015/16 is used to derive poverty status in 2019 of each household combined with the national poverty lines. A constant growth of population in each county is assumed for the period of analysis, with information from KNBS. In addition, household's consumption was a derived until 2019 based on private consumption growth from the World Bank's Macro & Poverty Outlook 2020 and a passthrough of 0.395.

March to May 2021, which is not only the long rain season but also the main growing season for crops.[31,] [32,33] Kenya's food production is particularly susceptible to changes in rainfall due to over-reliance on rainfed irrigation and inadequate water supply.[34] This, coupled with the impact of COVID-19, has brought worrisome effects on the level of food security in Kenya. In light of this, it is important to ensure that short term policies to deal with the pandemic do not affect long term health and nutrition. This is especially true in the case of young children, for whom it is imperative to get appropriate nutrition.

Figure C-38: Went hungry due to lack of food (past 30 days)
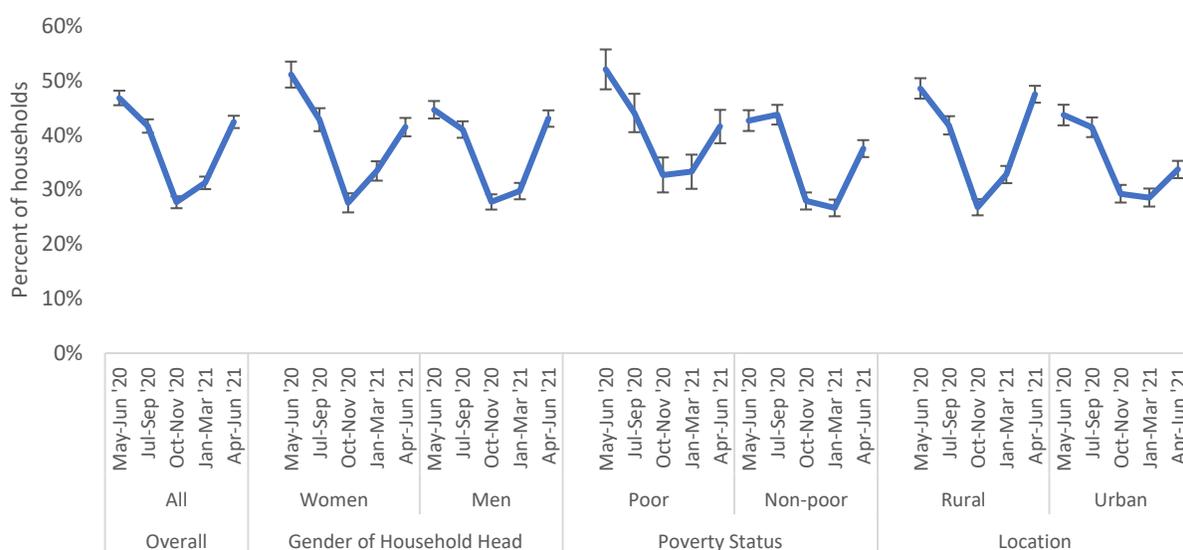
Source: Kenya COVID-19 RRPS.

35.   Many Kenyans still skip meals and go to bed hungry, though there is an improvement as compared to the early months of the pandemic. Adults in 33 percent of households skipped meals on at least 1 day in the past 7 days, of which 14 percent skip meals on 2 days, while only 2 percent skip meals on all 7 days in April-June 2021 (Figure C-39). In comparison, adults in 41 percent of households skipped meals on at least one day (12 percent had to skip meals on all 7 days) in May-June 2020. While there is an overall improvement compared to the early months of the pandemic, the downward trajectory in 2020 has changed in 2021 and more households are skipping meals as compared to the later months of 2020. In 11 percent of the households, children skipped meals on at least 1 day in April-June 2021, compared to 27 percent in May-June 2020, though the improvement has slowed over time (Figure C-40). Similarly, there is an improvement in households with adults going to bed hungry from 27 percent of households in May-June 2020 to 12 percent in April-June 2021 (at least 1 day in past 7 days, Figure C-41). Again, while there is an overall improvement, the downward trend which persisted through 2020, has shown signs of reversal in 2021.

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[31] Reliefweb, "Why Kenya's Seasonal Rains Keep Failing and What Needs to Be Done."
[32] FEWS NET, World Food Programme, and NDMA, "Kenya Food Security Outlook Update." https://reliefweb.int/report/kenya/why-kenya-s-seasonal-rains-keep-failing-and-what-needs-be-done
[33] International Rescue Committee, "Over 2 Million People in Kenya Face Acute Hunger Due to Drought, Warns IRC."
[34] Environment for Development, "Climate Change and Food Security in Kenya."

Figure C-39: Number of days adults skipped meals (past 7 days)
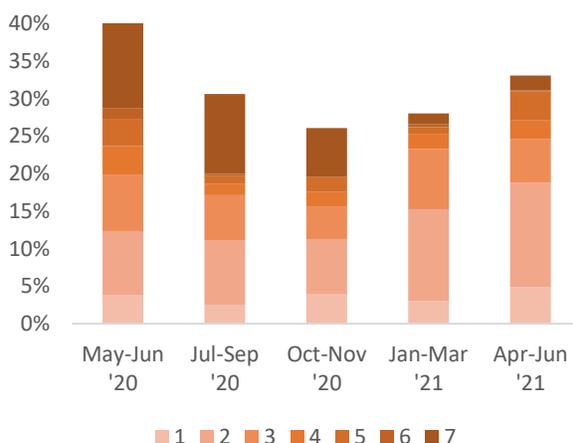
Figure C-40: Number of days children skipped meals (past 7 days)
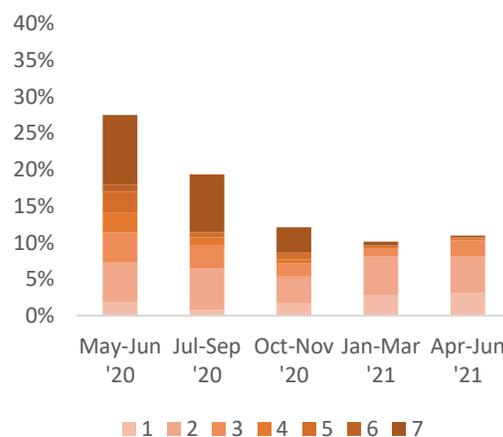
Figure C-41: Number of days adults went to bed hungry (past 7 days)
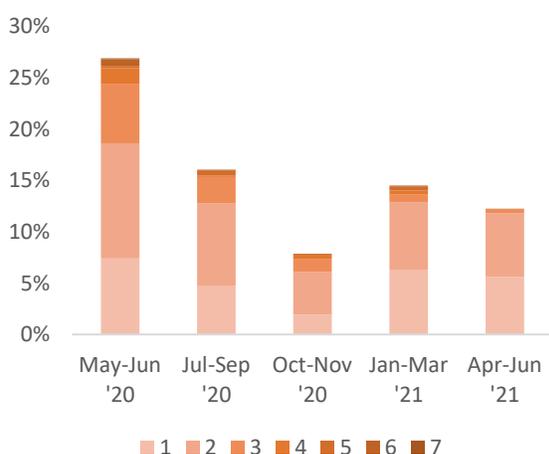
Figure C-42: Number of days children went to bed hungry (past 7 days)
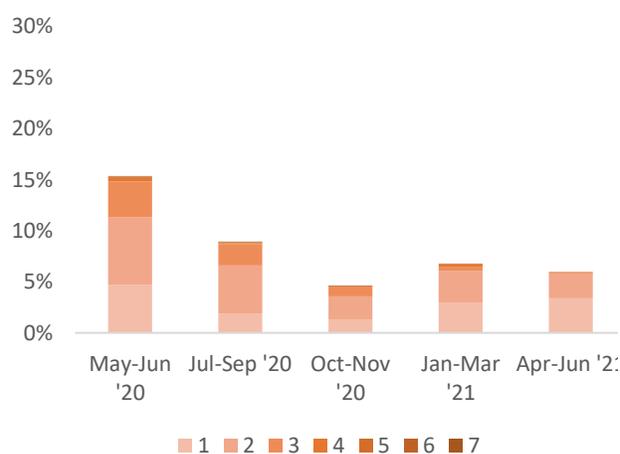
Source: Kenya COVID-19 RRPS.

36.   3 in 10 households are unable to access staple food. As reflected in the share of households experiencing hunger, many households (28 percent) were unable to access staple food. Lack or reduction in income, reduced access to markets due to travel restrictions and low purchasing power have been the main reasons for food insecurity in 2020. [35] This situation is worse for rural households, while there is no significant difference between men and women-headed households (Figure C-43). It is because they are less likely to have adequate savings for food purchase amidst increased food prices, due to disruptions in the regional markets because of lookdown given the high ratio of food imports to domestic production. Half of the households reported higher prices as the reason for not accessing staple foods by mid-2021

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[35] Kansiime, M. K. , Tambo, J. A. , Mugambi, I. , Bundi, M. , Kara, A. , & Owuor, C. (2020). COVID-19 implications on household income and food security in Kenya and Uganda: Findings from a rapid assessment. Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7500897/

(Figure C-44). At the same time, inflation rates reported by the GoK have been at the same level as before the pandemic (Figure C-45). [36]

Figure C-43: Not been able to access staple food (past 30 days)
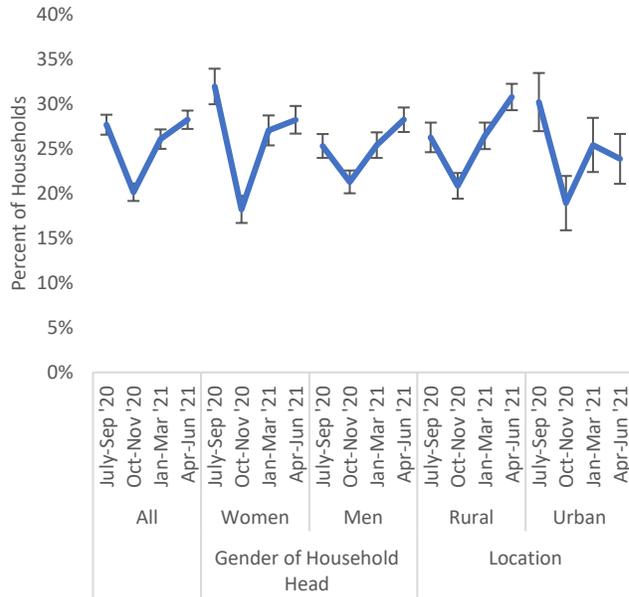
Source: Kenya COVID-19 RRPS.

Figure C-44: Reason for not being able to access staple food
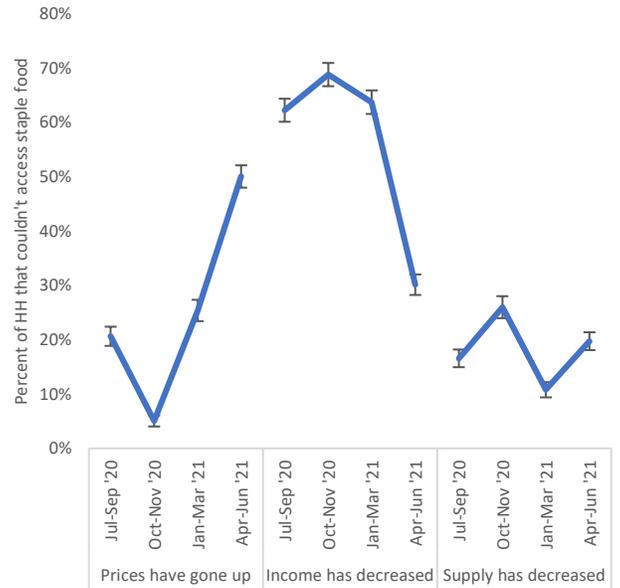
Source: Kenya COVID-19 RRPS.

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[36] For inflation rates, see https://www.centralbank.go.ke/inflation-rates/. However, CPI is taken from urban areas only and not rural areas. The data was collected from selected retail outlets in 50 zones, 14 of which are in Nairobi and the other 36 in urban areas.

Figure C-45: Inflation rate[37]
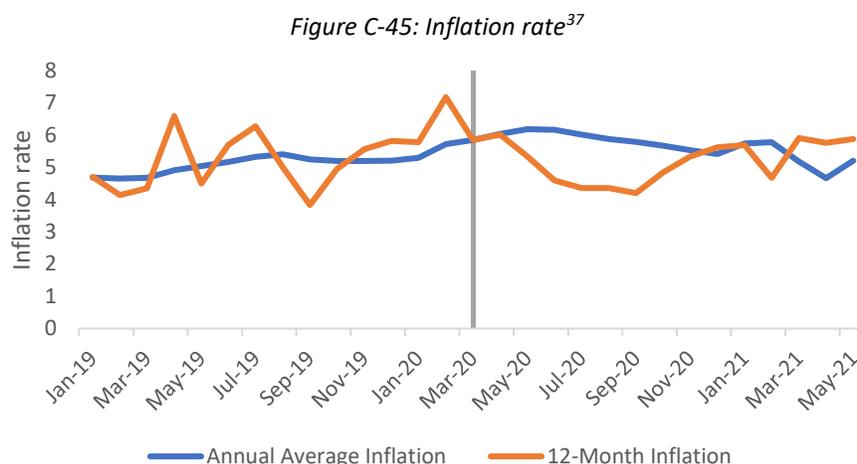
Source: Central Bank of Kenya.
Note: Grey line indicating first case of COVID-19 in Kenya.

37. **Food insecurity is worse in households with a higher child to adult ratio[38] and for relatively poor households.** With an increase in the child to adult ratio by 1, members in that household are 3 percentage points more likely to go hungry and 5 pp more likely to have to skip meals (Table C-3). Children in such households are also worse off. Many children who depended on school provided meals had lost access to access to these meals during the past year, which may be increasing food insecurity among households with children. Households where the main material of the floor of the dwelling is dirt, a proxy for poverty, are also worse off, with such households being 9 pp more likely to have members going hungry, 7 percent more likely to have adult members and 4 pp more likely to have children skipping meals. While urban households are 3 pp less likely to have members going hungry as compared to rural households, they are 4 pp more likely to have lower access to drinking water.

Table C-3: Food security

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger	No Access to Staple Food	Worry Food	Meal Skip-Adult	Meal Skip-Child	No Water Access
Female Head (=1)	0.022	0.007	-0.008	0.016	0.022*	-0.004
	(0.017)	(0.019)	(0.022)	(0.013)	(0.013)	(0.021)
Head age	0.002***	0.002**	0.001	0.002**	0.002***	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household Size	0.008	0.006	0.012**	0.008	0.019***	0.013***
	(0.005)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)
Urban (=1)	-0.025*	0.008	0.018	-0.019	-0.018	0.036**

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[37] 12-month inflation is the percentage change in the monthly consumer price index (CPI). Annual Average Inflation is the percentage change in the annual consumer price index (CPI) of corresponding months. For instance, a 12-month inflation for March 2020 is the percentage change in the CPI of March 2020 and March 2019, whereas Average Annual Inflation is the percentage change in the annual CPI of March 2020 and March 2019. Data downloaded on June 12, 2021.

[38] The Child to Adult ratio is defined as the ratio of the number of children (those below 17 years of age) to the number of adults in a household.

	(0.013)	(0.017)	(0.016)	(0.016)	(0.012)	(0.015)
Dirt Floor (=1)	0.094***	0.072***	0.097***	0.073***	0.044***	0.024
	(0.015)	(0.016)	(0.023)	(0.017)	(0.015)	(0.018)
Child to Adult Ratio	0.032**	0.025*	0.024	0.045***	0.084***	-0.004
	(0.015)	(0.014)	(0.016)	(0.014)	(0.012)	(0.012)
Constant	0.296***	0.130***	0.523***	0.259***	0.064**	0.218***
	(0.043)	(0.047)	(0.039)	(0.035)	(0.026)	(0.030)
Observations	31,480	26,163	31,492	31,399	31,408	31,492
R-squared	0.071	0.051	0.076	0.069	0.153	0.078

Note: Regressions pool observations from waves 1 to 5. County, wave, strata fixed effects were included in all regressions. Dirtfloor is used as a proxy for poverty for this analysis. A linear probability model is used. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.
Source: Kenya COVID-19 RRPS.

38. **Access to drinking water remains a problem, with urban households being most affected.** Poor access to drinking water is linked to transmission of diseases, adverse effects on health and loss of productivity.[39] With the onset of the pandemic, over one-quarter of households (28 percent) were unable to access drinking water in sufficient quantities, though this had declined to 16 percent in late 2020 (Figure C-46). Since then, access to clean water has again emerged as a pressing issue as 30 percent households are unable to get drinking water. The situation is worse for urban households (32 percent) compared to rural households (28 percent). Poor access to basic requirements like food and water can lead to worse longer-term outcomes on health and even education of children who may suffer from lowered nutritional intake.

Figure C-46: Not been able to access drinking water (past 30 days)
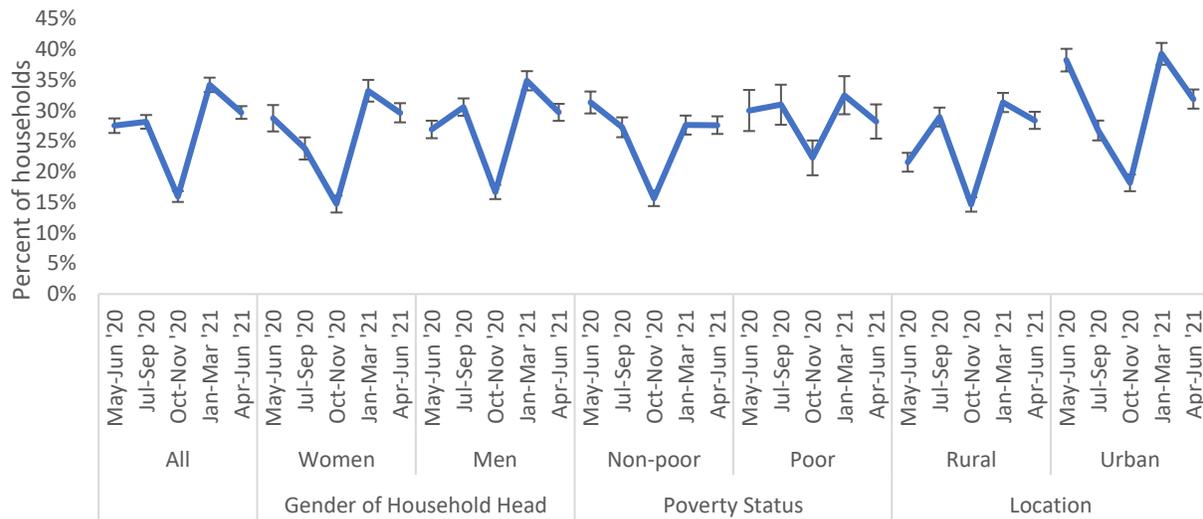
Source: Kenya COVID-19 RRPS.

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[39] World Health Organization, "Drinking Water."

D. Human Capital: Education, Health, Well-Being and knowledge

1. Education

39.   Access to teachers and engagement in learning was low during school closures, in particular for those attending public schools. In the late months of 2020, fewer than 20 percent of children were able to access their teachers (Figure D-1).[40] Among the children who could still access their teachers during those months, most relied on calls or in-person contact, while the use of WhatsApp, though important, has reduced over time (Figure D-2). As schools re-opened in January 2021, access to teachers improved for children in public and private schools alike. In the event of future school closures, allowance of airtime and mobile data for students and teachers could be a useful way to facilitate communication through channels that have been underutilized so far, such as online services and SMS. Furthermore, as schools struggled financially, many teachers were put on unpaid leave or faced salary cuts, which increased the need to complement incomes through other activities and might have contributed to a reduction in accessibility.[41,42] Adequately compensating teachers along with providing training to contact students remotely can help fostering continued learning activities during school closures.

Figure D-1: Access to teachers
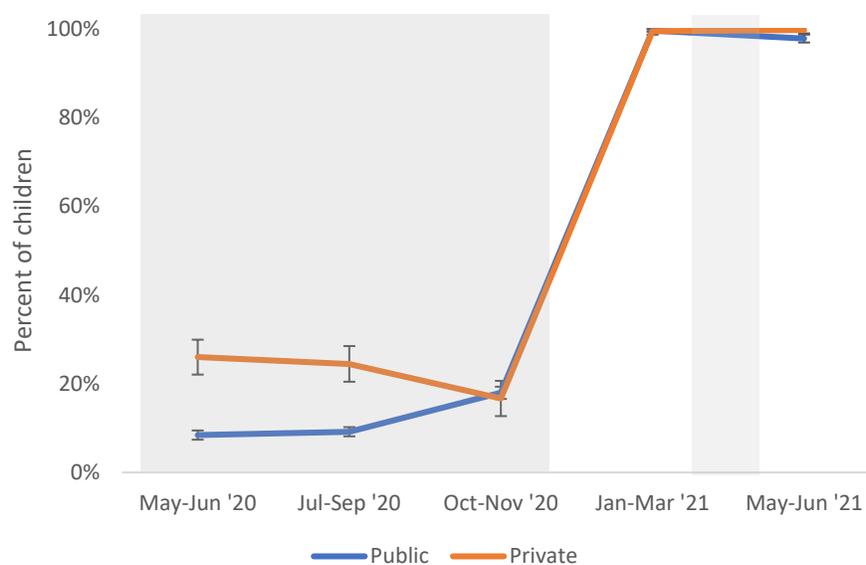
Source: Kenya COVID-19 RRPS.
Note: Period of school holidays (from March 29 to May 17, 2021, including a seven-day buffer) has been excluded from this analysis; grey shaded area indicating school closures.

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[40] Access to teacher is defined as a child or respondent having the ability to contact or communicate with teachers in the last week.
[41] FSD Kenya, "FSD Kenya: State of the Economy- Focus on the Impact of COVID on Women and Education."
[42] Alam and Tiwari, "Implications of COVID-19 for Low-Cost Private Schools."

Figure D-2: Channels for reaching teachers (multiple answers possible)
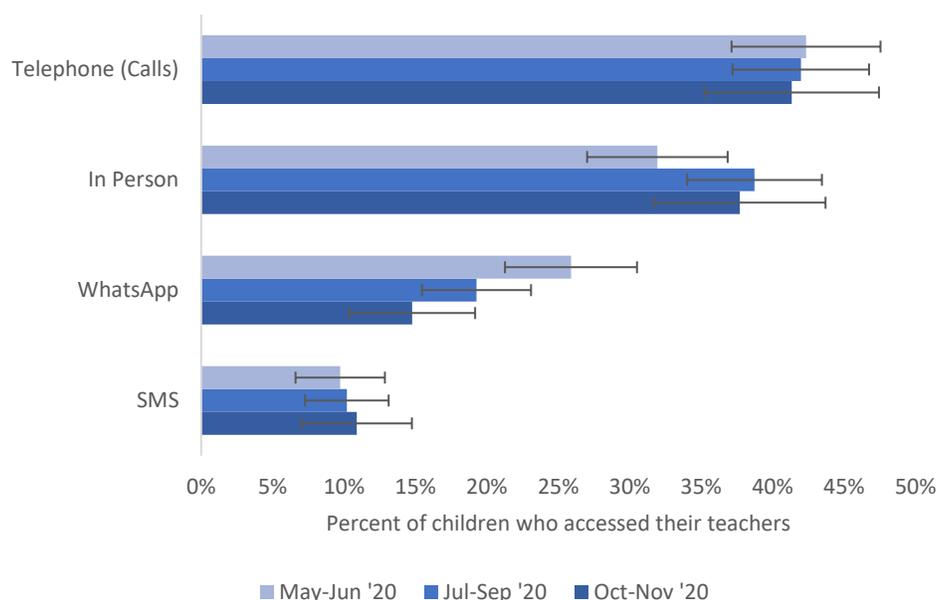
Source: Kenya COVID-19 RRPS.

40.   Although engagement in learning activity has picked up in 2021, low levels of engagement during 2020 could have long-term implications for learning outcomes. As schools re-opened, engagement in educational activities picked up in the earliest months of 2021, and there were no marked differences in learning engagement between public and private school throughout the whole period. (Figure D-3). The setbacks throughout 2020 may lead to learning losses in both the short and long run, potentially impairing future human capital accumulation. Thus, providing children additional time and consideration to catch up with the curriculum will be helpful in bridging learning gaps that may have developed. The major reasons for low engagement in 2020 were a lack of motivation among children and inadequate support from teachers, schools and lack of adult supervision (Figure D-4). Once schools had re-opened fewer children lack motivation, although a lack of educational programs (29 percent of children) and textbooks (9 percent) are still hurdles to engagement in learning activities. Schools provide the most conducive environment for effective learning in the long term and hence keeping them open with adequate safety measures must be a priority. Moreover, a rise in teen pregnancies by 40 percent[43] over the period of lockdown and school closures can have further detrimental effects on the health and education of young girls as 98 percent of pregnant girls are not in schools.[44]

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[43] Beutel, "Rise of Teen Pregnancies During Kenya's Lockdown."
[44] Plan International, "COVID-19: Lockdown Linked to High Number of Unintended Teen Pregnancies in Kenya."

Figure D-3: Engagement in learning activity (past 7 days)
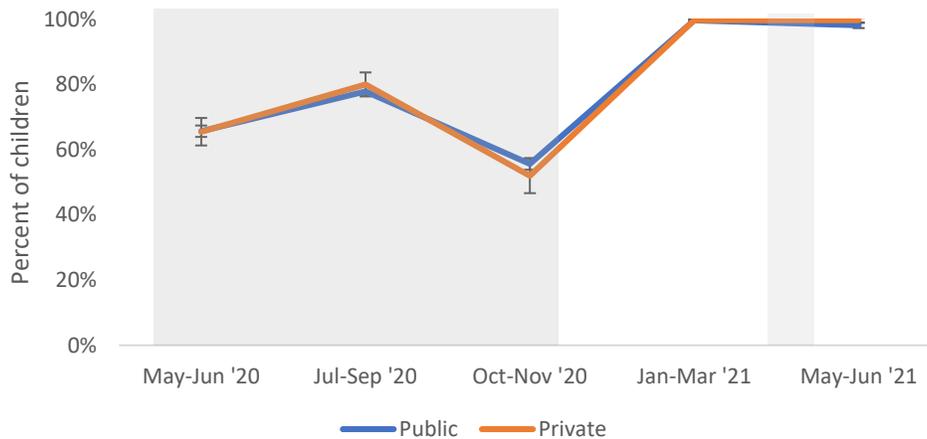
Note: Period of school holidays (from March 29 to May 17, 2021, including a seven-day buffer) has been excluded from the sample; grey shaded area indicating school closures

Figure D-4: Reason why children are not engaging in learning activity (multiple answers possible)[45]
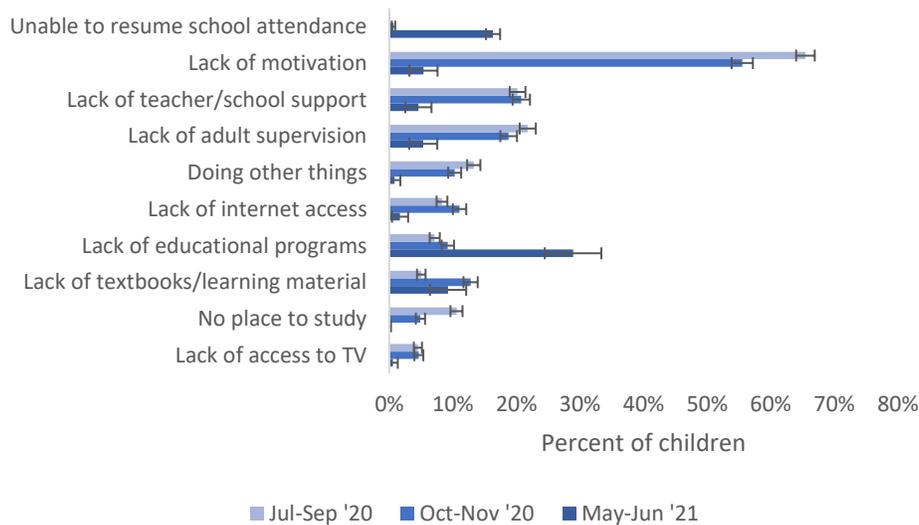
41.   Underprivileged children were significantly less likely to have access to remote education during school closures. When schools closed in 2020, most children engaged in alternative forms of education, which includes self-directed and community-based learning, and, to a lesser extent, in remote education through online, radio, and TV programs. The use of remote learning varied greatly across different groups of the society, as children in poor households and whose parents (or household head) do not have tertiary education exhibited lower rates of remote access than their counterparts. Poor girls, in particular, were

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[45] The question was not available for Rounds 1 and 4 of the survey.

significantly (11 percentage points) less likely to learn remotely (Table D-1). The fact that they reported to spend over 50 percent more time with household chores than poor boys during the period of school closures, is likely one of the obstacles that threaten the continuation of their education in times of crisis.[46] The reliance on alternative education, on the other hand, was much more widespread and homogeneous across gender and other socioeconomic characteristics (Figure D-5).[47] As schools opened up in January 2021, face-to-face attendance quickly returned to being the most adopted learning method and very few children continued to rely upon other learning forms such as online tools, TV and radio programs, community-based teaching, and computers (Figure D-6).

Figure D-5: Forms of learning during school closures (October-November 2020)
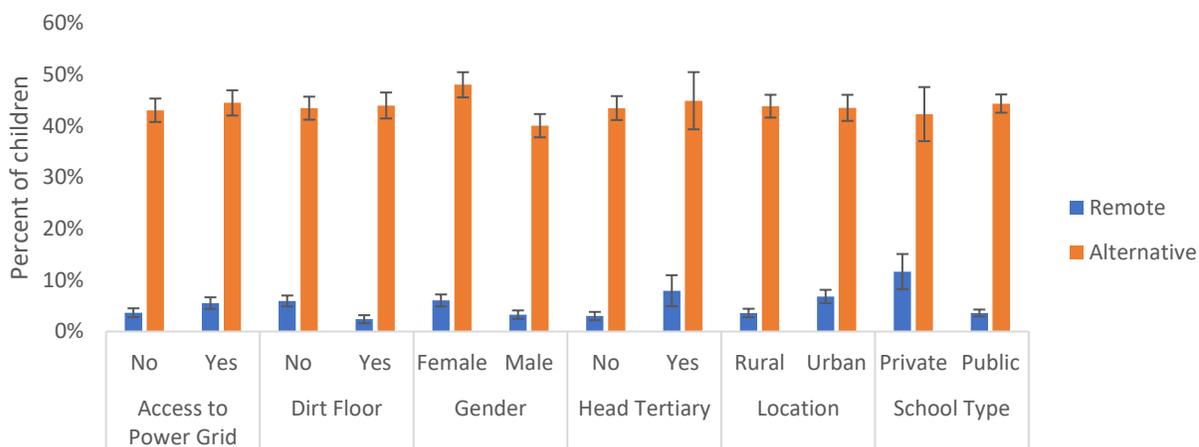
Source: Kenya COVID-19 RRPS.
Notes: Alternative education consists of self-directed and community-based learning and teaching by parents and siblings. Remote education includes online, radio, TV. Children younger than three years old excluded from the sample.

Table D-1: Remote and alternative education during school closures

	Remote Education		Alternative Education	
	(1)	(2)	(3)	(4)
Female (=1)	0.022	0.061**	0.045	0.081
	(0.018)	(0.031)	(0.056)	(0.072)
Poor (=1)	-0.061**	-0.010	0.092	0.139*
	(0.028)	(0.017)	(0.058)	(0.083)
Female (=1) × Poor (=1)		-0.107**		-0.096
		(0.046)		(0.104)
Child Hunger (=1)	-0.039**	-0.045**	0.164*	0.159*

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[46] Between October and November 2021, girls aged 6 and older in poor households reported to spend, on average, 10.52 hours with household chores in the last seven days, while their male counterparts dedicated 6.97 hours to such tasks. The difference is significant at the 1 percent level.

[47] For instance, between October and November 2020, privately educated children were 13 percentage points more likely to report having access to remote education than their peers in public schools.

	(0.017)	(0.018)	(0.089)	(0.088)
Urban (=1)	0.002	-0.003	-0.033	-0.038
	(0.016)	(0.017)	(0.063)	(0.063)
Head Tertiary Education (=1)	0.046*	0.048*	0.079	0.081
	(0.026)	(0.026)	(0.078)	(0.079)
Female Head (=1)	0.036**	0.031**	0.045	0.041
	(0.016)	(0.015)	(0.054)	(0.052)
Power Grid (=1)	-0.035	-0.037*	-0.034	-0.036
	(0.022)	(0.022)	(0.062)	(0.060)
Public School (=1)	0.045	0.047	0.081	0.083
	(0.049)	(0.048)	(0.078)	(0.078)
County FE	Yes	Yes	Yes	Yes
Control	Yes	Yes	Yes	Yes
R-squared	0.18	0.20	0.26	0.27
Observations	2005	2005	2005	2005

Note: OLS regression using data from wave 3. Robust (svy) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Alternative education consists of self-directed and community-based learning and teaching by parents and siblings. Remote education includes online, radio, TV. Children younger than three years old excluded from the sample. Dirt floor is used as a proxy for poverty. County fixed effects. Control variables: age, age squared, no. children (log), anxious due to outbreak, week count. Source: Kenya COVID-19 RRPS.

Figure D-6: Children engaging in type of learning activity
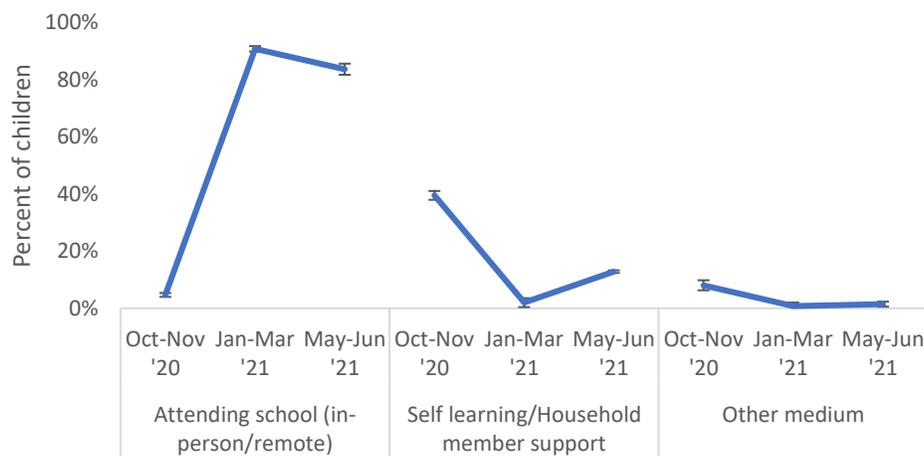
Source: Kenya COVID-19 RRPS.
Note: Children younger than three years old excluded from the sample. Period of school holidays (from March 29 to May 17, 2021, including a seven-day buffer) has been excluded from the sample.

2. Early Childhood Development

41.   **Job insecurity is impacting households' ability to provide nutrition to young children.**[48] Prior to the COVID-19 pandemic, Kenya was making progress in reducing childhood malnutrition.[49] However, recent increases in food insecurity during COVID-19 threaten to disrupt this progress if not immediately addressed. As of January 2021, more than 20 percent of households with young children had children skip at least one meal during the week preceding the survey, with 6 percent skipping meals every day in a week. Children in households where no adults are employed are disproportionately skipping meals compared to children in households where at least one adult is employed (Figure D-7). The effect is not different for children from rural or urban households. As households continue to struggle with the COVID-19 economic shocks, a lack of access to adequate and consistent nutrition has dire implications for young children's developmental growth and life outcomes.[50]

Figure D-7: Food insecurity and employment[51]
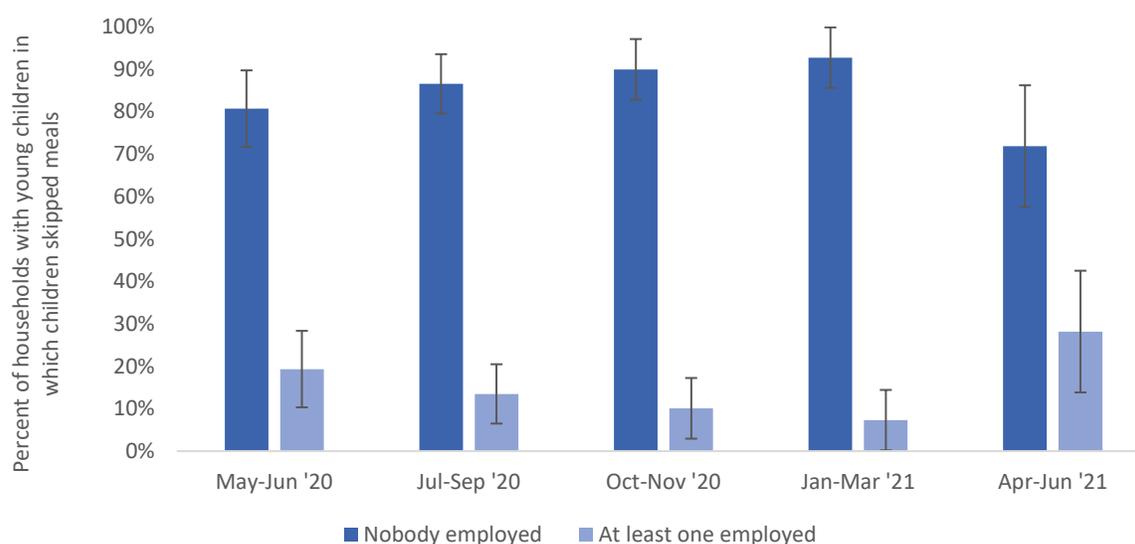
Source: Kenya COVID-19 RRPS.

42.   **Young children out of school are much more likely to experience changes in behavior than children in school**.[52] When the Kenyan government closed schools in March 2020, over 3.2 million pre-primary learners were at risk of increased early childhood development service deprivations, and some

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[48] Throughout this section, young children refer to any child under the age of six and only households with at least one young child are included in this analysis.

[49] Kenya National Bureau of Statistics et al., "Kenya Demographic and Health Survey 2014."

[50] Devercelli and Humphry, The World Bank, "Investing in the Early Years During COVID-19."

[51] Employed households are defined as at least one adult is employed, while not employed households are defined as households with no adults employed.

[52] It may be important to note that there may be some bias, wherein parents of children who are out of school may notice changes in behavior more than the parents of children who are in school, because of reasons such as more contact time with child. However, this analysis is important nonetheless, as for young children the implications of not having access to school is incredibly high and it can have long last impacts on their social-emotional skills/behavior, presumably much longer than older children

were without access to remote learning and potentially left in stressful home conditions with heightened levels of neglect and abuse as families struggled to cope with COVID-19 related shocks. After schools reopened in early January 2021, approximately 15 percent of households with young children did not enroll their children in early learning institutions. The families of these young learners cited fear of COVID-19, a lack of money for uniforms and books, distance to school and a lack of motivation as reasons why they did not enroll their children. More than 20 percent of young children out of school experienced at least some sign of behavior change, compared to less than 5 percent of their in-school counterparts (Figure D-8).[53] The difference is most notable in externalizing behaviors. At this malleable age, access to education is crucial not only for foundational learning but for building the social and emotional developmental skills necessary for a high-quality and long-lasting life, future labor force productivity and increased human capital.

Figure D-8: Changes in behavior by pre-primary attendance in January-March 2021 (3-6 years)
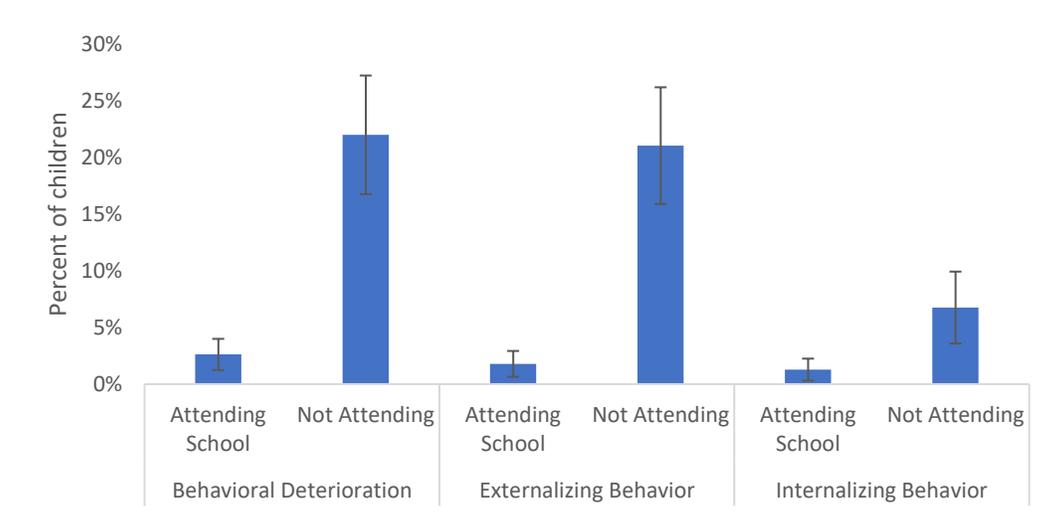
Source: Kenya COVID-19 RRPS.

Notes: Behavioral change includes the following six changes in behavior: children who have been (i) crying more, (ii) more defiant, (iii) more destroying, (iv) speaking less, (v) more withdrawn or (vi) more irritable than usual. The first three (i-iii) refer to externalizing behavior, whereas the last three (iv-vi) are classified as internalizing behavior.

43.   Switching back to in-person education can protect children from experiencing negative changes in behavior. Children who were previously engaged in other forms of learning but switched to in-person education saw a decrease of up to 13 percentage points in the likelihood of suffering from behavioral deterioration (Table D-2). Switching to remote education, while beneficial for children aged 6 and older, can lead to a higher likelihood of exhibiting negative behavioral changes for children in pre-primary age. Across all age cohorts, children treated aggressively by their parents are significantly more likely to report behavioral issues.

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[53] Externalizing behavior includes crying more, more defiant and destroying more; Internalizing behavior includes more withdrawn, more irritable, sadness and nervousness.

Table D-2: Behavioral deterioration and learning form

	Behavioral Deterioration					
	(1)	(2)	(3)	(4)	(5)	(6)
In-person Education (=1)	-0.133***			-0.117***	0.021	-0.109***
	(0.033)			(0.035)	(0.052)	(0.037)
Remote Education (=1)		0.209*		0.056	0.849***	-0.279***
		(0.121)		(0.155)	(0.155)	(0.086)
Alternative Education (=1)			0.196**	0.086	0.081	0.241***
			(0.086)	(0.095)	(0.132)	(0.088)
Received Care (=1)	0.078*	0.091**	0.092**	0.079*	0.079	0.074*
	(0.040)	(0.044)	(0.044)	(0.041)	(0.089)	(0.043)
Aggressive Parenting (=1)	0.438***	0.438***	0.417***	0.428***	0.345***	0.394***
	(0.055)	(0.057)	(0.056)	(0.055)	(0.097)	(0.053)
Child FE	Yes	Yes	Yes	Yes	Yes	Yes
Age	3+	3+	3+	3+	3-6	6+
R-squared	0.39	0.36	0.37	0.40	0.35	0.47
Observations	5401	5401	5401	5401	984	4417

Note: FE regression using data from waves 4 and 5. Robust (svy) standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Behavioral change includes the following six changes in behavior: children who have been crying more, more defiant, more destroying, speaking less, more withdrawn or more irritable than usual. Alternative education consists of self-directed and community-based learning and teaching by parents and siblings. Remote education includes online, radio, TV. Received care includes the following activities: playing, reading books, telling stories or singing songs to the child. Aggressive parenting consists of calling the child names (such as dumb or lazy), spanking, hitting and beating the child. Child fixed effects. Control variables: public, poor, child hunger, urban, power grid access, internet access, no. children (log), anxious due to outbreak, week count. Source: Kenya COVID-19 RRPS.

3. Health

47.   The majority of Kenyans are able to access health services. In 2020, the frequency of health check-ups decreased as compared to February 2020 during periods when the number of COVID-19 cases were high (May-July, and October-November) [54],[55] (Figure D-9). People in 15 percent of those households that needed to visit hospitals for medical treatments were also unable to do so in the initial couple of months of the pandemic[56] (Figure D-10). This could be due to pandemic containment measures e.g.,

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[54] Report of daily cases as reported by CSSE at the John Hopkins University COVID-19 Dashboard.https://www.arcgis.com/apps/dashboards/bda7594740fd40299423467b48e9ecf6
[55] Health check-ups include routine checks, prenatal check-ups, check-ups for cancer, chronic heart disease or chronic lung disease.
[56] Medical treatments include giving birth, malaria, flu or flu-like symptoms, gastrointestinal illness, HIV/AIDS related visits, serious wound/injury, a major accident, minor body pains, child's check-up and others.

movement restrictions; loss of employment leading to loss of health insurance; concerns over safety when visiting health facilities; and constrained capacity within health facilities to offer other services. Almost all Kenyans are able to access medicines, if needed, which has improved from the initial months of the pandemic when 7 percent of households were unable to access medicines when required (Figure D-11). By 2021, almost everyone was able to visit health facilities for medical treatment and routine check-ups as frequently as needed. It is crucial to strengthen capacity of healthcare facilities to maintain delivery of essential health services even during health emergencies. Removing financial barriers to these essential services, particularly for poor and vulnerable households or persons with co-morbidities, is also critical and will have the additional effect on reducing vulnerability to COVID-19.

Figure D-9: Able to go for routine health check-ups as frequently as February 2020/as needed
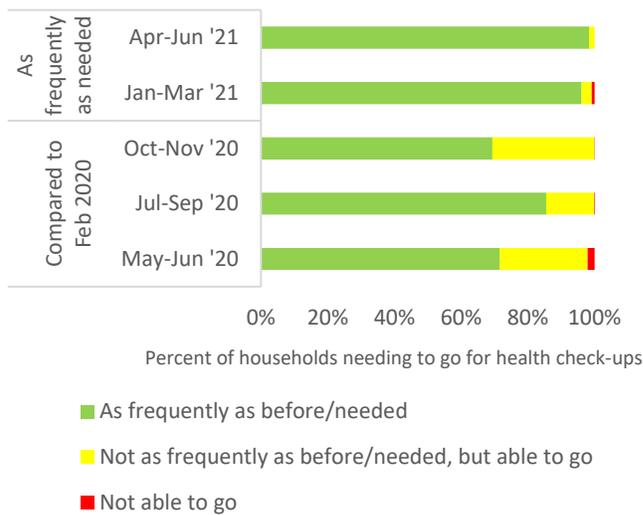
Figure D-10: Able to access medical treatment if needed
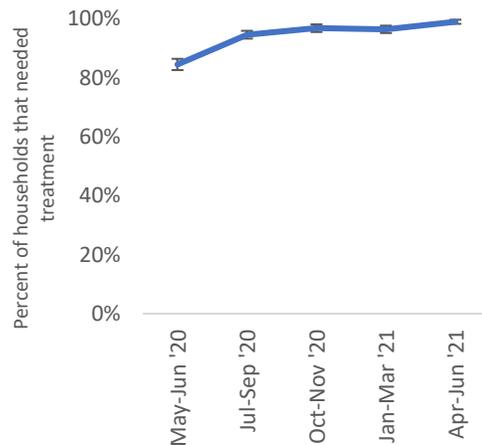
Figure D-11: Households not being able to access medicines
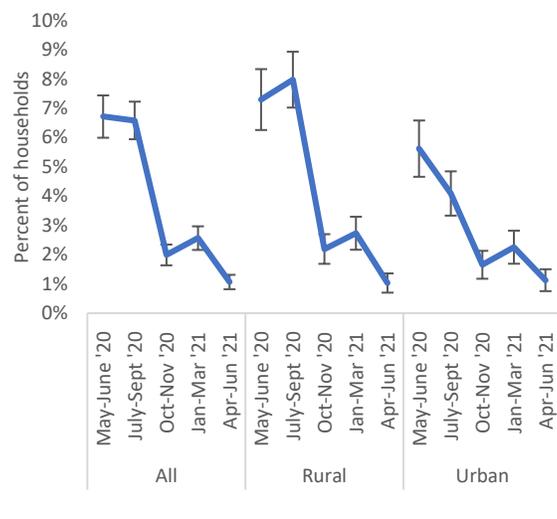
Source: Kenya COVID-19 RRPS.

48.   Most Kenyans are willing to take a COVID-19 vaccination, if available at no cost. Over three-quarters of Kenyans are ready to take a COVID-19 vaccination if it is available at no cost (Figure D-12).

Despite some initial hesitancy in the urban population, by mid-2021, 85 percent of the urban population were willing to get vaccinated. The less educated are comparatively less willing to take a vaccine, although willingness is also increasing over time. Among those who do not want the vaccine, the majority are worried about potential side-effects (Figure D-13). A large proportion of Kenyans also say that they would be more willing to take the vaccine if doctors or scientists recommended it (Figure D-14). It is therefore necessary to increase the visibility of health professionals in vaccine-related communication and community engagement activities. This could boost the willingness of people to get vaccinated once vaccines are widely available and hence curb the spread of COVID-19.

Figure D-12: People who agree to take a COVID-19 vaccination if available at no cost
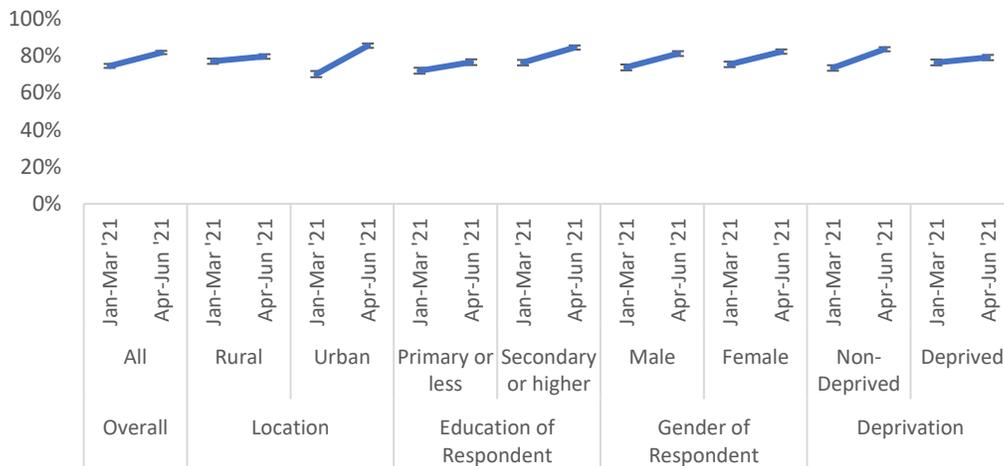
Figure D-13: Reasons for not taking vaccine
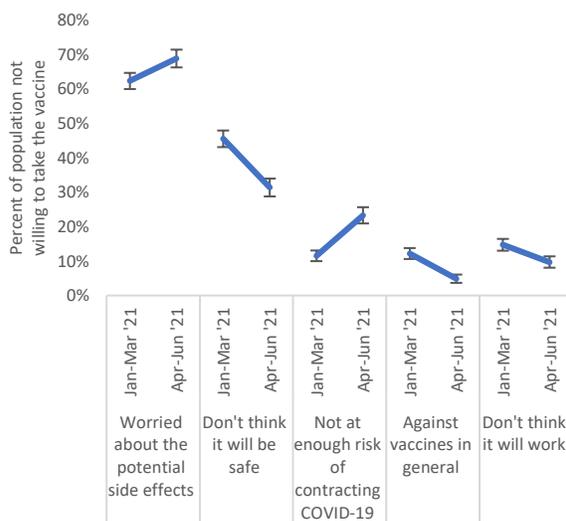
Figure D-14: Would take vaccine if recommended (April-June 2021)
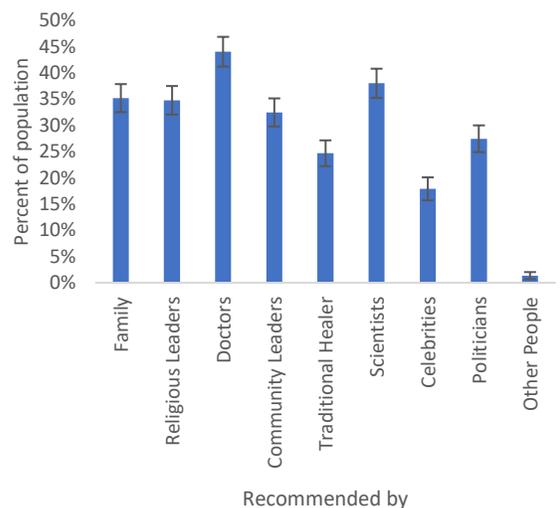
Source: Kenya COVID-19 RRPS.

49.   Most Kenyans would prefer to be vaccinated in public facilities and feel that the major challenge to access the vaccine is covering the related costs. While a majority of Kenyans would prefer to be vaccinated in public facilities, a slightly higher number of urban dwellers (20 percent) and the relatively more educated (18 percent) prefer to be vaccinated in private facilities as compared to the rural

population (13 percent) and the relatively less educated (9 percent, Figure D-15). There is no significant difference in preference of vaccination facilities between men and women. Most Kenyans also feel that the main challenge in accessing the vaccine is covering the costs (61 percent), while a smaller sub-section also feel that difficulty in reaching clinic (20 percent) and disapproval from the community are also challenges (18 percent, Figure D-16). A slightly higher percentage of the deprived population (66 percent) and the less educated population (69 percent) feels that covering the costs is the main challenge. It is essential then to make the population aware of the availability of already free of cost vaccines and to ensure easy accessibility of the vaccine to the entire population through establishing vaccine centers and holding vaccination drives in the more remote areas.

Figure D-15: Preference of vaccination center (April-June 2021)
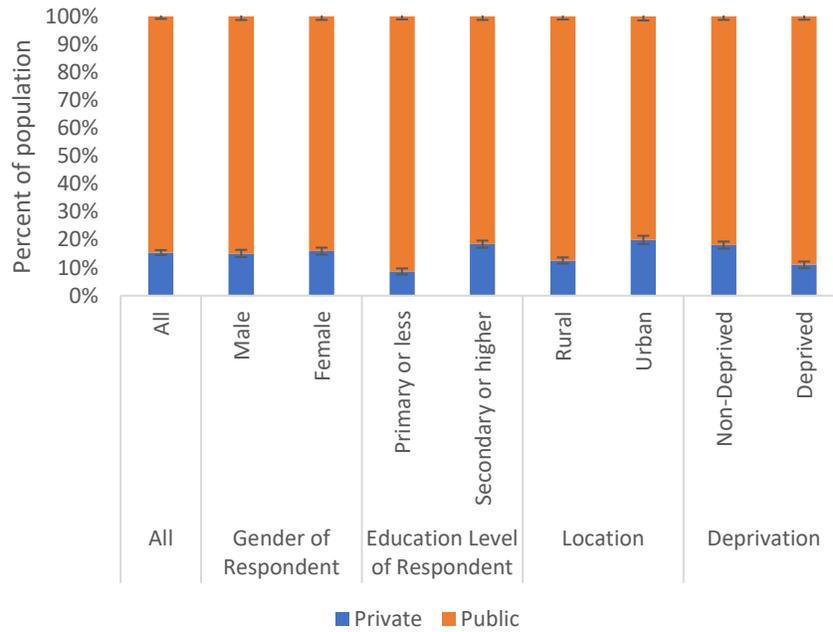
Source: Kenya COVID-19 RRPS.

Figure D-16: Main challenge in accessing the vaccine (April-June 2021)
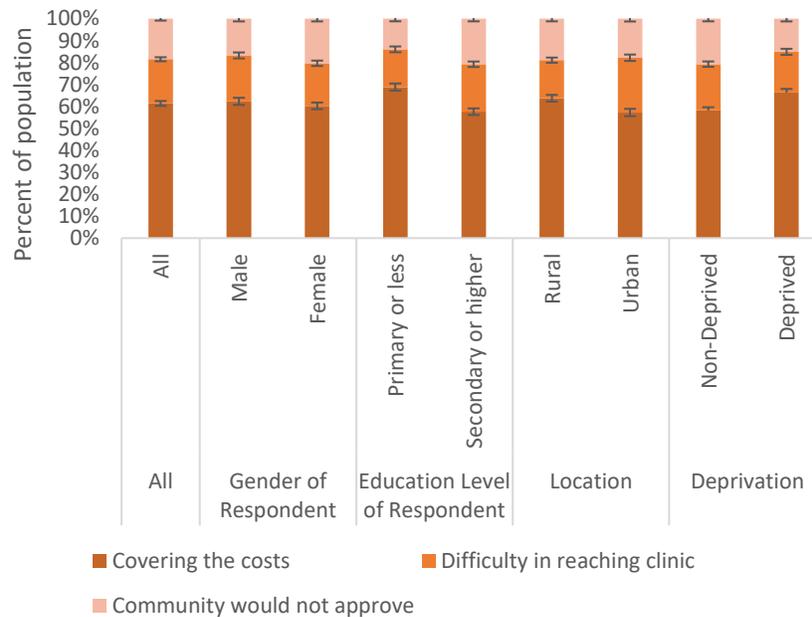
Source: Kenya COVID-19 RRPS.

E. PERCEPTIONS AND BEHAVIORAL CHANGE

1. Subjective Well-Being

50. **Towards the end of 2020 anxiety surrounding the pandemic had declined, however, anxiety has started to slowly increase again in 2021, while fewer people are optimistic about the future.** People are generally feeling less anxious as compared to the early months of the pandemic, but anxiety has increased again in 2021. Half of the population was anxious due to COVID-19 for at least a day per week in April-June 2021 compared to 42 percent towards the end of 2020 (Figure E-1). Higher anxiety levels are mainly driven by fear of getting infected (**Error! Reference source not found.**). Other common causes of anxiety i n 2021 are predominately economic (economic crisis, loss of employment, and being unable to provide). Fewer people feel hopeful in 2021 about the future as compared to the beginning of the pandemic (**Error! R eference source not found.**).
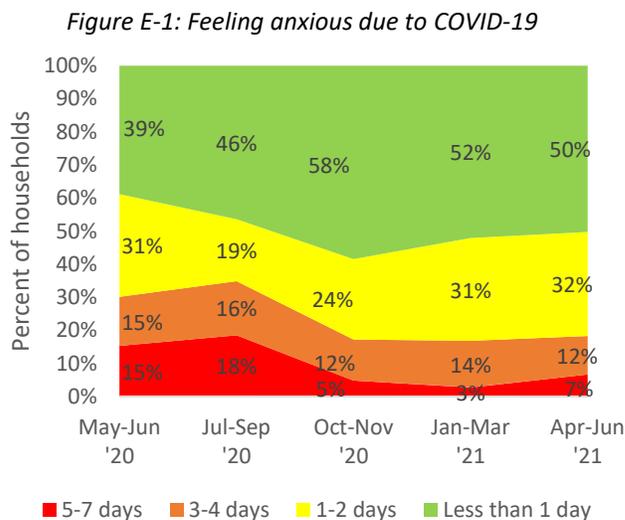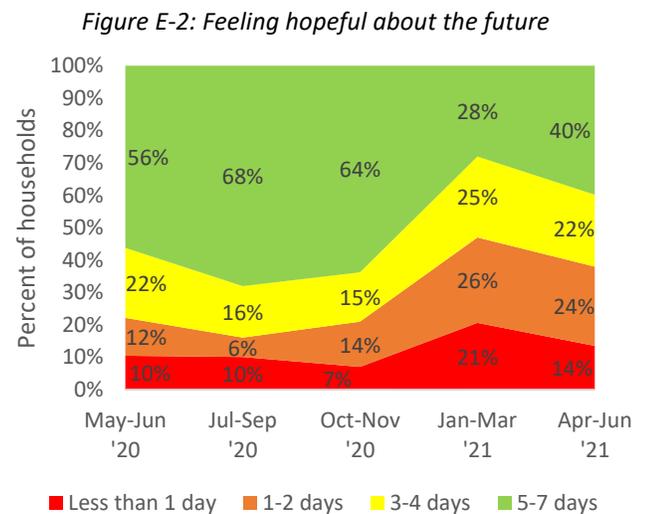
Figure E-1: Feeling anxious due to COVID-19

Source: Kenya COVID-19 RRPS.

Figure E-2: Feeling hopeful about the future

Source: Kenya COVID-19 RRPS.

Figure E-3: Main reasons for worrying about the COVID-19 outbreak (multiple answers possible)
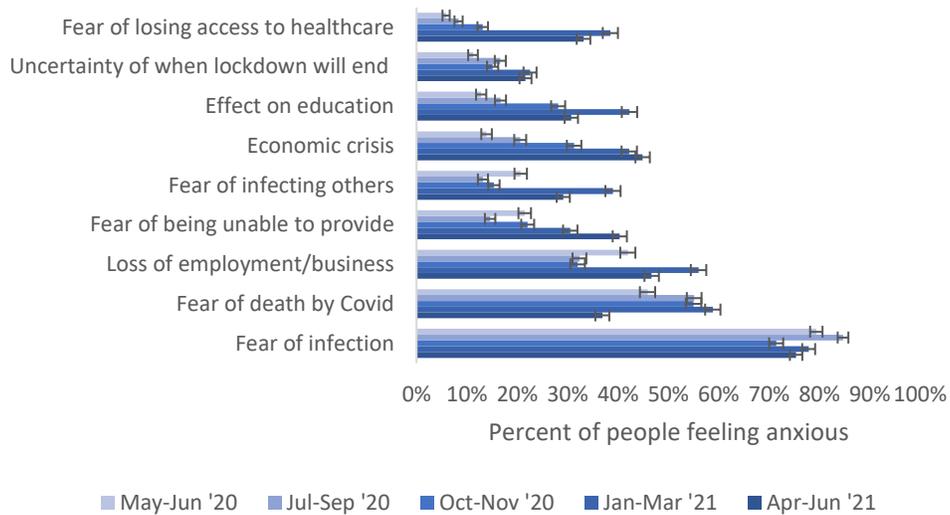
2. Knowledge, Behavior and Government Perception

51.   Most people are still satisfied with the government's response to COVID-19. Over two-thirds of the population are satisfied with the government's response to the pandemic, a similar level to early in the pandemic (Figure E-4). Of the people that are dissatisfied, most feel that the government is not able to provide adequate financial assistance, along with an increasing share feeling that there is insufficient COVID-19 testing (Figure E-5). An increasing proportion disagree that the government is able to provide adequate healthcare (16 percent) and in-kind or cash assistance (35 percent) in April-June of 2021 – an increase of 9 and 5 percentage points respectively from the early months of the pandemic (Figure E-6 and Figure E-7). Assistance in the form of cash transfers can help the newly vulnerable and poor households.

Figure E-4: Satisfaction with the government's response to COVID-19
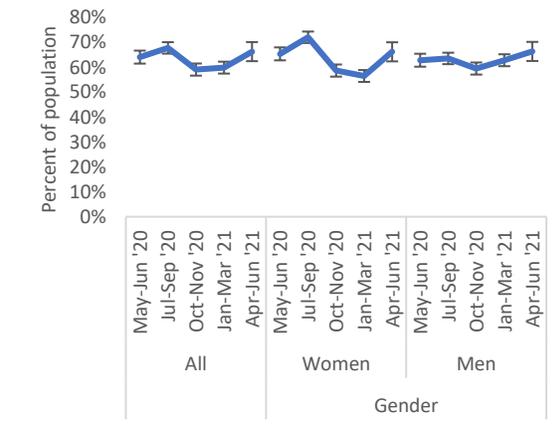
Figure E-5: Most important reason not to be satisfied

- Shortage of medical material
- Late response by government
- No financial assistance from government
- Limited testing
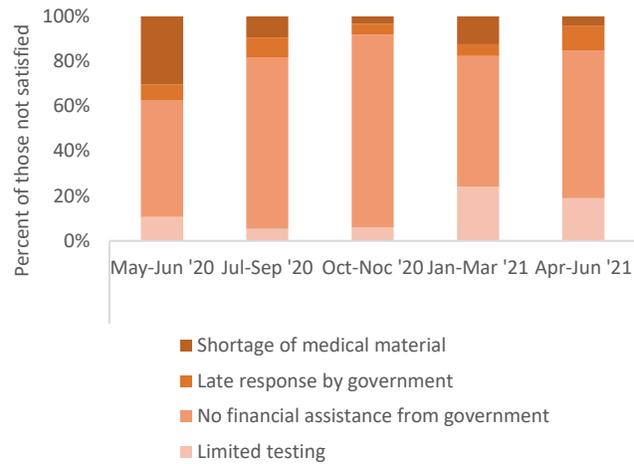
Figure E-6: Government is able to provide healthcare

- Disagree ▪ Neutral ▪ Agree
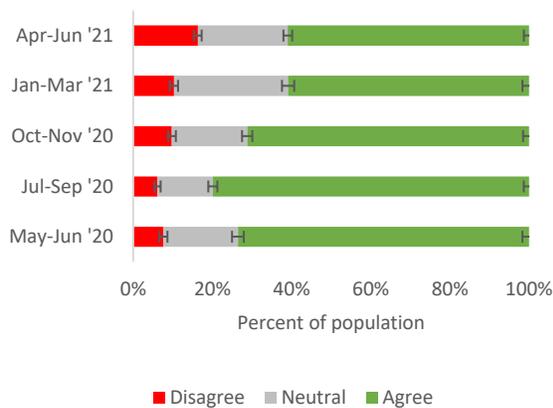
Figure E-7: Government is able to provide cash or in-kind assistance

- Disagree ▪ Neutral ▪ Agree
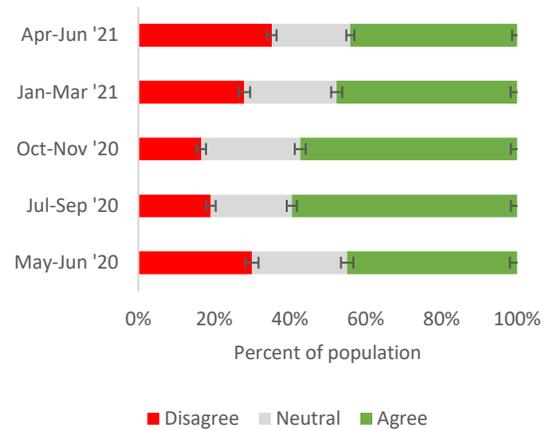
Source: Kenya COVID-19 RRPS.

52. **Women had higher trust in the government and were more optimistic that the Kenyan government was able to handle the situation as compared to men.** Women were 12 percentage points more likely to believe that the government is trustworthy in the way it manages the COVID-19 crisis. Women were also 6 pp more likely to believe that the government is able to provide health care (**Error! R eference source not found.**). In addition, women were more satisfied when stricter measures were put in place by the government. However, men had lower trust in the government in light of a stricter measure (**Error! Reference source not found.**).

Table E-1: Gender differences in government trust

	Trust in …			Satisfied w.	Gov …			Follow Gov	
	General	Gov	Gov Response	Gov Response	Willing	Able	Assist	Me	Others
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female (=1)	-0.018	0.095	0.117**	0.023	0.042	0.058**	0.120***	0.038	0.071**
	(0.016)	(0.064)	(0.047)	(0.030)	(0.037)	(0.028)	(0.042)	(0.026)	(0.033)
Age	-0.000	-0.000	-0.001	0.001	-0.002	-0.002	0.000	-0.001	0.001
	(0.001)	(0.003)	(0.003)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Employed (=1)	0.012	0.111	0.069**	0.033	0.028	0.056	-0.035	0.048	-0.023
	(0.016)	(0.076)	(0.032)	(0.030)	(0.035)	(0.044)	(0.055)	(0.030)	(0.027)
Household Head Age	0.000	0.001	0.003	-0.000	0.004**	0.004***	0.003*	0.002**	0.001
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
ln Household Size	-0.014	-0.090	-0.093	-0.003	-0.042	-0.160***	-0.038	0.015	-0.024
	(0.020)	(0.090)	(0.056)	(0.037)	(0.047)	(0.047)	(0.050)	(0.035)	(0.037)
Child-Adult Ratio	0.006	0.101	0.054	-0.025	0.061*	0.063	0.062	-0.014	-0.009
	(0.015)	(0.070)	(0.039)	(0.028)	(0.034)	(0.048)	(0.047)	(0.022)	(0.034)
Urban (=1)	-0.001	0.015	0.049	0.010	0.040	-0.026	0.038	0.068**	0.024
	(0.016)	(0.061)	(0.034)	(0.025)	(0.033)	(0.034)	(0.047)	(0.028)	(0.031)
Dirt Floor (=1)	0.018	-0.092	0.001	0.044*	-0.040	-0.081	-0.087	0.038	0.046
	(0.014)	(0.084)	(0.052)	(0.026)	(0.042)	(0.049)	(0.059)	(0.038)	(0.040)
Observations	16,626	14,150	16,765	16,646	16,765	16,765	16,765	16,765	15,624
R-squared	0.076	0.096	0.067	0.036	0.063	0.077	0.070	0.075	0.047

*Note: Regressions pool observations from waves 1 to 5. County, wave, strata fixed effects were included in all regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*
Source: Kenya COVID-19 RRPS.

Table E-2: Gender differences in the impact of government response on governmental trust

	Trust in …			Satisfied w.	Gov …			Follow Gov	
	General	Gov	Gov Response	Gov Response	Willing	Able	Assist	Me	Others
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Stringency Index	0.002	-0.005	-0.009	0.009	-0.009	-0.030***	-0.007	0.002	0.006
	(0.004)	(0.018)	(0.012)	(0.009)	(0.011)	(0.009)	(0.012)	(0.006)	(0.009)
Stringency × Female	0.000	0.009	0.008*	0.004	0.006	0.003	-0.002	0.004*	0.001
	(0.001)	(0.007)	(0.005)	(0.003)	(0.004)	(0.004)	(0.005)	(0.002)	(0.004)
Female (=1)	0.078	-0.204	-0.363	-0.122	-0.252	0.004	0.451	-0.295*	0.209
	(0.123)	(0.523)	(0.336)	(0.227)	(0.296)	(0.299)	(0.340)	(0.147)	(0.284)
Age	0.000	-0.000	-0.007	-0.002	0.008	0.005	0.001	-0.009***	-0.000
	(0.002)	(0.011)	(0.006)	(0.004)	(0.009)	(0.008)	(0.009)	(0.003)	(0.006)
Employed (=1)	0.040	-0.107	0.022	-0.028	0.061	0.029	-0.103	0.044	-0.060
	(0.039)	(0.126)	(0.079)	(0.057)	(0.068)	(0.067)	(0.101)	(0.050)	(0.054)
Household Head Age	-0.001	0.016**	0.005	0.002	0.005	0.007	0.000	0.004**	0.001
	(0.001)	(0.008)	(0.004)	(0.003)	(0.004)	(0.005)	(0.004)	(0.001)	(0.003)
ln Household Size	-0.075	-0.304	0.075	-0.073	0.149	-0.134	-0.177	-0.033	-0.159
	(0.074)	(0.289)	(0.235)	(0.174)	(0.189)	(0.206)	(0.258)	(0.084)	(0.230)
Child-Adult Ratio	0.002	0.086	-0.036	-0.017	-0.073	0.055	0.098	0.022	-0.017
	(0.041)	(0.265)	(0.169)	(0.105)	(0.173)	(0.153)	(0.142)	(0.076)	(0.207)
Urban (=1)	-0.125	-0.361	0.277	0.019	0.196*	0.167	-0.194	0.066	-0.085
	(0.082)	(0.287)	(0.217)	(0.131)	(0.105)	(0.141)	(0.257)	(0.121)	(0.214)
Dirt Floor (=1)	0.018	-0.071	-0.012	-0.021	-0.052	-0.083	0.066	0.008	0.034
	(0.042)	(0.156)	(0.118)	(0.068)	(0.079)	(0.086)	(0.084)	(0.037)	(0.052)
Observations	12,809	10,559	12,894	12,809	12,894	12,894	12,894	12,894	11,921
R-squared	0.531	0.593	0.547	0.514	0.562	0.581	0.557	0.564	0.539

Note: Regressions pool observations from waves 1 to 5. The Stringency Index measures the strictness of "lockdown style" policies that primarily restrict people's behavior and is calculated by the COVID-19 Government Response Tracker[57]. County, wave, strata fixed effects were included in all regressions. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Source: Kenya COVID-19 RRPS.

53.   Fewer people were following protocols to mitigate the spread of COVID-19 towards the end of 2020, but adherence had once again picked up in 2021 with the onset of the second wave. As pandemic fatigue set in, fewer people were practicing containment measures including wearing masks and social distancing in the late months of 2020.[58] Only 81 percent of the population were regularly washing their hands towards the end of the year as compared to almost everyone in the early months of the pandemic. Only 32 percent people use a hand sanitizer while only 60 percent of the people wore a mask in October-

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[57] University of Oxford, BSG: COVID-19 Government Response Tracker
[58] World Health Organization. Regional Office for Europe, "Pandemic Fatigue: Reinvigorating the Public to Prevent COVID-19: Policy Framework for Supporting Pandemic Prevention and Management: Revised Version November 2020."

November, down from 60 percent and 81 percent respectively in May-June 2020 (Figure E-8). However, with another lockdown in place and the onset of the second wave in February 2021, adherence to preventative measures increased, although fewer people are staying home.

Figure E-8: Behavior change in response to COVID-19
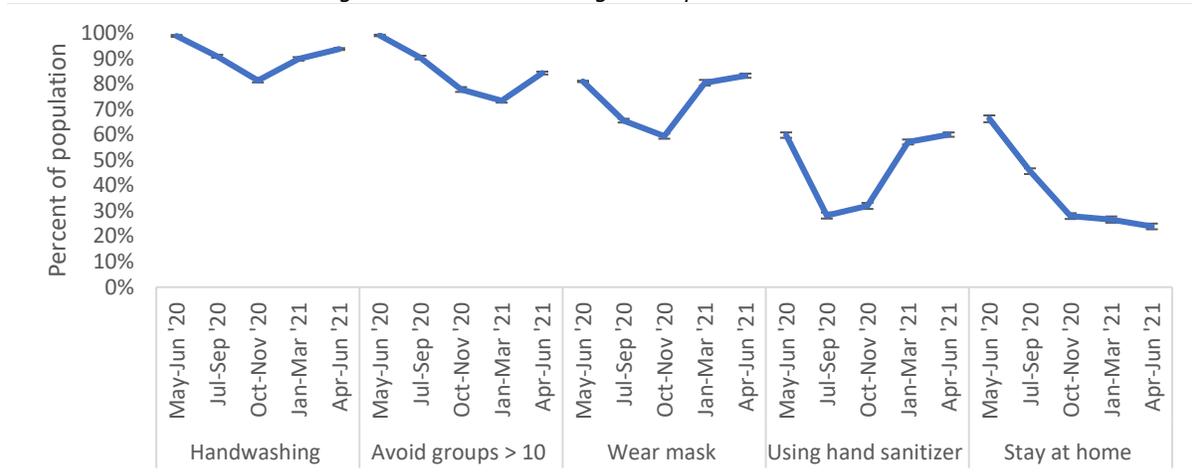
Source: Kenya COVID-19 RRPS.

REFERENCES

Alam, Andaleeb, and Priyamvada Tiwari. "Implications of COVID-19 for Low-Cost Private Schools." UNICEF, March 2021. https://www.unicef.org/globalinsight/reports/implications-covid-19-low-cost-private-schools.

Al-Samarrai, Samer, Maulshree Gangwar, and Priyal Gala. "The Impact of the COVID-19 Pandemic on Education Financing." Policy Note. Washington, D.C.: World Bank Group, May 2020. http://hdl.handle.net/10986/33739.

Azevedo, Joao Pedro, Amer Hasan, Diana Goldemberg, Syedah Aroob Iqbal, and Koen Geven. "Simulating the Potential Impacts of COVID-19 School Closures on Schooling and Learning Outcomes : A Set of Global Estimates." Working Paper. World Bank Group, June 2020. http://hdl.handle.net/10986/33945.

Bedoya Arguelles, Guadalupe, Jishnu Das, and Amy Beth Dolinger. "Safety First : Improving Access to Quality Health Services in Kenya, Expanding Global Knowledge on Disease Prevention." Development Impact Evaluation (DIME). Washington, D.C.: World Bank Group, November 12, 2020. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/751991605198328124/safety-first-improving-access-to-quality-health-services-in-kenya-expanding-global-knowledge-on-disease-prevention.

Beutel, Allie. "Rise of Teen Pregnancies During Kenya's Lockdown," n.d. https://borgenproject.org/rise-of-teen-pregnancy-during-kenyas-lockdown/.

Cameron, John, and World Health Organization, eds. *Valuing Water, Valuing Livelihoods: Guidance on Social Cost-Benefit Analysis of Drinking-Water Interventions, with Special Reference to Small Community Water Supplies*. London: New York : IWA Publishing : World Health Organization, 2011.

Dennis, Allen Curtis K., and Utz Johann Pape. "Kenya - Systematic Country Diagnostic." Washington, D.C.: World Bank Group, November 9, 2020. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/531731600090213005/kenya-systematic-country-diagnostic.

Devercelli, Amanda E., and Ella V. Humphry. "Investing in the Early Years During COVID-19." Working Paper. The World Bank, April 1, 2020. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/244881586986597613/investing-in-the-early-years-during-covid-19.

Environment for Development. "Climate Change and Food Security in Kenya," n.d. https://efdinitiative.org/sites/default/files/publications/drb_15-05_dec_2015_revised_jan_18_2016_0.pdf.

FAO, ed. *Safeguarding against Economic Slowdowns and Downturns*. The State of Food Security and Nutrition in the World 2019. Rome: FAO, 2019.

FEWS NET, World Food Programme, and NDMA. "Kenya Food Security Outlook Update." Situation Report, July 2021.

Food Research and Action Center. "The Impact of Poverty, Food Insecurity, and Poor Nutrition on Health and Well-Being." Hunger & Health. FRAC, December 2017. https://frac.org/wp-content/uploads/hunger-health-impact-poverty-food-insecurity-health-well-being.pdf.

FSD Kenya. "FSD Kenya: State of the Economy- Focus on the Impact of COVID on Women and Education." February 2021.

Government of Kenya. "Government to Begin Vaccination of the 2nd Dose of Covishield," May 27, 2021. https://www.health.go.ke/article-on-vaccination-of-the-2nd-dose-of-covishield/.

Himelein, Kristen. "Weight Calculations for Panel Surveys with Subsampling and Split-off Tracking." *Statistics and Public Policy* 1, no. 1 (December 22, 2014): 40–45. https://doi.org/10.1080/2330443X.2013.856170.

Hunter, Paul R., Alan M. MacDonald, and Richard C. Carter. "Water Supply and Health." *PLoS Medicine* 7, no. 11 (November 9, 2010): e1000361. https://doi.org/10.1371/journal.pmed.1000361.

International Monetary Fund (IMF). "Policy Responses to COVID-19," n.d. https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.

International Rescue Committee. "Over 2 Million People in Kenya Face Acute Hunger Due to Drought, Warns IRC," September 28, 2021. https://www.rescue.org/press-release/over-2-million-people-kenya-face-acute-hunger-due-drought-warns-irc.

Kenya National Bureau of Statistics. "2019 Kenya Population and Housing Census, Volume II: Distribution of Population by Administrative Units." Nairobi: Kenya National Bureau of Statistics, 2019. https://www.knbs.or.ke/?wpdmpro=2019-kenya-population-and-housing-census-volume-ii-distribution-of-population-by-administrative-units.

———, ed. *Basic Report: Based on 2015/16 Kenya Integrated Household Budget Survey (KIHBS)*. Nairobi: Kenya National Bureau of Statistics, 2018.

Kenya National Bureau of Statistics, Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International. "Kenya Demographic and Health Survey 2014." Rockville, MD, USA, 2015. http://dhsprogram.com/pubs/pdf/FR308/FR308.pdf.

Monga, Celestin, Abebe Shimeles, and Andinet Woldemichael. "Creating Decent Jobs Strategies, Policies, and Instruments." African Development Bank, 2019. https://am.afdb.org/2019/sites/default/files/AfDB18-16_Jobs_English.pdf.

Mwaniki, Mike. "Kenya Completes Its First Round of COVID-19 Vaccinations." *Gavi* (blog), May 12, 2021. https://www.gavi.org/vaccineswork/kenya-completes-its-first-round-covid-19-vaccinations.

Ndubi, Modesta. "The Shona: A Stateless Community in Kenya Yearning to Gain Citizenship." *UNHCR - Kenya* (blog), November 9, 2017. https://www.unhcr.org/ke/12739-shona-stateless-community-kenya-yearning-gain-citizenship.html.

Plan International. "COVID-19: Lockdown Linked to High Number of Unintended Teen Pregnancies in Kenya," n.d. https://plan-international.org/news/2020-06-25-covid-19-lockdown-linked-high-number-unintended-teen-pregnancies-kenya.

Reliefweb. "Why Kenya's Seasonal Rains Keep Failing and What Needs to Be Done," 2019. https://reliefweb.int/report/kenya/why-kenya-s-seasonal-rains-keep-failing-and-what-needs-be-done.

Schmillen, Achim D. "Causes and Impacts of Job Displacements and Public Policy Responses." Policy Note. Washington, D.C.: World Bank Group, May 7, 2020. http://hdl.handle.net/10986/33720.

UNHCR. "The Impact of COVID-19 on Refugee Education," June 9, 2020. https://www.unhcr.org/dach/de/45421-the-impact-of-covid-19-on-refugee-education.html.

UNHCR, United Nations High Commissioner for Refugees, and World Bank. "Understanding the Socioeconomic Conditions of Refugees in Kenya. Volume A: Kalobeyei Settlement." Nairobi, 2019. https://documents.worldbank.org/en/publication/documents-reports/documentdetail/982811613626800238/understanding-the-socioeconomic-conditions-of-

refugees-in-kenya-volume-a-kalobeyei-settlement-results-from-the-2018-kalobeyei-socioeconomic-survey.

World Bank. "COVID-19 From the Ground Up: What the Crisis Means for Nigerians." World Bank Group, n.d. http://documents1.worldbank.org/curated/en/757201593465025800/pdf/COVID-19-From-the-Ground-Up-What-the-Crisis-Means-for-Nigerians.pdf.

World Health Organization. "Drinking Water," June 14, 2019. https://www.who.int/news-room/fact-sheets/detail/drinking-water.

World Health Organization. Regional Office for Europe. "Pandemic Fatigue: Reinvigorating the Public to Prevent COVID-19: Policy Framework for Supporting Pandemic Prevention and Management: Revised Version November 2020." Copenhagen: World Health Organization. Regional Office for Europe, 2020. WHO IRIS. https://apps.who.int/iris/handle/10665/337574.

Yusuf, Mohammed. "Kenya Reimposes COVID-19 Measures Amid Surging Cases." *VOA News*, November 4, 2020. https://www.voanews.com/covid-19-pandemic/kenya-reimposes-covid-19-measures-amid-surging-cases.

F. ANNEX: DETAILED METHODOLOGY

1. Design and Survey Instrument

1.   **The Kenya COVID-19 RRPS for households, is structured as a bi-monthly panel survey that monitors the socioeconomic impacts of the pandemic on nationals, refugees and stateless people.** The same respondents are interviewed every two months, along with some new households, between May 2020 and June 2021. Respondents can be interviewed in a language they are comfortable with as the questionnaire is translated to Swahili, Luo, Arabic, French, Kirundi, Luganda, Oromo, Somali, Kinyarwanda, Tigrinya, Nuer and Dinka.

Table F-1: Sample size

	Wave 1	Wave 2	Wave 3	Wave 4	Wave 5
Data collection	May 14 to July 7, 2020	July 16 to September 18, 2020	September 28 to December 2, 2020	January 15 to March 25, 2021	March 29 to June 13, 2021
KNBS sample	3,294	3, 664	3,982	4,060	4,710
RDD sample	769	840	1,011	846	1,164
UNHCR sample	1,326	1,687	1,469	1,357	1,536
Total sample	5,389	6,191	6,462	6,263	7,410

Source: Kenya COVID-19 RRPS.

2.   **The survey questionnaire for households, was designed to allow for international comparability.** To ensure that findings are comparable across countries, the Kenya COVID-19 RRPS was designed to both allow comparison across countries that have implemented surveys on the impact of COVID-19 and measure the impacts of the pandemic in Kenya specifically. Therefore, the questionnaire maintained most core questions from the global template of the World Bank and added country specific questions for a better understanding of the effects of COVID-19 on Kenyan households.[59] The Kenya COVID-19 RRPS for households questionnaire covers a range of topics including employment, income, coping strategies, food security, access to education and health services, child labor, subjective well-being, knowledge of COVID-19, changes in behavior in response to the pandemic, and perceptions of the government's response.

3.   **The RRPS household definition is aligned with the one used by the KNBS.** In the 2015/16 Kenya Integrated Household Budget Survey (KIHBS), conducted by the KNBS, households were defined as "a person or a group of people living in the same compound (fenced or unfenced); answerable to the same head and sharing a common source of food and/or income as a single unit in the sense that they have common housekeeping arrangements".[60] To ease the phone survey implementation, the KNBS's household definition was simplified based on the field testing carried out before the data collection. The RRPS household definition is "a person, or group of people, that eats from the same pot and spends four nights or more on an average week sleeping in the same home".

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[59] For access to the global questionnaire template, visit:
https://documents.worldbank.org/en/publication/documents-reports/documentdetail/567571588697439581/questionnaire-template
[60] Kenya National Bureau of Statistics 2018.

2. Sampling and Weighting

4.   **A nationally representative sample was randomly drawn from the 2015/16 KIHBS Computer Assisted Personal Interview (CAPI) pilot.** The 2015/16 KIHBS is representative at the national level, stratified by county and place of residence (urban and rural areas). The KIHBS included a national sample of 21,773 households interviewed as part of a paper-based data collection and 12,851 households interviewed via CAPI (KIHBS CAPI). To select the sample, the Kenya COVID-19 RRPS firstly identified all households that were part of KIHBS CAPI and provided a phone number and used the resulting list of 9,009 households as a sampling frame. From this sample 3295 households were interviewed in the first wave, 3,664 were reached in the second wave, 3,982 in the third wave, 4,060 in the fourth wave, and 4,710 were reached in the fifth wave.

5.   **The second sample comprises households selected using the Random Digit Dialing method.** A list of random mobile phone numbers was created using a random number generator from the 2020 Numbering Frame produced by the Kenya Communications Authority. The initial sampling frame consisted of 92,999,970 randomly ordered phone numbers assigned to three main networks: Safaricom, Airtel, and Telkom. An introductory text message was sent to 5,000 randomly selected numbers to determine if numbers were in operation. Out of these, 4,075 were found to be active and formed the final sampling frame. There was no stratification and individuals that were reached through the selected phone numbers were asked about the households they live in. There were 763 completed interviews for this sample in the first wave of the RRPS, 840 in the second wave, 1,011 in the third wave, 846 in the fourth wave and 1,164 in the fifth wave. RDD gives us a representative sample of households that existed in 2015/16 but had changed their phone number as well as households that did not exist in 2015/16. Both groups of households that cannot be covered with the 2015/16 KIHBS CAPI sample alone.

6.   **The third RRPS sample consisted of urban and camp-based refugees as well as stateless people registered by the UNHCR.** The sample aims to be representative of the refugee and stateless population in Kenya. It comprises five strata: Kakuma refugee camp, Kalobeyei settlement, Dadaab refugee camp, urban refugees, and Shona stateless, where sampling approaches differ across strata. For refugees in Kakuma and Kalobeyei,[61] as well as for stateless people,[62] recently conducted Socioeconomic Surveys (SES)**,** were used as sampling frames. For the refugee population living in urban areas and the Dadaab camp, no such household survey data existed, and sampling frames were based on UNHCR's registration records (proGres), which include phone numbers.[63] For Kakuma, Kalobeyei, Dadaab and urban refugees, a two-step sampling process was used. First, 1,000 individuals from each stratum were selected from the corresponding sampling frames. Each of these individuals received a text message to confirm that the registered phone was still active. In the second stage, implicitly stratifying by sex and age, the verified phone number lists were used to select the sample. For the stateless population, all the participants of the Shona socioeconomic survey[64] (n=400) were included in the RRPS, because of limited sample size.[65] The sampling frames for the refugee and Shona stateless communities are thus representative of households with active phone numbers registered with UNHCR. 1,326 households were interviewed in

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[61] UNHCR and World Bank, "Understanding the Socioeconomic Conditions of Refugees in Kenya. Volume A: Kalobeyei Settlement."

[62] The Kakuma and Kalobeyei household surveys are representative of the refugee populations in each settlement, while the stateless survey is representative of the Shona community in Kenya.

[63] The UNHCR in coordination with the Kenya Refugee Affairs Secretariat (RAS) registers persons of concern, including camp and non-camp refugees—most of whom reside in urban areas—as well as stateless persons.

[64] To be released in September 2020.

[65] For the first round of the RRPS, 413 refugee households were interviewed in Kakuma camp, 264 in Kalobeyei settlement, 154 in Dadaab camp, 333 in urban areas, while 168 stateless population households were interviewed.

the first wave, 1,687 in the second wave, 1,469 in the third wave, 1,357 in the fourth wave and 1,536 in the fifth wave

7.   **For each household, a target respondent is followed throughout all survey waves**. All households in the sample were targeted in each wave independent of whether they were reached in a previous wave. The only exception was households that explicitly stated that they don't want to be called again in future waves. This means, some households were interviewed for the first time in wave 2 or 3. In each household we follow one target respondent. In the 2015/16 KIHBS CAPI pilot sample, the target respondent was the primary male or female from the 2015/16 KIHBS CAPI, which was randomly chosen where both existed. In the RDD and UNHCR samples, the target respondent was the owner of the phone number drawn for the sample. If the target respondent was not available for a call, the field team spoke to any adult currently living in the household of the target respondent. If the target respondent was deceased, the field team spoke to any adults that lived with the target respondent in 2015/16. Finally, if a household split up, we targeted anyone in the household of the target respondent but did not survey a household member that no longer lives with the target respondent.

8.   **The COVID-19 RRPS household survey was not able to include households without active phone numbers.** As phone surveys can only reach respondents who use a phone with an active subscription in an area with network coverage, statistics are only representative for this part of the population. Nationally, 80 percent of Kenyan households report owning a mobile phone (Figure F-1). Although cellphone penetration and coverage are high, the sample excludes those households without a registered number, potentially excluding to some extent the poorest households who do not own phones or who live in areas with no network coverage. The areas in the north-east of Kenya (shaded in white, Figure F-1) have the lowest mobile phone penetration and are among the most vulnerable counties in Kenya. Conversely, most of the central and southern regions (shaded in darker blue) display a much higher mobile phone penetration. The Kenya COVID-19 RRPS uses re-weighting to enhance representativeness of the overall sample.

Figure F-1: Mobile phone coverage in Kenya
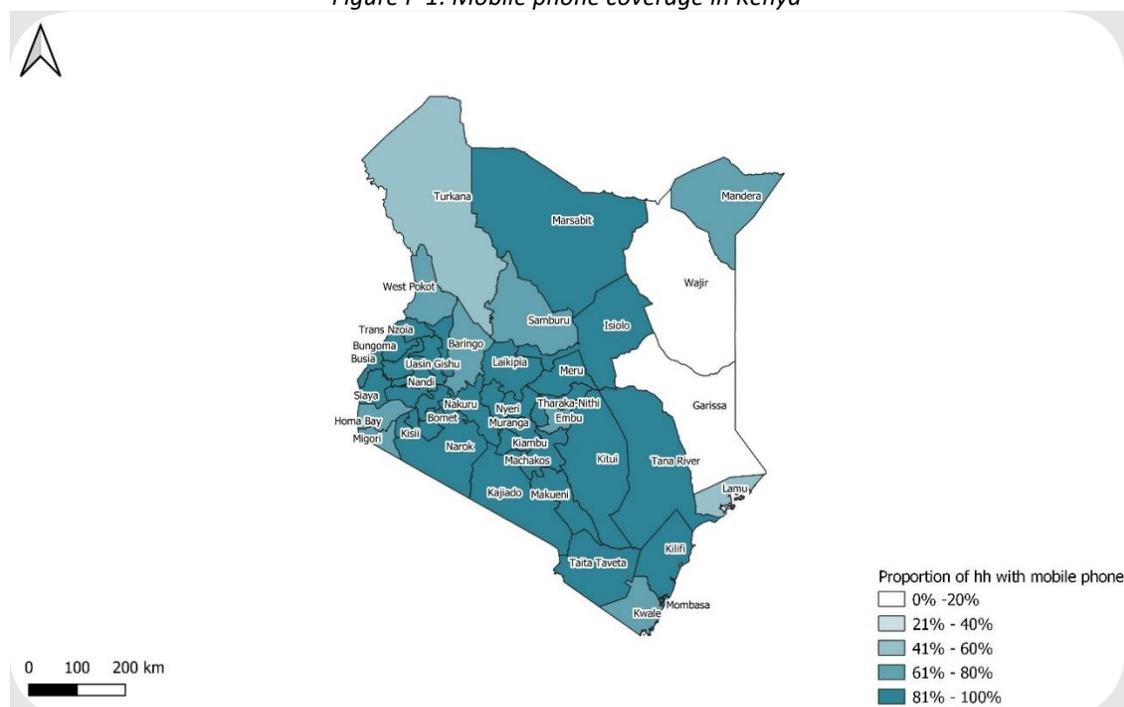
Source: 2019 Kenya Continuous Household Survey

9.   **Households that were included in the sample have better socioeconomic conditions than those that were excluded.** Using the 2015/16 KIHBS CAPI and the 2019 KCHS, it is possible to identify differences between households that provided a phone number and were reached by the RRPS as opposed to those that did not . Households providing a phone number have better living conditions. They are more likely to have better housing materials, have more rooms available, and are more likely to own assets, such as a refrigerator, radio, or mattress. Additionally, the households that were reached by the Kenya COVID-19 RRPS were compared to the ones who could not be reached (regardless of whether they provided a phone number). Comparing the socioeconomic characteristics of the interviewed households to the ones of the nationally representative 2019 Kenya Continuous Household Survey (KCHS) shows similar, statistically significant differences. The 2015/2016 KIHBS CAPI sample was also compared with the RRPS sample consisting of both KNBS and RDD households on the basis of some socioeconomic indicators, showing that there are statistically significant differences.

Table F-2: Indicators by registration of phones and participation in the RRPS

Variable	(i) All	(ii) Provided phone number	(iii) Provided no phone number	(iv) Reached in RRPS	(v) Not reached in RRPS	(vi) P-value comparing (ii) and (iii)	(vii) P-value comparing (iv) and (v)
Floor material rudimentary or absent	44%	38%	60%	37%	46%	<0.001	<0.001
Floor material improved (cement, asphalt)	48%	54%	33%	54%	46%	<0.001	<0.001

Floor material refined (tiles, parquet)	8%	8%	7%	9%	7%	0.20	0.18
Wall material rudimentary or absent	3%	1%	7%	1%	3%	<0.001	<0.001
Wall material improved (mud, stones, iron)	37%	33%	47%	32%	38%	<0.001	<0.001
Wall material refined (bricks, stone, cement)	60%	66%	46%	67%	58%	<0.001	<0.001
Number of habitable rooms	2.8	2.8	2.5	2.9	2.7	<0.001	0.01
Main source of lighting is electric power	56%	61%	43%	63%	54%	<0.001	<0.001
Owns: refrigerator	7%	8%	5%	9%	6%	<0.001	0.03
Owns: mattress	91%	95%	79%	95%	89%	<0.001	<0.001
Owns: radio	64%	70%	47%	71%	61%	<0.001	<0.001
Household size	4.1	4.2	4.0	4.2	4.1	<0.001	0.14

Source: 2015/16 KIHBS CAPI pilot

Table F-3: Socioeconomic indicators by phone registry in the 2019 KCHS

Indicator	(i) Provided phone number	(ii) Provided no phone number	(iii) P-value of comparison (i) vs (ii)
Floor material rudimentary or absent	44%	71%	<0. 001
Floor material improved (cement, asphalt)	46%	27%	<0. 001
Floor material refined (tiles, parquet)	10%	2%	<0. 001
Wall material rudimentary or absent	2%	18%	<0. 001
Wall material improved (mud, stones, iron)	56%	59%	<0. 001
Wall material refined (bricks, stone, cement)	42%	24%	<0. 001
Has electricity	47%	21%	<0. 001
Owns: charcoal stove	41%	18%	<0. 001
Owns: refrigerator	8%	1%	<0. 001
Owns: mattress	96%	78%	<0. 001
Owns: radio	45%	19%	<0. 001
Household size	5.2	5.6	<0. 001

Household head age	46	48	<0. 001
Women headed households	27%	36%	<0. 001

Source: 2019 Kenya Continuous Household Survey.

Table F-4: Socioeconomic indicators of KIHBS CAPI and RRPS

Indicator	KIHBS CAPI 2015/2016 (All)	RRPS (KNBS+RDD)	P-value of comparison
Household head gender (Percent of female heads)	32%	50%	<0. 001
Household head age	43 years	35 years	<0. 001
Household head education (Percent of hh heads with secondary or higher level of education	40%	57%	<0. 001
Household Size	4.1	4.1	<0. 001
Household owns: Radio	64%	75%	<0. 001
Household owns: Fridge	7%	8%	<0. 001

Source: 2015/2016 KIHBS CAPI Pilot and Kenya COVID-19 RRPS

10.   The COVID-19 RRPS is built to be representative across the five waves with comparable characteristics. The survey is designed to have comparable socioeconomic characteristics for the households that are interviewed across all waves. Some of the summary statistics for the characteristics (household size, age and gender of the household head and the ownership of assets in the months preceding the pandemic) are presented in Table F-5

Table F-5: Socioeconomic indicators by wave

Variable	Round 1 (May-June 2020)	Round 2 (July-September 2020)	Round 3 (October-November 2020)	Round 4 (January-March 2021)	Round 5 (April- June 2021)
Household Size	4.13	4.15	3.41	3.66	3.27
Age of household head	39	40	37	38	38
Households headed by women	33.52%	35.74%	37.45%	40.85%	39.27%

Gender profile of population - percent of females	51.66%	51.75%	51.96%	52.33%	50.56%
Household owns: Mattress	88.16%	90.79%	93.23%	94.68%	92.07%
Household owns: Radio	74.03%	71.91%	79.87%	78.95%	78.64%
Household owns: Refrigerator	7.47%	6.68%	8.3%	8.76%	8.26%
House physically connected to electricity grid	55.61%	55.18%	56.55%	53.61%	61.69%

Source: Kenya COVID-19 RRPS

11. Sampling weights were constructed for each stratum to consider different probabilities of selection at baseline. To make the sample nationally representative, a two-step approach was used to create the weights for the national sample provided by the KIHBS CAPI and RDD method. As a first step, raw weights were constructed for three groups of households: (i) households that existed in 2015/16, and did not change phone numbers, (ii) households that existed in 2015/16, but changed phone number, and (iii) households that did not exist in 2015/16. The baseline weights from the 2015/16 KIHBS CAPI pilot make the KIHBS sample representative of type (i) households. For RDD households, we ask whether they existed in 2015/16, when they had acquired their phone number, and where they lived in 2015/16, allowing us to classify them into type (i), (ii) and (iii) households and assign them to KIHBS CAPI strata. We adjust weights of each RDD household to be inversely proportional to the number of mobile phone numbers used by adult members of the household and scale them relative to the average number of mobile phone numbers used in the KIHBS within each stratum. RDD therefore gives us a representative sample of type (ii) and (iii) households. We then combine RDD and KIHBS type (i) households by ex-post adding RDD households into the 2015/16 sampling frame and adjusting weights accordingly. Last, we combine our representative samples of type (i), type (ii) and type (iii), using the share of each type within each stratum from RDD.

12. Sampling weights for the national samples were adjusted to reflect geographic differences. For the second step we use post stratification to adjust for differential attrition and response rates across counties and rural/urban strata, ensuring all geographic areas in Kenya were appropriately accounted for. We scale the raw weights from step 1 above to reflect the population size in each county and rural/urban stratum as recorded in the 2019 Kenya Population and Housing Census conducted by the KNBS.[66]

13. Sampling weights for the refugee and stateless samples were tailored to the respective sampling strategies. Kakuma and Kalobeyei sub-samples have used the baseline weights from the respective SES underlying the sampling frame to adjust for any differences in the sampling probabilities. Then, propensity score weighting based on the full population covered in the SES household survey, have been used to account for differences in the probability of owning a phone number.[67] The estimated

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[66] Kenya National Bureau of Statistics, "2019 Kenya Population and Housing Census, Volume II: Distribution of Population by Administrative Units."
[67] To construct the propensity score weights, a logit regression model is estimated for each stratum, where the dependent variable is an indicator for whether a household was in the COVID-19 RRPS sample. The set of explanatory variables included dummies for the country of origin, number of children, dependency ratio as well as the gender, literacy and employment status of the household head.

propensity score reflects the household probability to have a phone number registered by UNHCR. To mitigate the effect of outlier estimates, the mean propensity score is computed for each decile. The baseline weights are then multiplied with the inverse of the propensity score deciles. For the refugees living in Dadaab camp and urban areas, a cell weighting approach have been used. Thereby, the sample is split into sub-groups (cells) based on the gender and age group of household head. The weights were then scaled such that they reflect the proportion of each cell in the UNHCR registration data of all refugees living in the respective location. In the group of stateless people registered with UNHCR, each household has the same weight assigned, as their full population is called in this survey. Lastly, to ensure sampling weights have the correct proportions across strata, they have been scaled to match population totals as provided by the up-to-date UNHCR registration data.

14.   Panel weights are constructed using a propensity score based method for attrition adjustment. To construct panel weights, we follow the approach outlined in Himelein (2014): "Weight Calculations for Panel Surveys with Subsampling and Split-off Tracking". In each household we follow one target respondent. Wherever households split, only the current household of the target respondent was interviewed. The weights for the wave 1, 2 and 3 balanced panel are constructed by applying the following steps separately for the national sample, (KNBS and RDD combined), and each of the UNHCR samples:

(1) Wave 1 cross-sectional weights after post-stratification adjustment are used as a base.

(2) Attrition adjustment through propensity score-based method: The predicted probability that a sample household was successfully re-interviewed in the second survey wave is estimated through a propensity score estimation. The propensity score (PS) is modeled with a linear logistic model at the level of the household. The dependent variable is a dummy indicating whether a household that has completed the survey in wave 1 has also done so in wave 2 and 3. The set of covariates includes the variables 1 which were used in the construction of the base weights (county and urban/rural dummy), variables that typically predict poverty, as well as variables related to mobile phone ownership.[68]

(3) Households are ranked by PS and split into 10 equal groups.

(4) Attrition factor is then calculated as the reciprocal of the mean empirical response rate for the propensity score decile.

(5) We then adjust base weights for attrition and trim top 1 percent of the weights distribution by replacing the weights among the top 1 percent of the distribution with the highest value of a weight below the cutoff.

(6) Last, post-stratification is applied in the same way as for cross-sectional weights.

15.   To address potential bias, some interviews were dropped from the labor analysis. Despite the random allocation of households to enumerators, high variability is observed in reported employment across enumerators. To reduce inconsistencies and obtain unbiased labor statistics, interviews collected by some enumerators were omitted from the labor analysis. For each enumerator the mean proportion of households without any employment is calculated. Then, across all enumerators the 95 percent confidence interval of this mean proportion is established. Enumerators who display a proportion of households with no employment above the upper bound of the confidence interval are dropped. This results in 596 of the 6,192 households in wave 2, 1,109 of the 6,462 households in wave 3 and 380 of

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[68] The following covariates were used in the linear logistic model: Urban/rural dummy, County dummies, Household head gender, Household head age, Household size, Dependency ratio, Dummy: Is anyone in the household working, Asset ownership: Radio, Asset ownership: Mattress, Asset ownership: Charcoal Jiko, Asset ownership: Fridge, Wall material: 3 dummies, Floor materials: 3 dummies, Connection to electricity grid, Number of mobile phones numbers household uses, Number of phone numbers recorded for follow-up, Sample dummy for estimation with national samples.

the 6,210 households in wave 4 being dropped from the labor analysis. The weights for the remaining households have been adjusted to account for the dropped observations. The weights for the remaining households have been adjusted to account for the dropped observations.

16.   The education status of household members, except for the respondent, was imputed for rounds 1 and 2. For rounds 1 and 2, only the education status of the respondent was elicited, while for later rounds the education status for each household member was asked. In order to evaluate employment outcomes by the education status, information on education was imputed for waves 1 and 2, using the information provided for all household members in waves 3, 4, and 5. This resulted in additional information on the education status for household members in round 1 and 2, which was not yet available for earlier analysis of the Kenya COVID-19 RRPS.

3. Microsimulations

17.   The microsimulation baseline scenario is outlined in Error! Reference source not found.**, which e stimates household level consumption for 2019.** Starting from the baseline scenario, the microsimulations adjust consumption using the changes caused by the impacts of COVID-19. The size of the impacts is estimated using the five waves of RRPS data collection, which cover different months across 2020 and 2021. Wave 1 covers May to July 2020, wave 2 covers August to September 2020, wave 3 covers October to November 2020, wave 4 covers January to March 2021 and finally wave 5 covers April to June 2021.

18.   Consumption and poverty in 2019 are used as a baseline scenario for micro-simulations. Consumption and poverty can be forecast to 2019 using the KIHBS data and projected growth in consumption. This results in a 2.5 percentage point decline in poverty between 2015 and 2019 (**Error! R eference source not found.**). The updated household consumption for 2019 is then used as a baseline scenario for the micro-simulations.

Figure F-2: Projected poverty headcount rates
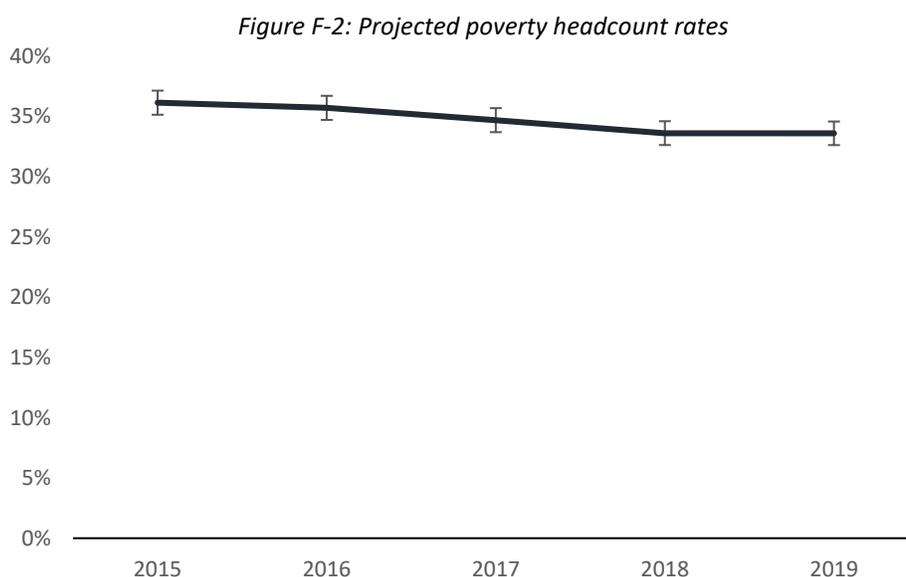
Source: Authors Calculation based on the Kenya Integrated Budget Household Survey 2015/16 (KIHBS) & Kenya Macro Poverty Outlook (MPO)

19. **Four different sources of income are considered for the microsimulations.** The RRPS survey collects information on income sources and the amounts both for the current time period and a pre-covid time point. The four income sources are: income from wage employment, income from household enterprises (self-employment), income from agriculture activities, and income from remittances. For each household, the percentage change in each of these income sources is calculated.

20. **The RRPS data is used to imputed income changes in the KIHBS data.** Using the baseline KIHBS dataset, the proportion of total income (wage, agricultural, self-employment earnings, combined with remittances) used for consumption is calculated as changes in income may not have a 1 to 1 relationship with consumption i.e. if a household saves some income. Both earnings and costs are scaled forward using the same growth rate as private consumption. Using the RRPS data, the percentage change in the KIHBS data is imputed for the four income channels 100 times. The total income change for each household in the KIHBS data is then calculated by combining the income loss across the four channels. The total income loss is multiplied by the share of total income used for consumption to produce an amount that the household consumption is reduced by.

21. **Each wave is treated as a standalone time point and does not consider previous waves.** The RRPS questionnaire asks about the amount from the different income sources in the current period and pre-COVID. Therefore, consumption changes for each wave start from the 2020 baseline consumption amount as this the income change recorded in the RRPS data. Monthly household consumption is calculated for the months that are covered by the RRPS survey by using the estimated impact. The monthly household consumption is then averaged across the 12 months of the year to get an annual amount. For the waves not covered by the RRPS pre-COVID consumption is assumed.

22. **Three different scenarios are considered for the microsimulations.** The first scenario considers no policy response and acts as a counterfactual for the different policy responses. The second scenario covers the GoK's policy responses (Table F-6). The third scenario uses the budget for the PIT and VAT changes (KSh 50 billion) and simulates a one-off cash transfer of KSh 20,000 in 2020 for 2.5 million households. The total poor after the impacts of COVID-19 in 2020 are calculated and each county's share of the total poor is used to allocate the 2.5 million recipients e.g. the larger a counties share of the poor the larger the share of the recipients it will receive. Using the share of the total poor ensures that there will be recipients in every county and the transfers will still be targeted to the poorest parts of the county. Within each county, the recipients are randomly selected among the poor, which is repeated 100 times for the 100 microsimulations.

Table F-6: GoK's COVID-19 Policy Responses

Policy Response	Phase	Microsimulation
Personal Income Tax	N/A	Each type of income (salary and business) is scaled forward to 2019 levels, as done for the microsimulations. Tax relief was increased to KSh24,000 and the top individual tax rate was reduced from 30 to 25 percent. Net earnings are scaled up to gross income using both the original and adjusted tax brackets. The difference in tax is calculated for each household and added back to a household's total consumption.
VAT	N/A	All individual consumption expenditure values are scaled forward to 2019 levels, as done for the microsimulations. For the relevant items, the VAT is reduced to 14 percent from 16 percent, and for each household the consumption expenditure difference is calculated and added back to a household's total consumption.

Emergency Cash Transfers	Pilot	Before the time period of microsimulations
	Scale-Up	342,000 households in urban areas (the KIHBS 2015/16 data is representative at the county level, and therefore the sample is not restricted to informal urban settlements). It is unclear how households were targeted and therefore recipients are randomly allocated across all counties and restricted to those in urban areas and in the bottom 2 wealth quintiles. It is assumed that if you were a recipient in the pilot (108,000 households restricted to Nairobi, Mombasa, Kilifi, and Kwale) you remain a recipient for the expansion period. This scale up covers 2 months in the wave 1 data.
	Expansion	669,000 households in urban areas. Same allocation as used for the scale-up. It is assumed that if you were a recipient in the scale-up, you remain a recipient for the expansion period. The expansion covers 1 month in wave 1, 2 months in wave 2, and 1 month in wave 3.
Kazi Mtaani	Phase 1	29,786 jobs provided in the urban areas of Nairobi, Mombasa, Kiambu, Nakuru, Kisumu, Kilifi, Kwale, and Mandera (the KIHBS 2015/16 data is representative at the county level, and therefore cannot restrict to informal urban settlements). Recipients were also required to have lost their job or be available to start working and had to be between 18 and 34. It is assumed that all recipients worked the maximum number of days (22 per month). The daily wage was 653.10KSh in Nairobi, Kisumu and Mombasa, while 600KSh everywhere else.
	Phase 2	200,000 jobs provided in urban areas across all counties. Recipients were also required to have lost their job or be available to start working and had to be between 18 and 34. It is assumed that all recipients worked the maximum number of days (11 per month). The daily wage was 653.10KSh in Nairobi, Kisumu and Mombasa, while 600KSh everywhere else.
PWSD Cash Transfers	Expansion	33,000 households with an individual with a disability who is unable to perform economic activities. The eligible recipients are randomly selected across all counties.

23.   The microsimulations involve assumptions and limitations. The microsimulations are an estimation of the impact of COVID-19 on consumption and poverty and therefore involve assumptions and limitations. For instance, while wage income can drastically change across waves, job gains and losses are not considered. Furthermore, other gains in income sources are not considered, for instance, if a household did not receive remittances in the KIHBS data, they will never receive remittances across any of the waves of data collection.

4. Existing and New Poor Profiles

Table F-7: Existing and new poor

	Existing Poor	New Poor 2020	New Poor 2021
Age of head	47 (46.5, 47.7)	43 (42.3, 44)	42 (41.8, 43.7)
Female HH head	35% (33.8%, 37.4%)	25% (22.5%, 29.1%)	26% (22.6%, 29.9%)
HH size	5 (5.1, 5.3)	4 (4.1, 4.4)	4 (4, 4.3)

Share of dependents	47% (46.6%, 48.4%)	36% (34.6%, 37.7%)	39% (37.4%, 41%)
Urban	27% (25.1%, 30.3%)	41% (38.1%, 45.5%)	37% (34%, 41.9%)
Ave. years sch. (15+)	6 (5.8, 6.1)	8 (7.8, 8.2)	7 (7.4, 7.8)
Head Agriculture	55% (52.9%, 57.8%)	35% (32.2%, 38.1%)	38% (34.8%, 41.5%)
Head Manufacturing	6% (5.2%, 7.1%)	9% (7.7%, 11.5%)	9% (7.5%, 11.8%)
Head Services	29% (27.5%, 31.8%)	45% (42%, 49.2%)	42% (38.2%, 45.9%)
Head Construction	8% (7%, 10.2%)	9% (7.7%, 11.3%)	9% (7.7%, 12.2%)
Members work in more than one sector	22% (20.4%, 23.8%)	29% (26.6%, 31.8%)	26% (23.9%, 29.6%)
Head Unemployed	1% (0.6%, 1.6%)	0% (0.1%, 0.9%)	0% (0.1%, 0.6%)
Head Not in Labor Force	11% (10.1%, 12.4%)	3% (2.2%, 3.8%)	3% (2.4%, 4.2%)
Improved water	65% (62.9%, 67.9%)	76% (74.3%, 79%)	74% (71.7%, 77%)
Improved sanitation	47% (45.1%, 49.9%)	66% (62.9%, 69.3%)	63% (59.7%, 66.6%)
Main source light (electricity)	18% (16.5%, 20.4%)	40% (37.7%, 43.5%)	35% (31.8%, 38.5%)
HH electricity access	20% (18%, 22%)	43% (40.1%, 45.8%)	38% (34.9%, 41.5%)
HH owns radio	39% (38%, 41.8%)	49% (46.3%, 53.3%)	48% (45%, 52.3%)
HH owns cell phone	77% (75.5%, 78.8%)	90% (89.2%, 91.9%)	88% (87%, 90.5%)
HH owns kerosene stove	22% (20.5%, 24.9%)	44% (40.8%, 48%)	40% (36.7%, 44.6%)
HH owns charcoal jiko	43% (41.4%, 45.9%)	58% (55.9%, 61.1%)	54% (51.5%, 57.8%)
HH owns mosquito net	65% (63.2%, 67.3%)	67% (65%, 70.5%)	66% (63.6%, 70.1%)
HH owns fridge	0% (0.2%, 0.9%)	1% (1%, 2.4%)	1% (0.7%, 2.5%)
HH owns sofa	39% (37.2%, 41.5%)	56% (54%, 59.8%)	52% (48.9%, 56.1%)

5. Job Quality Index

Dimension	Indicators
Income	The monthly salary is greater than the poverty line. The salary is deflated to 2015/16 levels so the 2015/16 national poverty lines can be used. There are separate poverty lines for rural and urban areas.
Benefits	The individual receives any of the following: 1) health insurance, 2) social security coverage, 3) sick leave.
Satisfaction	The individual does not work excessive hours[69].
Stability	The individual has a permanent contract.

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[69] Defined as usually working over 48 hours a week (ILO, 2019, "Safety and Health at the Heart of the Future of Work").