Cash Transfers as a Response to COVID-19: A Randomized Experiment in Kenya

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We deliver an unconditional cash transfer equal to one month's average profit to a randomly selected group of Kenyan female microenterprise owners in May 2020 at the outset of exponential growth in COVID-19 cases. Firm profit, inventory spending, and food expenditures increased relative to a control group. Entrepreneurs recovered about one third of the profit lost during the crisis. The transfers caused greater business activity by inducing previously closed businesses to re-open. PPE spending and precautionary management practices increase to mitigate this effect, but only among those who perceive major health risk from COVID-19. The results suggest cash transfers promoted economic stabilization during the crisis, but may work against the public health

goal of reducing interpersonal interaction.

As of September 2020, 156 countries around the world had initiated a total of 231 new cash transfer programs in response to the COVID-19 pandemic (*1*). Social scientists and policy-makers alike have pointed to the particular need for such programs in developing countries, where the COVID-19 crisis threatens substantial harm among those with limited access to savings and credit (*2, 3*). However, there is little evidence on the effects of such programs during a pandemic.

We use a randomized controlled trial to estimate the effects of a short-term unconditional cash transfer (UCT) during the COVID-19 pandemic for a group that has received much policy attention: female-run microenterprises (*4, 5*). We do so in the dense urban slum of Dandora, Kenya. In addition to the gendered component of COVID-19 costs (*6, 7*), these businesses primarily operate in "non-essential" sectors that rely on face-to-face interactions, making them particularly vulnerable to the negative economics effects of the COVID-19 outbreak (*8*). Indeed, in our sample, average profit falls from approximately 2 USD per day to 1 USD per day between January and May 2020 (the initial COVID-19 case in Kenya was on March 13).

We randomly divide a sample of these business owners into a treatment group that receives a one-time 5000 KES cash transfer ($\approx$ 50 USD, equal to approximately 1 month of average profit in January 2020 among our sample) and a control group that receives 500 KES ($\approx$ 5 USD). The ubiquity of mobile money – already a key aspect of informal social insurance networks (*9*) – allowed us to quickly deliver the treatment without any in-person meetings and before the period of fastest rising infections in Kenya. While there were 700 cumulative cases in Kenya when we finished delivery of the transfers on May 12, there were 1,286 two weeks later (*10*). We gathered data continuously from April through August as the COVID-19 pandemic expanded and the Kenyan government responded.

Cash transfers increased business profits by 38 percent relative to the control, restoring approximately one-third of the decline in average profit observed between January and May, and increased household food expenditure by 7 percent. Treated firms were also 5 percentage points more likely to remain open than the control group and stayed open an additional half hour per day. These average effects are driven by firms that had closed due to the initial COVID-19 downturn and subsequently re-opened in response to the treatment. A firm that had temporarily closed between January and May was 65 percentage points more likely to be open if treated, compared to a control firm that had similarly closed at baseline. These findings run counter to the "shut down as a luxury" effect that has been hypothesized in both policy discussions and the popular press (*11, 12*).

Treated firms partially mitigated the public health costs of reopening by increasing their spending on personal protective equipment (PPE) by 15 percent relative to the control. They further implement management practices associated with increased health safety, such as using sanitizers or gloves, only accepting mobile money, enforcing social distancing in their businesses, wearing a mask, and starting a delivery service. We create a health-safety management practices index and find that the treatment induces a 0.15 standard deviation increase relative to control. Thus, while the cash transfer does induce greater economic activity, any associated risk is at least partially mitigated by safer and more sanitary practices among these firms.

Baseline beliefs about the health risk posed by COVID-19 play a significant role in generating these mitigation responses. Among those who perceived the risk of COVID-19 to be low (i.e., estimated the mortality risk to be no greater than the common flu), the treatment induces no change in PPE spending or our health-safety index. Instead, the average effect is entirely driven by those who assess the risks of COVID-19 to be greater than the flu. This suggests an important complementarity between cash transfers and information campaigns to reduce health risk, which has been noted in other ongoing work related to the COVID-19 pandemic (*13, 14*). In addition, our results are related to recent experimental work studying how the COVID-19 response of rural Kenyans depends on their enrollment in a universal basic income (UBI) program. Such results form an important evidence base for UBI (*15*). Our intervention is designed to more closely resemble proposed policy responses to combat the pandemic in execution and intent, by focusing on short-term transfers among the urban poor.

Economic Impact of COVID-19 in Dandora

Dandora is a dense, urban slum in Nairobi of about 150,000 residents. It contains a 30 acre trash dump that serves all of Nairobi despite being declared full in 2001. Burning garbage and chemicals from the dump contribute to poor health and respiratory issues among its residents (*16*). These conditions led to substantial anxiety that COVID-19 would spread quickly among its residents, many of whom have pre-existing respiratory conditions. To combat the spread of the virus, the government instituted a series of measures designed to limit personal interactions after the first confirmed case in Kenya on March 13, 2020. As of July 27, 59 percent of all reported cases in Kenya were in Nairobi county (*17*). Our sample is comprised of female entrepreneurs, who make up the majority of small businesses in Dandora. They are substantially less profitable that those run by men (*18*) and are particularly vulnerable to the negative impact of the covid oubreak (*7*).

Economic Contraction Between January and late April 2020, average profit declined by 47 percent as COVID-19 spread. This is 57 percent lower than what we observed four years earlier in April 2016 among a similar set of female-run microenterprises (*18*), despite the fact that profit in late 2014 and 2019 seem quite similar. These reductions in profit can be attributed to both the impact of government restrictions on movement and trade and consumer pessimism.

Policy Response and (Lack of) Reach into Dandora To mitigate the forthcoming health crisis, the Kenyan government implemented a number of social protection policies. This included tax relief to the poorest earners and a reduction of income tax in mid-March. As of April 1, the government suspended of listing of negative credit information with the Credit Reference Bureau (CRB) of any person or micro or small business with an overdue loan, along with a decrease in the VAT rate from 16 to 14 percent.

These policies primarily assist the formal economy, providing little relief to many of the most vulnerable entrepreneurs and households. In our baseline survey, only 17 percent of business owners had received any government relief by May 2020, with more than half mentioning the tax cut. Few businesses in our sample use formal loans, so it was rare that they reported benefiting from loan deferrals. Similarly, there is little NGO reach into Dandora: Ninety-five percent of our sample received no help from any NGO (no one mentions cash transfers, in particular). These numbers remain roughly constant among the control group throughout the study period ending August 2020.

Thus, our study takes place among a population that is among the most vulnerable to such an economic downturn and faces a substantial contraction in profit. Yet, at the same time, there is little relief from either the government or NGOs.

COVID-19 Beliefs and Preventative Measures We asked a series of questions to quantify the entrepreneurs' understanding of the severity of the outbreak. A full analysis of these data is available in the supplementary material, but one question was particularly illustrative of the entrepreneurs' attitudes. We asked respondents to compare the lethality of COVID-19 with other illnesses such as the flu, yellow fever, or ebola, and provided them with a mortality rate for comparison. Nearly 55 of our sample believe the mortality risk of COVID-19 to be similar to that of ebola, while only 20 percent believed it to be less deadly than the flu.

These beliefs are reflected in the firms' responses to the pandemic. Over 80 percent of business owners wear a mask during work and a similar fraction use hand sanitizer while working. Other practices – limiting cash transitions, transitioning to takeaway service, or wearing gloves – are more limited.

Data Collection and Experimental Design

From October 2019 to January 2020, we conducting a survey of 4,500 female-run microenterprise owners in Dandora for a separate research study. As COVID-19 pandemic began, we drew a sample from that baseline for the intervention reported in this paper: a one-time cash injection as a response to the economic downturn. We selected 800 women to be part of the study. Of these, 753 were successfully enrolled into treatment (367) and control (386). We then collected data continuously by trained enumerators by phone from April 23, 2020 through August 11, 2020. Once each business owner was contacted (or called a maximum of 4 times with no response), the call list was re-randomized to limit the likelihood of bias in the timing of contact.

The transfers were delivered in the first two weeks of May 2020 by mobile money (M-PESA). Treated individuals were made aware of their status the day after the completion of their baseline survey response. The treatment group received 5000 KES and the control group received 500 KES (as compensation for surveys and air time required to answer). The scale of the treatment transfers was designed to be approximately equal to one month of average profit among our sample as observed in January 2020.

To summarize this timeline, Figure 1 overlays our data collection and cash delivery timeline with the daily cumulative cases in Kenya (*10*). Note that we observe all business owners before the COVID-19 pandemic (and the government response) and once in late April or early May (after the government's response, but before the substantial growth in cases). The transfers are likewise delivered before the number of cases begins to grow substantially, and our data collection period covers the bulk of the run-up in COVID-19 cases in Kenya.

The supplemental material includes balance checks, and find no difference between control and treatment groups along a number of dimensions. The joint F-test p-value is 0.984 across 15 relevant baseline variables.

Results

Our main regression specification is

$$y_{it} = \alpha + \beta T_{it} + \theta_i + \gamma_t + \varepsilon_{it}, \tag{1}$$

where y_{it} is an outcome for individual i at week t, $T_{it} = 1$ if i is treated at week t, and θ and γ are individual and week fixed effects. Standard errors are clustered at the individual level. We focus on the continual data collection from April – August 2020, though the results are robust to the inclusion of the earlier baseline data.

Economic and Business Impact of the UCT Table 1 reports treatment effects on the entrepreneur's business and household. In Panel A, average profit increases by 40 percent relative to the control average ($p = 0.000$), recovering about one-third of the decline in profit we observe between January and May. Some of these additional resources are re-invested into the business in terms of higher inventory spending, which increases by 66 percent ($p = 0.000$), while some is used for consumption, with food expenditures increasing by 7 percent ($p = 0.072$). But rather than scale back operations or temporarily close, the treatment induces them to operate more intensively on average. Firms are 5 percentage points more likely to be open ($p = 0.046$) and are open 0.55 hours more per day ($p = 0.050$). Thus, while the UCT improves outcomes for the entrepreneur's business and household, it comes with an increase in business activity. This may worry policymakers, since this increased activity could cause greater potential for virus transmission.

We are particularly interested in the impact of the intervention on the businesses that had closed between the baseline and the delivery of the UCT. We interact the treatment with an indicator for whether the business closed between January and May, and report results in Panel B. Firms that were closed at the time the UCT was distributed experienced similar increases in profit, revenue, and inventory expenditures to the average, but only firms that were open at distribution had a statistically significant increase in food expenditures. Firms that were open at baseline were 7.3 percentage points ($p = 0.001$) more likely to close compared to the control group, but this effect was counteracted by the firms that were closed at baseline who were 73.8 percentage points ($p = 0.000$) more likely to re-open.

Why Do Businesses Re-open? In Panel B of Table 1, food spending increased only for entrepreneurs that continued operating in May, among whom we observe a 9 percent increase in food expenditures ($p = 0.049$). The change among those who were closed in May is 36.95 KES, a 2 percent increase and statistically indistinguishable from zero.

To better understand the heterogeneous response of these firms to the UCT, we begin by studying how inventory and profit change before the treatment. Figure 2 plots average inventory expenditures, average profit, and average food expenditure in January and May separately for the group of firms that are eventually closed in May and those who are not. At baseline, the groups are indistinguishable, but then there is a decline in inventory expenditures and profit in both groups, which is larger among those that close by May. In response to the treatment, firms that were open spend more in inventory and food expenditures despite lower average profit and revenue (Table 1, Panel B, Columns 3, 4, 1 and 2), while firms that were closed exhibit no statistically significant increase in food expenditure (Table 1, Panel B, Column 4).

We interpret this as evidence that entrepreneurs are using the firm to smooth consumption over time in the face of risk: unsure of whether customers will continue to purchase their goods, some entrepreneurs prefer to hold their wealth in cash rather than keep their store stocked, requiring them to temporarily close. Those entrepreneurs can then maintain household consumption steady at the beginning of the pandemic regardless of whether they close or not by consuming out of savings (Figure 2, Food Spending). For firms that remained open, the UCT simply leads to more consumption and investment (Table 1, Panel B, Columns 3 and 4). Many who closed, however, can divert some of the transfer to the household's savings and reduce the risk of the entrepreneur's wealth being tied up in inventory on the store shelves, which cannot be easily converted into food or other necessities if the crisis escalated. The entrepreneur's use of the firm to smooth consumption this way has been studied in other contexts (*19*), but plays a key role in interpreting the results here and understanding how small, credit-constrained firms respond to stimulus during a crisis.

COVID-19 Preventative Measures Do treated firms adopt more sanitary practices and partially mitigate the potential for the virus to spread, particularly among those that reopen? We study whether the treatment induces any change in spending on personal protective equipment (PPE) or public health-related management practices. The latter is an index of 9 practices related to safe business operation, measured as the z-score and detailed in the supplemental material.

Columns (1) and (3) in Table 2 show the average effect on personal protective equipment (PPE) spending along with the management practices index. We find that despite causing businesses to remain open and operate more intensively, the treatment is also causing them to increase protective measures against the spread of COVID-19 while operating. PPE spending increases by 15 percent ($p = 0.047$), while our "protective measures" index increases by 0.15 standard deviations above baseline mean ($p = 0.029$).

To measure how these outcomes depend on beliefs, we interact the treatment indicator with an indicator that the entrepreneur believes the mortality risk of COVID-19 is no greater than that of the seasonal flu. These results are in columns (2) and (4) of Table 2. Among those with low perception of risk, the effects on PPE spending and protective measures reverse sign and lose significance: those with lowest assessment of the severity of COVID-19 at baseline do not change their preventative practices, while those with a higher assessment of the severity of COVID-19 use the treatment to increase PPE spending and adopt public health-related management practices. This suggests an important complementary role for information interventions, which have been highlighted in recent work (*13, 14*).

These beliefs and behaviors evolve over time, particularly in response to government behavior. Figure 3 shows how the share with low assessment of COVID-19 severity varies over time. Of particular note are the two major policy announcements by the Kenyan government during this time. On June 6, the curfew and movement restrictions into/and out of Nairobi were extended for 30 days as the new caseload was beginning to increase quickly. Corresponding to this, we see a drop in the share of businesses underestimating the health risk of COVID-19. At the same time, we see a spike in spending among the treatment firms without any corresponding change among control firms. After the movement restriction was lifted on July 6 as Nairobi was nearing what seemed to be the peak of its crisis (*20*), beliefs seemed to relax and spending on PPE began trending down again.

Behavior also changes over time. We interact the treatment with indicators for the three periods delineated by the July 6 and June 6 policy announcements, and report results in column (5) of Table 2. The treatment increases spending primarily after the government announcement on June 6, but before the easing of restrictions on July 6.

Other Outcomes Our results show that UCTs have significant impacts during a pandemic. However, there is both little existing evidence on how such a transfer impacts microenterprise owners, nor theoretical or empirical guidance on the direction or magnitude of the effects. In the supplemental material, we analyze heterogeneous effects along a number of different dimensions that may play a role, but report some of the more interesting results here.

First, we study whether household characteristics generate variation in the treatment effect, particularly whether the woman is married, head of household, age, and the number of children. Recent work shows how these characteristics can impact various outcomes (*21*). We find no statistically significant evidence that these characteristics generate differential treatment effects. Second, we consider heterogeneity by type of business, but find no differential effects. Like most slums, however, our sample includes many small retail or food service establishments with only a few employees, which will have similar responses to the intervention.

Conclusion

This paper provides new experimental evidence on the impact of delivering cash transfers during a very severe global downturn. We utilize mobile money to deliver these transfers to female micro-entrepreneurs in Dandora, Kenya, a group that was both particularly vulnerable to the economic consequences of the pandemic and received little assistance from the government or NGOs.

Our results suggest that UCTs have their intended effect in helping people maintain their livelihoods when facing the crisis. Firm profit increases by 38 percent, making up approximately one-third of the decline observed during the initial shutdown implemented by the Kenyan government, with simultaneous increases in inventory investment and food consumption. However, caution is warranted. We observe that the cash transfer substantially increases the likelihood of a closed business re-opening and this result drives an overall average increase in the operating hours among average businesses. This effect works against the goal of reducing interpersonal interaction in order to curtail the spread of the virus. Thus, the economic benefits of UCTs instituted alone must be weighed against these public health goals. Since we find that beliefs play an important role in affecting mitigation efforts by recipients, there may be an important role for public information campaigns to be used in concert with cash transfers. As the use of cash transfers grows as a response to COVID-19, we are hopeful these results can provide a useful guide for policy design both now and during potential future epidemics.

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Supplementary materials

Materials and Methods

Additional Results

Supplementary Figures S1 – S3

Supplementary Tables S1 – S4

Materials and Methods

Data Collection From October 2019 to January 2020, we surveyed 4500 female-run businesses in Dandora, Kenya. We then began continuous follow-up surveys starting in April 2020 and ran through August 2020. All April – August surveys were conducted via mobile phone due to COVID-19. We created a randomized list of all participants, and trained enumerators then called each individual. When individuals did not answer, we attempted 3 additional contacts before moving on. Once completed, we re-randomized the list and called again.

The survey was identical each time. It included questions about business outcomes, changes in response to COVID-19 and beliefs about COVID-19. Below we describe relevant questions in more detail:

Business Revenue: "In total, how much revenue did you make in the last week? By that, I mean the total amount your customers paid you."

Business Profit: "How much profit did you earn from your business last week? When I say this, I mean, once you take out the costs of your business from the total amount customers paid you, what remained?"

Inventory Expenditures: "How much did you spend on inventory or supplies this week?"

Food Expenditures: "In the past week, how much in total has your family spent on food?"

Open: Derived from the question "What is the current status of your business?" which respondents can choose of one: (1) Business remains open, (2) Temporarily closed by government mandate, (3) Temporarily closed due to challenges related to the COVID-19 outbreak, (4) Permanently closed due to challenges related to the COVID-19 outbreak, (5) Temporarily or permanently closed due to factors unrelated to the COVID 19 outbreak.

A business remains open if the respondent chooses (1).

Daily Hours: "How many hours do you usually stay open on a day you operate your business?"

Health-Safety Management Practices: Respondents can choose any of the following in response to the question "Are you doing anything to protect yourself and your customers from infection?" (1) Using hand sanitizer, (2) Gloves when handling money, (3) Only use mobile money, no cash (4) I don't interact directly with customers, (5) Customers pick up orders and must leave immediately, (6) We started a delivery service, (7) Social Distancing (everyone stays 6 feet apart), (8) Wear facial/N95 masks, (9) Ask my customers to wash their hands, (10) Other.

As discussed below, we use these responses to create a health management practices indices.

Beliefs about COVID-19 Health Risk: "For an average person in good health, how serious a threat does the coronavirus pose to their health?" Respondents can choose one of the following answers: (1) Similar to the common cold (¡1 death in 5000), (2) Similar to the seasonal flu (5 deaths in 5000, unvaccinated), (3) Similar to malaria (15 deaths in 5000, unvaccinated), (4) Similar to mumps (50 deaths in 5000, unvaccinated), (5) Similar to smallpox (150 deaths in 5000, vaccinated), (6) Similar to yellow fever (375 deaths in 5000, unvaccinated), (7) Similar to typhoid (500 deaths in 5000, unvaccinated and untreated), (8) Similar to Ebola (4000 deaths in 5000, unvaccinated and untreated).

The numbers in parenthesis are approximate mortality rates conditional on contracting, and are explained to the respondents as part of their choices. As discussed further below, we use these responses to construct an indicator for relatively lower beliefs on COVID-19 severity.

Creation of Relevant Variables We create a health management practices index using the details provided above. Specifically, we count the number of implemented practices and normalize by baseline levels. This z-score for individual i at time t is given by $(\sum_{j=1}^{9} \mathbf{1}_{ijt} - \mu_0)/\sigma_0$, where $\mathbf{1}_{ijt} = 1$ if individual i implemented practice j at week t and the mean and standard deviation are from baseline responses. The choice (10) "other" is never chosen, and thus not included.

We also create an indicator used in Table 1 to define whether or not a business is closed in May 2020. Our survey respondents are firm owners, so we can identify whose business is closed and open at this point. This variable is equal to one if the business is closed, and equal to zero if the business is open.

We finally create an indicator for "low" beliefs about COVID-19 health risk. This indicator is equal to one if individual i at time t believes the COVID-19 health risk is no greater than the common flow, and equal to zero otherwise. This is used in Table 2.

For remaining continuous variables (profit, revenue, inventory and food expenditures, hours open) we trim responses at 1 percent to eliminate any outliers or accidental data entries. The results are not sensitive to this procedure.

Statistical Specification The random assignment of treatment status allows us to study the effect of the unconditional cash transfer by comparing the means of outcomes between treatment and control firms. Because our data includes multiple observations over time, we include week and individual fixed effects. We cluster standard errors at the individual level to deal with any remaining correlated errors within individuals. For an outcome y for person i at week t, this regression takes the form

$$y_{it} = \alpha + \beta T_{it} + \theta_i + \gamma_t + \varepsilon_{it}$$

where $T_{it} = 1$ if i is in the treatment at week t, and $T_{it} = 0$ if not. The individual and week fixed effects are given by θ_i and γ_t, while the regression error is ε_{it}. The coefficient β is the estimated average effect for outcome y between treatment and control. Table 1 Panel A and the first row of Table 2 present the estimated values $\hat{\beta}$ from this regression.

We also study heterogeneity across various sub-groups. This requires interacting the treatment indicator T_{it} with the relevant characteristic. This regression takes the form

$$y_{it} = \alpha + \beta T_{it} + \delta(T_{it} \times C_{i0}) + \theta_i + \gamma_t + \varepsilon_{it}.$$

In Table 1 Panel B, this variable $C_{i0} = 1$ if the business is closed at baseline (May 2020) and $C_{i0} = 0$ if the business remains open. In Table 2, we use the "low" beliefs of COVID-19 health risk as this indicator in Columns (2) and (4), along with indicators for time period in column (5).

Finally, as we discuss below and show in Table S1, we show that the treatment and control firms are balanced along a number of dimensions, as is required to interpret these results causally.

Additional Results

We complement our results in the main text with a number of additional results detailed here.

Additional Information on Initial Response to COVID-19 in Dandora Figures S1 – S3 provide additional information on the response of businesses in our sample to the initial downturn before our intervention.

Figure S1 plots the evolution of average profit among a similar set of female-run microenterprises. It shows the average profit among control firms from the current study (October 2019 – August 2020) and compares to an earlier study from October 2014 – April 2015. Thus, this is the evolution of profit without the treatment over time. The results show the severe economic consequences of COVID-19.

Figure S2 details the beliefs of individuals at baseline on the health risk of COVID-19, by relating it to various other health ailments. Figure S3 details the practices undertaken by firms at baseline to help protection against COVID-19.

Additional Statistical Results Table S1 provides balance checks. These come from regressions of the form $y_{i0} = \alpha + \beta\tilde{T}_i + \varepsilon_i$. Here, y_{i0} is a baseline value for individual i, $\tilde{T}_i = 1$ if individual i eventually ends up as a treatment firm and ε_i is the error. This cross-sectional regression uses only baseline data, and Table S1shows that the treatment and control firms are similar along a number of different dimensions. That is, the average baseline values across a number of characteristics do not vary across the two sets of firms.

Tables S2 and S3 provide additional results, using our previously discussed regression specification. Table S2 studies whether household characteristics – whether the woman is married, head of household, age, and number of children – generate variation in the treatment effect. We find no statistically significant evidence that these characteristics generate differential treatment effects. Table S3 considers heterogeneity by type of business, as certain types of businesses are more likely to be hurt by the COVID-19 shock. We find no differential effects. We emphasize however that this is likely a function of the types of businesses that are most common in Dandora. Like most slums, our sample is dominated by retail (either directly, or combined with own-production of goods such as furniture or clothes) and restaurants. Thus, the same heterogeneity highlighted in more diversified economies is unlikely to be found here.

Finally, Table S4 reproduces our headline results from the text under an alternative specification of the regression framework. This new regression is $y_{it} = \alpha + \beta T_{it} + y_{i0} + \gamma_t + \varepsilon_{it}$, run only on weeks after the treatment is delivered. The key difference here is that the baseline value of the outcome y_{i0} replaces the individual fixed effect in the specification detailed in the main text. Table S4 shows that the results are the quite similar, and shows that our results are not dependent on the choice of regression specification.

Supplementary Figures

Figure S1: A comparison of female-run microenterprise profit over time in Dandora

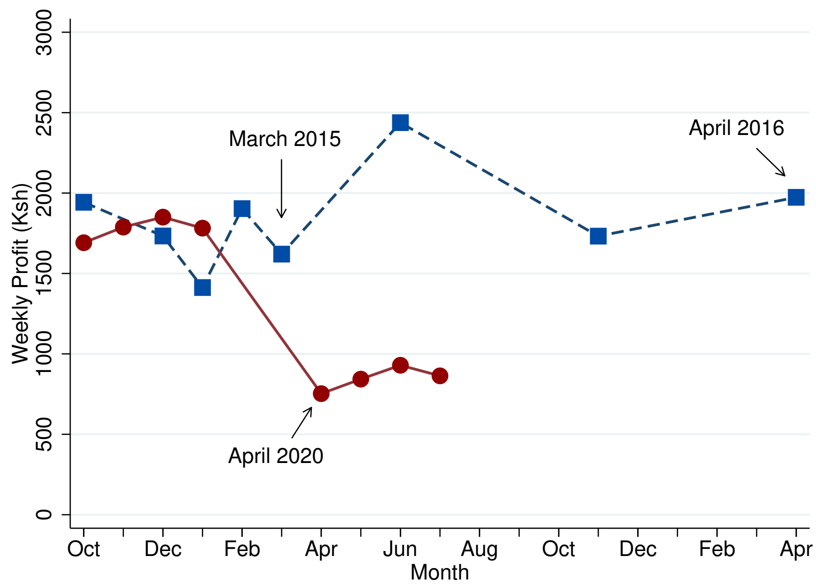


Figure notes: This figure traces out average control group profit by month in our study, and compares it to time series of profit from a similar sample of female-run microenterprises in Dandora collected in 2014-2016 (*18*). Surveys began April 23, 2020, so the April 2020 data point should be interpreted as the last week of April 2020.

Figure S2: Beliefs about COVID-19 Mortality Risk

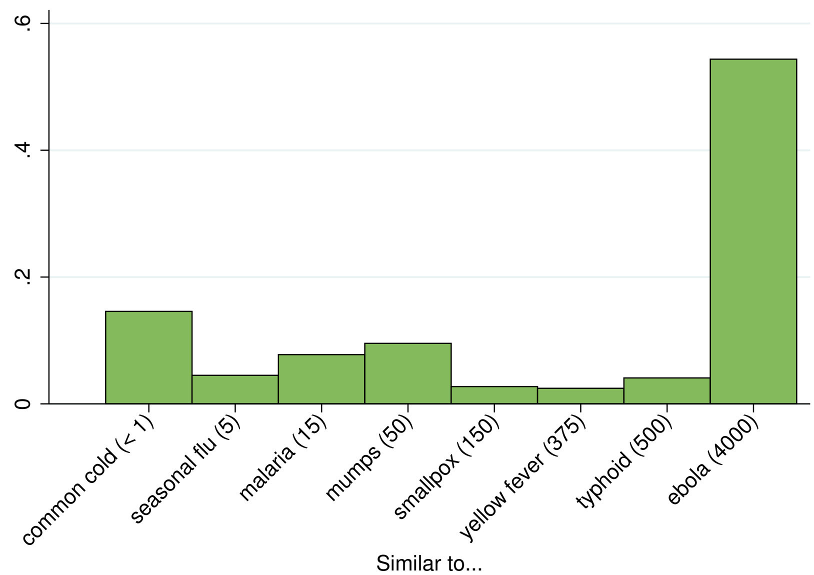


Figure notes: This figure is a histogram of the answer to the question "For an average person in good health, how serious a threat does the coronavirus pose to their health?" in late April and early May 2020 (before treatment). The number in parenthesis is the approximate average death rate per 5000 untreated individuals, which was given to respondents as part of their choices.

Figure S3: COVID-Related Protective Measures at Work

Figure notes: Baseline responses in May 2020 on measures undertaken to limit COVID spread at business. Sum to greater than one because individuals can choose as many as relevant.

Supplementary Tables

Table S1: Balance Test

	(1) Treated	(2) Constant
Business Outcomes		
Profit	-54.35	811.4***
	(81.73)	(57.06)
Revenue	-73.15	2619.7***
	(258.4)	(180.4)
Inventory Spending	-141.1	2138.3***
	(302.4)	(211.1)
Open	0.0147	0.811***
	(0.0282)	(0.0197)
Hours open	0.150	6.477***
	(0.289)	(0.202)
Number of employees	0.00380	0.179***
	(0.0392)	(0.0274)
Any employee	0.000420	0.126***
	(0.0245)	(0.0170)
Any loan	0.0246	0.242***
	(0.0687)	(0.0479)
Loan amount	-5.628	201.8***
	(69.00)	(48.17)
Personal and Household Characteristics		
Age	0.492	39.47***
	(0.706)	(0.493)
Head of household	-0.00689	0.582***
	(0.0361)	(0.0252)
Married	0.0140	0.618***
	(0.0354)	(0.0247)
Number of children	-0.0335	2.927***
	(0.109)	(0.0763)
Years of schooling	0.275	10.28***
	(0.786)	(0.549)
Food Spending	-17.99	2112.2***
	(91.11)	(63.61)
Observations	753	
Joint F-test, p-value	0.984	

Results from a regression of $y_i = \alpha + \beta T_i + \varepsilon_i$ run on baseline data, where $T_i = 1$ if eventually treated. All results are from the April/May 2020 survey wave, except Age through Years of Schooling, which were collected in the initial baseline in late 2019/early 2020. Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S2: Treatment Effect by Household Characteristics

Table 1: Household Composition

INTERACTED CHARACTERISTIC	(1) Head of Household	(2) Married	(3) Age	(4) No. of Children
Treat	279.673***	403.318***	520.015**	345.303**
	(99.924)	(99.545)	(250.487)	(139.583)
Treat × HH Char	64.661	-135.632	-4.919	-9.637
	(108.884)	(108.353)	(5.832)	(36.816)
Observations	4,042	4,042	4,028	4,042
R-squared	0.021	0.021	0.021	0.021
Ind FE	Y	Y	Y	Y
Control Average	848.3	848.3	848.3	848.3

Standard errors clustered at the individual level in parentheses.
Outcome in all columns is profit trimmed at 1 percent.
Columns vary the interacted characteristic.
*** p<0.01, ** p<0.05, * p<0.1

Table S3: Treatment Effect on Profit by Business Type

INTERACTED CHARACTERISTIC	(1) Business Type
Treat	320.344***
	(88.290)
Treat × Production	85.880
	(189.974)
Treat × Service Provider	2.393
	(123.721)
Treat × Restaurant	-22.057
	(172.743)
Treat × Other	-146.113
	(249.236)
Observations	4,042
R-squared	0.021
Ind FE	Y
Control Average	848.3

Standard errors clustered at the individual level in parentheses.
Outcome in all columns is profit trimmed at 1 percent.
Columns vary the interacted characteristic.
Baseline business type is retail.
*** p<0.01, ** p<0.05, * p<0.1

Table S4: Headline Results with ANCOVA Specification

Table 2: ANCOVA Specification

OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Hours Open	(7) PPE Spending	(8) Protective measures (z-score)
Treat	246.701***	635.509***	550.914***	179.891***	0.050***	0.525***	22.170***	0.054
	(56.402)	(176.519)	(146.779)	(56.531)	(0.017)	(0.194)	(10.571)	(0.034)
Observations	3,216	3,167	3,159	3,169	3,312	3,213	2,322	2,946
R-squared	0.135	0.178	0.108	0.120	0.117	0.126	0.082	0.054
Ind FE	N	N	N	N	N	N	N	N
Control Average	771.4	2534	1637	2074	0.829	6.886	245.1	0.188

Standard errors clustered at the individual level in parentheses. Continuous variables trimmed at 1 percent.
*** p<0.01, ** p<0.05, * p<0.1

Figures and Tables for Main Text

Figure 1: Cumulative COVID-19 Cases in Kenya and RCT Timeline

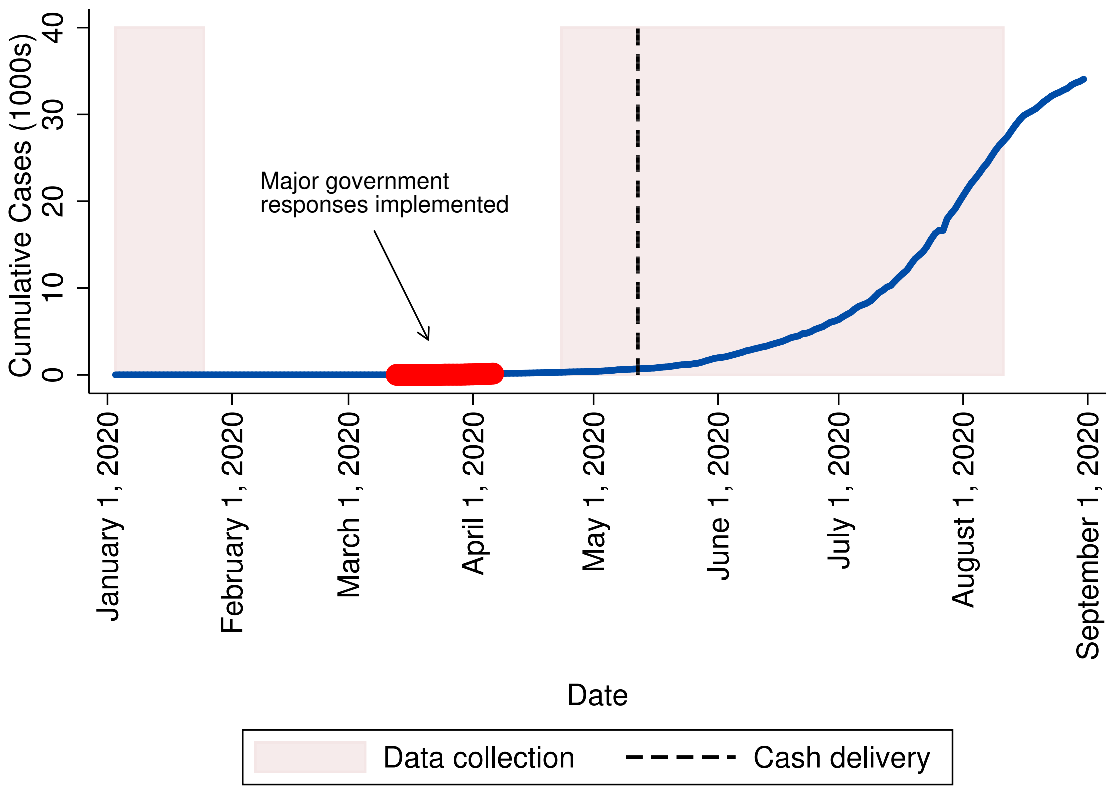


Figure notes: This figure plots cumulative COVID-19 cases in Kenya at a daily frequency from (*10*) beginning on January 3, 2020. It further includes our data collection periods (shaded area) and cash delivery date (dashed line).

Figure 2: Pre-Intervention Changes in Outcomes

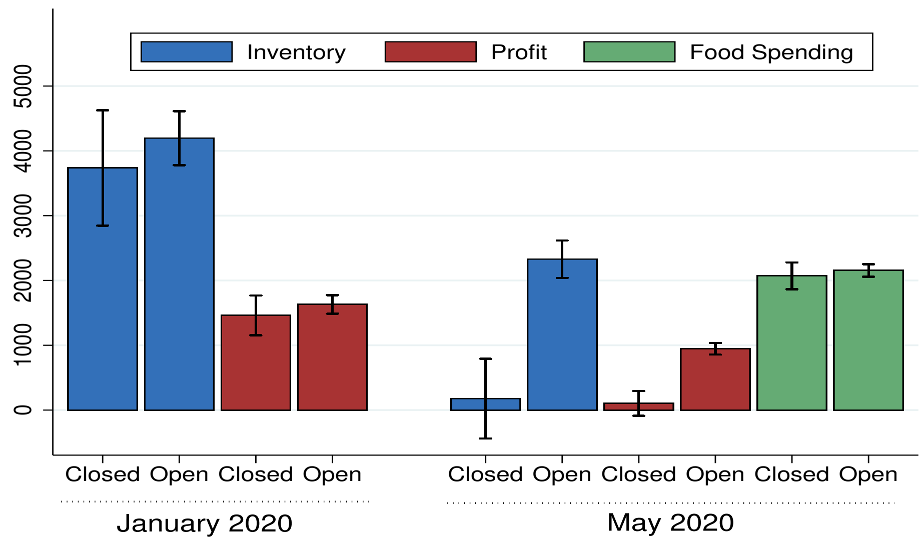
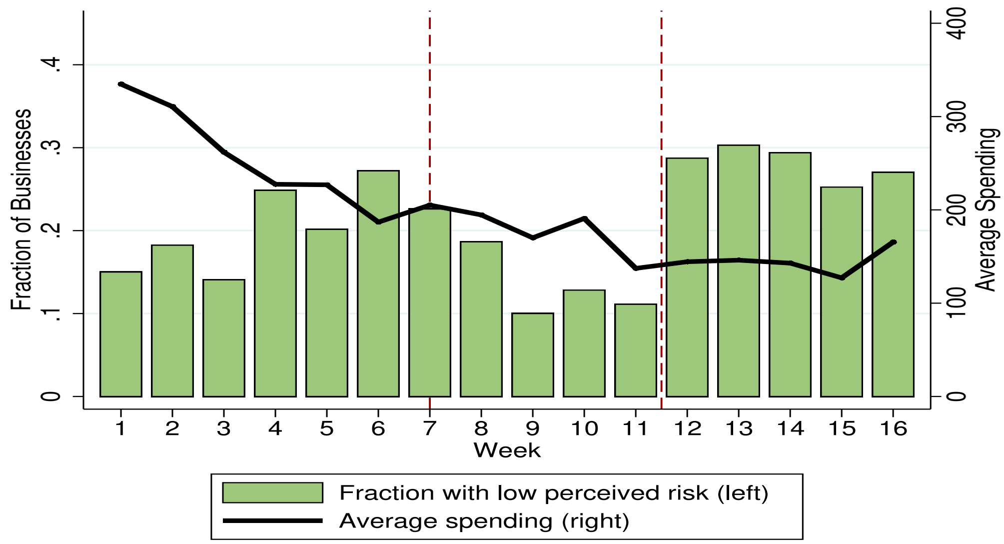
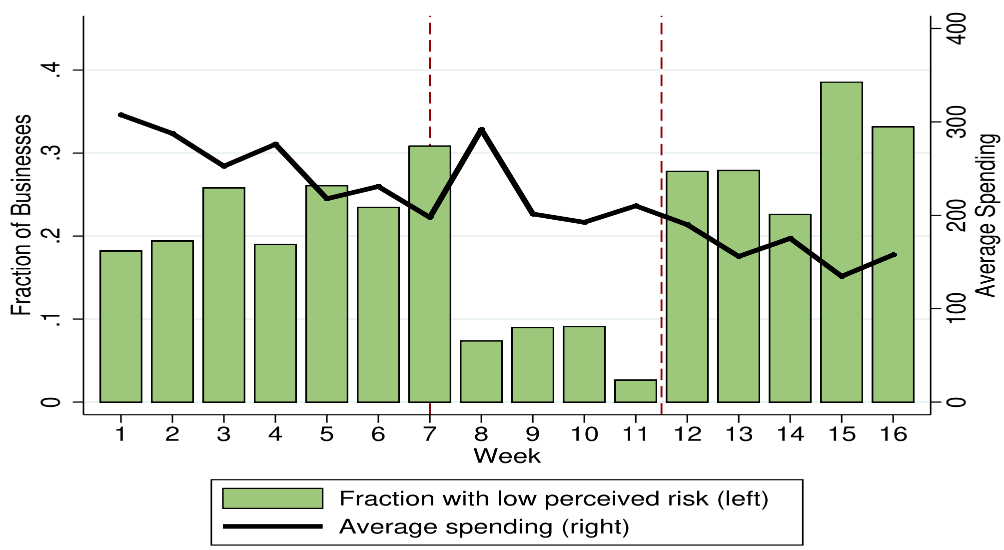


Figure notes: This figure plots average inventory spending in January and May 2020, along with food expenditures in May 2020. It delineates firms by whether or not they were open in May 2020. Ninety-five percent confidence intervals are included. Vertical axis is measured in Kenyan shillings.

Figure 3: PPE Spending and Beliefs



(a) Control



(b) Treatment

Table 1: Economic and Business Outcomes

PANEL A: OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	315.381***	744.372***	1,098.363***	154.291*	0.053**	0.545*
	(72.165)	(216.005)	(228.128)	(85.709)	(0.027)	(0.278)
Observations	4,046	3,996	3,997	4,019	4,112	4,052
R-squared	0.021	0.019	0.021	0.014	0.013	0.025
Ind FE	Y	Y	Y	Y	Y	Y
Control Average	785.7	2567	1663	2063	0.829	6.931

PANEL B: OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	234.309***	591.776**	993.137***	178.686**	-0.073***	-0.375
	(77.166)	(230.622)	(245.989)	(90.587)	(0.021)	(0.264)
Treat × Closed before Transfer	459.672***	884.806**	601.642**	-141.733	0.738***	5.235***
	(116.312)	(379.292)	(255.576)	(144.870)	(0.052)	(0.497)
Observations	4,001	3,952	3,952	3,973	4,066	4,006
R-squared	0.025	0.021	0.022	0.015	0.103	0.064
Ind FE	Y	Y	Y	Y	Y	Y
Control Average (Open)	898.1	2927	1890	2091	0.913	7.767
Control Average (Closed)	301.3	968.4	647.2	1965	0.464	3.365

Standard errors clustered at the individual level in parentheses. Continuous variables trimmed at 1 percent.
Control averages taken over entire time period of study.
*** p<0.01, ** p<0.05, * p<0.1

Table 2: COVID-19 Precautionary Measures

OUTCOMES	(1) PPE spending	(2) PPE spending	(3) Protective measures (z-score)	(4) Protectives measures (z-score)	(5) PPE spending
Treat	36.753**	47.869**	0.154**	0.217***	-28.204***
	(18.491)	(20.028)	(0.071)	(0.077)	(16.063)
Treat x Low Perception of Risk		-51.402**		-0.279***	
		(25.859)		(0.103)	
Treat $\times$ Week 7–12					42.833**
					(18.063)
Treat $\times$ Week 13+					26.805
					(20.160)
Observations	3,243	3,210	3,862	3,818	3,243
R-squared	0.064	0.066	0.072	0.075	0.022
Ind FE	Y	Y	Y	Y	Y
Control Average	245.1	245.1	0.188	0.188	245.1

Standard errors clustered at the individual level in parentheses. Spending trimmed at 1 percent. *Protective measures* is the standardized z-score of 9 management practices designed to limit COVID-19 spread.
*** p<0.01, ** p<0.05, * p<0.1