



## Regular article

## Cash transfers as a response to COVID-19: Experimental evidence from Kenya

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## ABSTRACT

We deliver one month's average profit to a randomly selected group of female microenterprise owners in Dandora, Kenya, arriving just in advance of an exponential growth in COVID-19 cases. Relative to a control group, firms recoup about one third of their initial decline in profit, and food expenditures increase. Control profit responds to economic conditions and government announcements during our study period, and treatment effects are largest when control profit is at its lowest. PPE spending and precautionary management practices increase to mitigate the health risks of more intensive firm operation, but only among those who perceive COVID-19 as a major risk.

## 1. Introduction

One of the defining features of poverty is the difficulty of coping with economic downturns. While developed countries deploy numerous policy tools to deal with negative shocks, high levels of informality and other related complications in the developing world make it difficult to provide a similar social safety net. Few modern events have highlighted this problem like the coronavirus pandemic. Faced with the necessity of responding quickly to a large, unprecedented negative shock, various programs sprang up to respond.

In this paper, we study one policy that has received substantial attention both within the COVID-19 crisis and more broadly as part of designing the social safety net in developing countries: a short-term unconditional cash transfer (UCT). By June 2020, 191 countries had initiated some form of cash transfers to combat the COVID-19 crisis (Gentilini et al., 2020).

We implement a randomized controlled trial in which we deliver a one-time UCT to a particularly vulnerable group: female microenterprise owners in Dandora, Kenya, an informal settlement in Nairobi county. We deliver this transfer immediately preceding the initial exponential growth in COVID-19 cases in Kenya, and study the impact of

a one-time cash injection throughout the beginning of the COVID-19 crisis on business and consumption outcomes among the poor.

This population is one that is particularly affected by this crisis. In addition to making up the majority of employment in many developing countries (Gollin, 2008), these firms tend to operate in “non-essential” sectors and rely heavily on face-to-face interactions, leaving them vulnerable due to the particular features of the COVID-19 shock (Alfaro et al., 2020).<sup>1</sup> In the first 4 months of 2020, average profit among our sample fell from 2 to 1 USD per day.

We randomly divide our sample of business owners into a treatment group that receives 5000 KES ( $\approx$  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) to cover mobile costs and time for participation. The ubiquity of mobile money – already a key aspect of informal social insurance networks (Jack and Suri, 2014) – allowed us to quickly deliver the treatment without any in-person meetings and before the rise of infections. While there were 700 cumulative cases in Kenya when we completed delivery of the transfers on May 12, 2020 there were 1,286 two weeks later (World Health Organization, 2020). We gathered data from April to August 2020 (discussed in Section 3) to trace the impulse response to the shock, observing the average participant every 2.5 weeks.

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E-mail addresses: [wjbrooks@asu.edu](mailto:wjbrooks@asu.edu) (W. Brooks), [kevin.donovan@yale.edu](mailto:kevin.donovan@yale.edu) (K. Donovan), [trj2j@virginia.edu](mailto:trj2j@virginia.edu) (T.R. Johnson), [Jackline.A.Oluoch-Aridi.1@nd.edu](mailto:Jackline.A.Oluoch-Aridi.1@nd.edu) (J. Oluoch-Aridi).<sup>1</sup> In addition, both cross-country and Kenyan evidence points to the particular burden borne by women during this crisis (Alon et al., 2020a; Population Council, 2020). Recent studies of such gendered distortions in “normal” times include Hardy and Kagy (2018) and Field et al. (2021), while Jayachandran (2020) provides a review.

Our results show that a one-time transfer significantly improves outcomes among the poor. We find that weekly business profits double relative to control (from a naturally low base given the depressed economy), restoring approximately one-third of the initial decline observed between January and May 2020. Household food expenditures also rise by 8 percent relative to control. While the initial COVID-19 shock was substantial, firm profitability fluctuates substantially over our study period as well. A particularly pronounced downturn started in June 2020 when cases started increasing rapidly and the government tightened restrictions on non-essential businesses. Indeed, we see profit and food expenditures in the control group drop by 36 and 13 percent, respectively, compared to the weeks before. We use this to study variation in the treatment over time. We find that the treatment effect is most pronounced in precisely this period, with the treatment effect on profit increasing by 68 percent. The impact on food spending is twice as high during this period. Thus, the one-time cash transfer both recoups lost profit and allows entrepreneurs to more effectively smooth consumption.

We note, of course, that there is an existing literature studying cash transfers in “normal” times, though the goals of this literature differ from our study.<sup>2</sup> Even setting that difference aside, whether or not the impact of an intervention conducted under normal conditions provides a reliable estimate of the impact in exceptional circumstances is itself an empirical question. [Rosenzweig and Udry \(2020\)](#), in particular, urge caution in interpreting any intervention divorced from the aggregate state of the economy from which it is derived. This fact differentiates our work in two ways. First, it need not be the case that the gains observed in other studies hold in the current crisis given the constraints on both customer demand and firm operation. Second, and particularly relevant to COVID-19, endogenous responses to treatment may affect public health and the progression of the epidemic itself.<sup>3</sup> Along these lines, we find that treated firms are 5 percentage points more likely to be in operation and remain open for an additional half hour per day. Thus, at least at the level of transfer we deliver, we find little evidence that the treatment generates the “shut down as a luxury” effect hypothesized in both policy and the popular press (e.g. [Glassman et al., 2020](#)). Instead, there is a potential tradeoff between economic and public health that must be considered when designing policy in this context.<sup>4</sup>

Although firms that remain or re-open in response to the intervention might become additional vectors of disease, the cash provided by the treatment might also allow them to invest in personal protective equipment (PPE, such as hand sanitizers and masks) or adopt other behaviors that mitigate the public health risk. We find evidence that entrepreneurs in the treatment group increase spending on personal protective equipment by 17 percent and increase an index of mitigation practices such as hand washing and mask wearing by 0.23 standard deviations. Moreover, we find that these effects depend critically on the beliefs. Among those who believed the coronavirus to be no more

<sup>2</sup> For example, [de Mel et al. \(2008\)](#) uses cash transfers to measure the average return to capital, [Blattman et al. \(2014\)](#) studies whether cash allows individuals to start a business and thus escape a poverty trap, and [Egger et al. \(2020\)](#) studies the general equilibrium effects of large transfers at the village level. Our focus is on the short-run stabilization effect of cash transfers.

<sup>3</sup> This point has been formalized in “behavioral” or “economic” susceptible–infected–recovered (SIR) models (see, for example, [Eksin et al., 2019](#); [Atkeson et al., 2021](#), and references therein).

<sup>4</sup> We do not attempt to quantify the optimal tradeoff of these forces within the context of our RCT, as we were unable to collect relevant health and interaction data. These moments are necessary to credibly estimate the properly-modified SIR model that would be required to study the overall welfare change induced by this tradeoff. See [Alvarez et al. \(2021\)](#) and [Acemoglu et al. \(2020\)](#) among many others for theoretical and quantitative evaluations of such tradeoffs. [Alon et al. \(2020b\)](#) quantitatively evaluate such in a model for developing countries.

deadly than the seasonal flu at baseline, we observe no change in PPE spending or practices. This implies a potentially important and policy-relevant complementarity between cash transfers and information campaigns, such as [Banerjee et al. \(2020a\)](#), to minimize health risk without stifling the social insurance benefits of cash transfers.

### 1.1. Related literature

This paper speaks to two closely related literatures. The first is the explosion of work around the impact and potential policy responses to COVID-19. This has taken many forms, including studies on optimal shutdown policies ([Alon et al., 2020b](#)), the development of targeting tools to prevent leakage ([Blumenstock, 2020](#)), mask wearing ([Abaluck et al., 2021](#)), and the role played by pensions ([Bottan et al., 2021](#); [Banerjee et al., 2021](#)).

More closely related is work focused on the delivery of unconditional cash to households. Most of this work focuses on transfers to households, such as [Londoño-Vélez and Querubín \(2022\)](#), finding small but positive effects on measures of household well-being. We advance this growing body of work in two ways. First, we focus on outcomes for the main income-generating activity of the poor, microenterprise operation. Given the interaction between household and firm accounts common among the poor, we view this as an important margin regardless of whether the transfer is officially delivered to the household or firm. A number of our results highlight the interaction of these two. Moreover, by conducting our own surveys and operating our own RCT, we can add granularity that help highlight relevant mechanisms. For example, we study the interaction of decisions with beliefs about COVID-19 severity. These informal microenterprises do not show up in government firm censuses and rarely are details like beliefs available. More closely related is work by [Banerjee et al. \(2020b\)](#). Like us, they study firms, though in rural Kenya where there are likely substantial differences in density, the impact of the COVID-19 demand shock, and other economic features are likely different than the urban setting we focus on here.<sup>5</sup> Moreover, they study an ongoing universal basic income program, meaning that firms were already treated when COVID-19 began. We focus on a new, unexpected transfer program. Thus, we view our results as filling an important policy-relevant gap in this growing literature.

Work that focuses more broadly on cash transfers to firms focuses almost exclusively on long-run development concerns like poverty traps or other sources of misallocation ([de Mel et al., 2008](#); [Blattman et al., 2014](#)). Yet low fiscal capacity in many developing countries leaves open an important role for short-term, well-timed cash transfers ([Jensen, 2019](#)). We contribute to this literature by addressing this issue, as the impact of a cash transfer in the middle of a substantial economic depression need not have any relation to those delivered during normal times, especially if demand is constrained (e.g. [Rosenzweig and Udry, 2020](#)). [De Mel et al. \(2012\)](#) study the role of cash transfers in response to a major tsunami in Sri Lanka, but the literal destruction of capital has little relation to the COVID-19 crisis. As such, we add new evidence to a broad literature on social safety nets in developing countries. See [Hanna and Olken \(2018\)](#) for a recent review.

## 2. Economic environment during the study

Dandora is a dense, urban settlement in Nairobi with 150,000 residents. It is the site of a sprawling 30 acre trash dump that services all of Nairobi despite being declared full in 2001, and its pollution plays a major role in poor health and respiratory issues among its residents ([Kimani, 2007](#)). This, along with the density of Dandora and

<sup>5</sup> The Kenyan government explicitly forbade movements out of Nairobi to rural areas with the goal of minimizing the virus spread. Thus, the government similarly acknowledged these spatial differences.

surrounding settlements, lead to substantial anxiety that COVID-19 would spread quickly among its residents. As approximately 59 percent of all cases in the “first wave” were in Nairobi county (Kenya Ministry of Health, 2020), these concerns seem well-founded.

In response to the first confirmed case in Kenya on March 13, 2020, the government instituted a series of measures designed to limit personal interactions. On March 15, a curfew and travel ban were simultaneously announced. All bars and restaurants were ordered not to provide seating to customers and only offer food to go on March 22. On April 6, movement into and out of Nairobi was suspended for 21 days. We return to these policy changes in the next section to study how they affect the impact of the intervention.

Our sample focuses on female entrepreneurs living in Dandora. In addition to making up the majority of small businesses in the area, qualitative survey evidence shows women bearing the brunt of the economic impact in Dandora and other slums surrounding Nairobi (Population Council, 2020). Combined with the fact that these female-run microenterprises are substantially less profitable than those run by men (Brooks et al., 2018), this suggests a particular vulnerability to such an economic downturn among Dandora women.

### 2.1. Economic contraction and policy response

The COVID-19 shock and associated government response were felt across Kenya, including Dandora. We find that average profit declines by 47 percent between January and late April 2020. These findings are consistent with the expectations and qualitative responses observed at baseline. Eighteen percent of our sample had closed their businesses between January and May 2020 at least temporarily, while 47 percent expected the COVID-19 crisis to shut down their business, at least temporarily.

Like most governments, the Kenyan government was aware that the aforementioned restrictions were likely to cause economic hardship. In response, they simultaneously implemented a number of policies designed to partially stabilize incomes. These policies included tax relief to the poorest earners and a reduction of income tax in mid-March. As of April 1, 2020, the government suspended the listing of negative credit information with the Credit Reference Bureau 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 and an elimination of mobile transfer fees.

These policies, however, provided little relief to many of the most vulnerable microenterprises and households with who are less connected to the formal economy, which is a common issue in designing a social safety net in developing countries. In our baseline survey conducted in April–May 2020, only 17 percent of business owners had received any government relief. Few, for example, utilize the formal loan market or pay taxes, implying little direct benefit from the implemented policies. 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.

A final question is the margins that COVID-19 affected. We asked respondents about the business harms caused by COVID-19 (data collection is detailed in the next section). Thirty-seven percent of control firms mentioned an increase in costs from their suppliers. On the other hand, 80 percent highlighted a lack of customers and 43 percent noted that the instituted curfews in Nairobi decreased demand from customers at night.<sup>6</sup> Thus, the COVID-19 shock has elements of both

a supply and demand shock, with perhaps a greater salience of the demand-side given that nearly all respondents mention some demand issue. We use Section 4.3 to expand on this discussion in terms of treatment effects after detailing the main results.

### 3. Data collection and experimental design

From October 2019 to January 2020, we were conducting an in-person cross-sectional survey of 4,500 female-run microenterprises in Dandora for a separate research project. As COVID-19 began to spread around the world, we drew a sample from this group to study the impact of a quick and one-time unconditional cash transfer as a response to the economic downturn. We selected 800 women to be part of the study. Of those, 753 were successfully enrolled. Those 753 were then randomized into treatment (367) and control (386). We then began a continuous data collection process on April 23, 2020. Starting on that date, we contacted each participant by phone to collect another pre-treatment data point. At the end of that survey round, we informed the participant if she was in the treatment group.

Immediately following the completion of this survey wave, we re-randomized the call list and began contacting individuals again. Our enumeration team moved through the list, with each participant either completing the survey or recording 4 unsuccessful contact attempts (on 4 consecutive days). Once this was complete, the list was re-randomized and begun again. We refer to the completion of this procedure as a “wave” of the survey. Each wave took approximately two weeks, and on average, we have 6 observations per participant after completing data collection in August 2020.

The goal of this high frequency data collection was to capture the fast-moving response both of the coronavirus and to better trace the impulse response to the initial shock. As such, all flow variables are recorded with one week recall.

Cash transfers were delivered in the first two weeks of May 2020 by mobile money (M-PESA). 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.

Fig. 1 summarizes this data collection timeline, indicates the time at which the cash was delivered, and plots the daily cumulative of COVID-19 cases in Kenya from the World Health Organization COVID-19 Dashboard (World Health Organization, 2020). Our treatment is delivered immediately preceding the high growth rate period of cases, and our data collection period covers most of the initial COVID-19 wave in Kenya.

In the Online Appendix we provide 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. In addition, in the Online Appendix we estimate the relationship between the number of surveys completed and observable characteristics of participants. Treatment status is uncorrelated with number of responses or attrition. The only statistically significant predictor of the number of responses is age, and the magnitude is small. Moving from the fifth percentile (age 25) to ninety-fifth percentile (age 58) of the age distribution predicts 0.53 additional surveys.

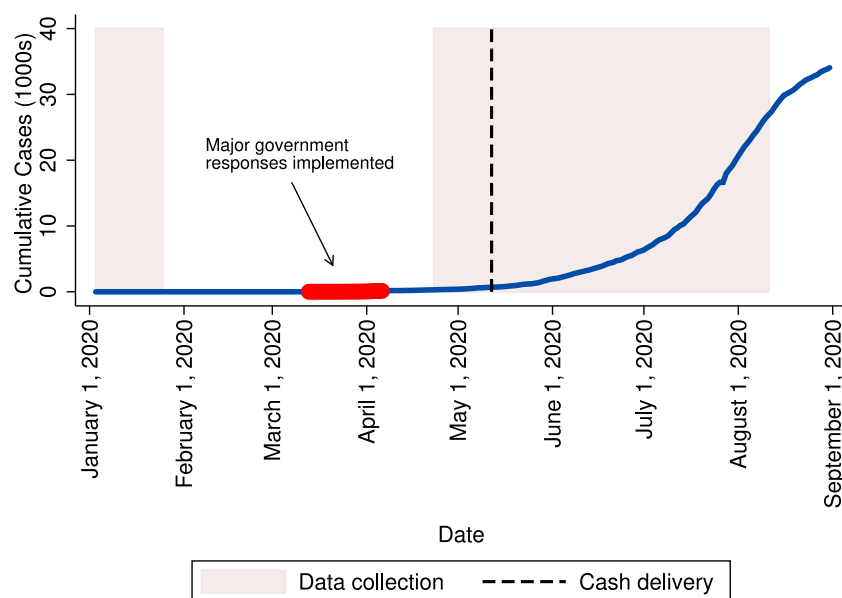
### 4. Empirical results

Our main specification takes the form

$$y_{it} = \beta T_{it} + \theta_i + \gamma_t + \varepsilon_{it}, \quad (4.1)$$

where  $y_{it}$  is some outcome for individual  $i$  at wave  $t$ ,  $T_{it} = 1$  if  $i$  is treated at wave  $t$ , and  $\theta_i$  and  $\gamma_t$  are individual and wave fixed effects. Standard errors are clustered at the individual level. We focus on the continual data collection from April–August 2020, though the results

<sup>6</sup> Customers were free to offer as many answers as they wanted, hence the percentages need not sum to one.



**Fig. 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 World Health Organization (2020) beginning on January 3, 2020. It further includes our data collection periods (shaded area) and cash delivery date (dashed line).

**Table 1**

Economic and business outcomes.

OUTCOMES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	0.990*** (0.255)	0.762*** (0.243)	1.515*** (0.309)	0.080** (0.041)	0.056** (0.027)	0.176** (0.080)
Observations	4,046	3,996	3,997	4,019	4,112	4,052
R-squared	0.011	0.007	0.011	0.014	0.007	0.011
Ind FE	Y	Y	Y	Y	Y	Y
Control Average	4.967	6.481	4.405	8.176	0.829	2.262

All measured in as inverse hyperbolic sines except *Open*.

Standard errors clustered at the individual level in parentheses.

Control averages taken over entire time period of study.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

are robust to the inclusion of the earlier baseline data from January 2020.

For non-indicator variables we trim outcomes at 1 percent to eliminate misreporting and outliers. We report relevant variables (e.g., profit, revenue, etc.) as inverse hyperbolic sine (IHS) transformations, allowing coefficients to be interpreted as approximate growth rates without dropping zeros that would generate misleading results during this period.<sup>7</sup> With the IHS caveat noted, we will refer to these treatment effects as percentage changes. All monetary values are reported in KES (with a nominal exchange rate of 106 KES = 1 USD during the study period).

Additional robustness on both the regression specification and the adjustments to outcome variables are provided in the Online Appendix, and our results do not rely on the choices made here.

#### 4.1. Economic and business impact of the UCT

Table 1 reports the average treatment effects of the intervention on business and household outcomes.

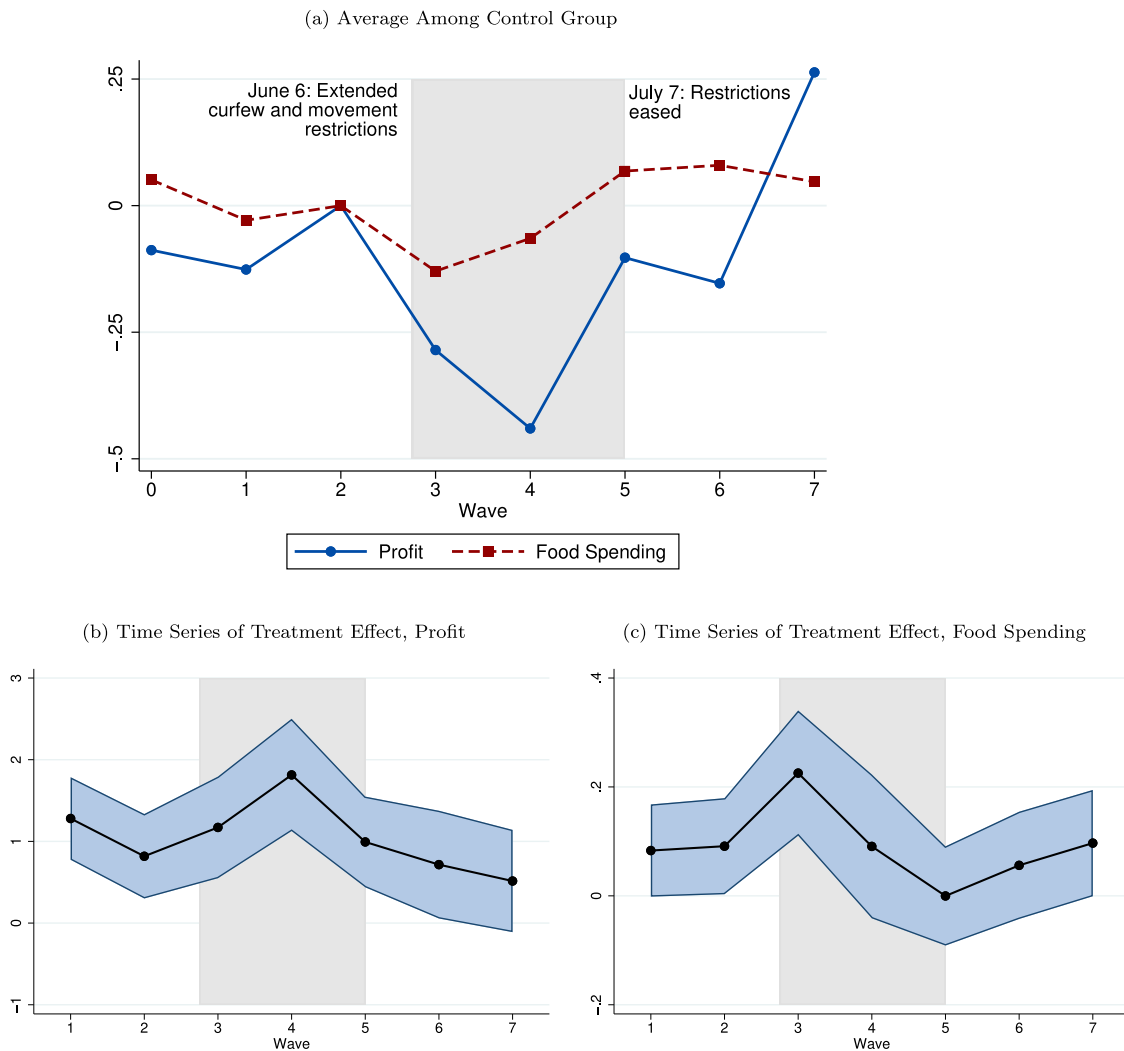
<sup>7</sup> The derivative of natural log is  $1/x$  and the derivative of inverse hyperbolic sine is  $1/\sqrt{1+x^2}$ , so that if  $x$  is large and positive,  $1/\sqrt{1+x^2} \approx 1/|x| = 1/x$ .

We observe a substantial increase in profit, revenues, and inventory spending within treated businesses. Profit doubles relative to control, with a point estimate of 0.99 ( $p = 0.000$ ). A different way to interpret this change is that it recoups 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 152 percent ( $p = 0.000$ ), while some is used for consumption, with food expenditures increasing by 8 percent ( $p = 0.072$ ).

Yet, the results show that the treatment also induces businesses to operate more intensively on average. Firms are 6 percentage points more likely to be open ( $p = 0.046$ ) and are open 18 percent longer per day ( $p = 0.050$ ). This occurred at the same time that the government was taking action to reduce interpersonal interaction. Hence, this effect may work against the government’s public health objectives. We return to the COVID-specific tradeoffs embedded in this result in Section 4.2.

##### 4.1.1. Variation over time

Our previous results show that the UCT helps stabilize income in the immediate aftermath of the shock. However, after the treatment delivery, the Kenyan government was instituting and removing various restrictions in response to rapidly-changing public health conditions. A particularly important period of this response was during June and early July, when it was clear that the virus was likely to become a



**Fig. 2.** Evolution of Food Expenditures and Profit. *Figure notes:* Figure (a) plots the evolution of average profit and food expenditures among control firms. Figures (b) and (c) plot the evolution of the treatment effect over time along with the 95 percent confidence interval, derived as  $\hat{\beta}_t$  from the regression  $y_{it} = \theta_i + \sum_{t=1}^7 \beta_t(T_{it} \times \mathbf{1}[wave = t]) + \gamma_t + \varepsilon_{it}$  with standard errors clustered at the individual level. The gray shading indicates the period of severe lockdown procedures in Nairobi.

lasting and global pandemic.<sup>8</sup> Those restrictions were eventually lifted on July 7, 2020, along with loosening of restrictions on air travel and religious worship.

To study the dynamics of business outcomes, we divide our sample period into the waves of the survey.<sup>9</sup> Fig. 2(a) shows the evolution of IHS food expenditures and profit among the control group by survey wave. The vertical axis shows changes in those outcomes for the control

group relative to wave 2 (which covers surveys conducted May 27–June 9). This shows that this period of heightened restrictions was particularly damaging to business profit in the control group.

Motivated by this observation, we ask if the treatment has a differential effect during this period when interaction is more limited. Figs. 2(b) and 2(c) begin with the evolution of the treatment effect over time, derived from the regression estimates  $\hat{\beta}_t$  in the regression

$$y_{it} = \sum_{t=1}^7 \beta_t(T_{it} \times \mathbf{1}[wave = t]) + \theta_i + \gamma_t + \varepsilon_{it}.$$

Both peak during this restricted period.<sup>10</sup> We test this systematically by defining a variable called “Restricted” that is equal to 1 during the period of heightened restrictions and interact it with the treatment indicator. We present evidence in Table 2 that the treatment effect is

<sup>8</sup> Low case counts in April and May created some hope that the initial restrictions would be short-lived, a fact reflected in much of the media reporting around this time. While Kenya had amassed 535 cumulative cases by May 6, there were 1,984 new cases reported between May 6 and June 6 alone (World Health Organization, 2020).

<sup>9</sup> As noted in Section 3, a wave began when the list of all participants was randomized, and was completed when each participant had either been surveyed or four attempts to contact them were completed. When a wave was completed, the next wave began again immediately.

<sup>10</sup> The remaining outcomes are provided in Appendix.

**Table 2**  
Timing variation in economic outcomes.

VARIABLES	(1) Profit	(2) Revenue	(3) Inventory Expenditures	(4) Food Expenditures	(5) Open	(6) Daily Hours
Treat	0.884*** (0.260)	0.650*** (0.246)	1.558*** (0.315)	0.065 (0.042)	0.050* (0.027)	0.153* (0.081)
Treat xRestricted	0.604*** (0.233)	0.637*** (0.237)	-0.193 (0.320)	0.084* (0.048)	0.040 (0.025)	0.135* (0.075)
Observations	4,046	3,996	3,997	4,019	4,112	4,052
R-squared	0.014	0.010	0.013	0.016	0.011	0.014
Ind FE	Y	Y	Y	Y	Y	Y

Flow variables measured as inverse hyperbolic sines in KES.  
Standard errors clustered at the individual level in parentheses.  
Control averages taken over entire time period of study.  
\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

larger along a number of dimensions during this period, consistent with the transfer increasing household wealth and allowing for more consumption smoothing. We find that the treatment effect is larger in terms of profit, revenue, food expenditures, and hours open. In addition, we find an additional 4 percentage point increase in being open during this period ( $p = 0.115$ ), but the effect slightly above standard cutoffs for statistical significance. We find no differential impact on inventory expenditures ( $p = 0.547$  on the interaction), consistent with the more forward-looking nature of that choice.

The results in this section show two key results. First, the one time transfer helps recoup some of the lost income during the initial economic shock. In our context of COVID-19, the cash transfer causes business to regain approximately one-third of the average decline in profit between January and May 2020. Moreover, that same one-time transfer helps most during the period in which restrictions on interaction were most intense.

**4.2. COVID-19 preventative measures**

As formalized in a number of recent papers extending standard SIR models, individual decisions concerning economic well-being and physical health are endogenous. Therefore, adjustments to one potentially effect the other, a key feature of the pandemic. An implication of this is that economic policy cannot be considered separately from public health policy. In our context, we find that the UCT induces owners to open their businesses and operate them more intensively relatively to the control group at precisely the time when this is likely to increase public health risk. The risks, however, can be mitigated by the entrepreneurs' actions and investments in sanitation, particularly when they have additional cash on hand to purchase PPE, sanitizer, and soap. To study this policy-relevant trade-off in more detail, we document the extent to which the treatment induces changes in mitigation practices, and also highlight the potential complementarity with other interventions that have been proposed and utilized in the fight against COVID-19.

We consider two measures of health risk mitigation: spending on personal protective equipment (PPE) in the past week and an index of public health-related management practices. The latter is constructed from 9 practices related to safe business operation, measured as the z-score.<sup>11</sup>

Columns (1) and (3) in Table 3 show the average effect on both mitigation measures. We find that despite causing businesses to remain open and operate more intensively, the treatment also causes them

<sup>11</sup> We construct an index of these practices by counting the number implemented and normalizing by baseline levels. Specifically, we construct the z-score for individual  $i$  at time  $t$  as  $(\sum_{j=1}^9 \mathbb{1}_{ijt} - \mu_0) / \sigma_0$ , where  $\mathbb{1}_{ijt} = 1$  if individual  $i$  implemented practice  $j$  at week  $t$  and the mean and standard deviation are from baseline responses. The Online Appendix provides the 9 practices considered and adoption of these practices at baseline.

**Table 3**  
COVID-19 health practices.

VARIABLES	(1) PPE expenditures	(2) PPE expenditures	(3) Protective measures (z-score)	(4) Protective measures (z-score)
Treat	0.170** (0.069)	0.223*** (0.075)	0.225*** (0.082)	0.286*** (0.090)
Treat xLow Belief of Risk		-0.245** (0.102)		-0.292** (0.115)
Observations	3,243	3,210	4,112	4,066
R-squared	0.064	0.066	0.045	0.047
Ind FE	Y	Y	Y	Y
Control Average	5.858	5.858	0.182	0.182

Columns (1) and (2) are measured as IHS.  
Columns (3) and (4) are standardized z-score of 9 management practices designed to limit COVID-19 spread.  
Standard errors clustered at the individual level in parentheses.  
\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

to increase protective measures against the spread of COVID-19 while operating. PPE spending increases by 17 percent ( $p = 0.014$ ), while our management practices index increases by 0.22 standard deviations above baseline mean ( $p = 0.006$ ).

The results show that individuals use the transfer to remain open more safely than they had previously been operating. Using the average baseline PPE spending is 214 KES, our point estimate implies a 17 percent increase of 36 KES of spending per week. In concrete terms of particular investments, this corresponds to one 50 KES cloth mask per 1.4 weeks or a 250 KES bottle of hand sanitizer once every 6.9 weeks. The extent to which this mitigates the spread of COVID-19 requires estimates of the elasticity of viral transmission to spending, about which it was not possible to gather data.

We next turn to studying the *type* of individual who makes these changes, and link our results relate to other key COVID-19 policies.

**4.2.1. The importance of beliefs in mitigation changes**

A broad literature highlights the importance of beliefs in the take-up of health products, both during COVID-19 (Arce et al., 2021; Banerjee et al., 2020a) and under normal circumstances (Dupas, 2014). Motivated by this work, we study the importance of baseline beliefs of COVID-19 severity on the willingness to change mitigation practices. Throughout the study, we ask participants to state their belief about the mortality risk of COVID-19.<sup>12</sup> We find substantial variation, with over

<sup>12</sup> The specific question asked if 5,000 people contracted COVID-19, how many do they believe would die? Participants were given options that had both a number and a disease with that mortality risk. The lowest risk option was a common cold (< 1 death in 5,000 cases) and the highest was ebola (4,000 deaths per 5,000 cases).

20 percent believing COVID-19 to be no more deadly than the seasonal flu and over 50 percent believing it more deadly than typhoid.<sup>13</sup>

We study the importance of these beliefs for willingness to change behavior by interacting our treatment with a “low belief of risk” indicator, which is equal to 1 for those with a baseline belief that COVID-19 mortality is no greater than the seasonal flu. This is measured at baseline, pre-treatment.<sup>14</sup> We interact this indicator with the treatment indicator with the results in columns (2) and (4) of Table 3. Among those with low perceived risk, the interaction term has the opposite sign and similar magnitude to the treatment variable. The net effect is that those with low perceived risk of COVID-19 severity do not change preventative practices, while those with a higher assessment increase PPE spending and mitigation practices.<sup>15</sup>

The results provide new evidence on the relationship between beliefs and cash transfers in managing the relationship between economic and public health during short-run stabilization policy, and suggests important complementarity with information interventions (e.g. Banerjee et al., 2020a). Together, such a suite of policy adjustments may be able to induce safer re-opening without eliminating the economic gains generated by the UCT.<sup>16</sup>

#### 4.3. Discussion of mechanisms

We discussed in Section 2.1 that the COVID-19 downturn had elements of both supply and demand shocks, at least in terms of problems highlighted by control firm owners. Here, we attempt to better unpack some potential mechanisms. The results are provided in Appendix.

We first focus on supply-side issues. Treated firms are no more likely (or less likely) to switch suppliers. Second, treatment and control firms are equally likely to miss a sale due to lack of inputs or materials. Both of these seem consistent with the relatively larger importance of the demand channel in qualitative responses highlighted in Section 2.1.

Another possibility is that the increased spending on PPE caused the increase in profit. For examples, customers may have increased their demand for sanitary stores at which to purchase goods. We test this and find that firm owners who underestimate the risk of COVID-19 actually see a larger treatment effect on their profit. However, they see no change in food expenditures relative to the control. Increases in food expenditures is concentrated among those who do not underestimate COVID-19's risk. Thus, one possibility is that, informed by their own beliefs, these firm owners place different marginal returns on different expenditure categories and react accordingly.

#### 4.4. Other forms of heterogeneity

Our results show that there substantial impacts from an unconditional cash transfer during a particularly severe economic downturn. As it relates to COVID-19, there is little existing evidence on how such a transfer impacts microenterprise owners and many hypotheses on how it should. We explore various margins of heterogeneity in Appendix.

<sup>13</sup> The histogram of responses is provided in the online appendix.

<sup>14</sup> In the Appendix we test whether these beliefs respond to treatment. We do not find any changes along this dimension.

<sup>15</sup> As with any type of research around externality-producing activities, social desirability bias may be present in these responses. That said, it would have to take a particular form to explain our results. It would have to be the case that the bias is largest in treated owners that have relatively high perception of COVID-19 severity, then approximately equal among the average control owners and treated owners who have relatively low perceived risk of COVID-19.

<sup>16</sup> Relatedly, in a large-scale RCT on free mask delivery in Bangladesh, Abaluck et al. (2021) that information nudges at the household level do not increase proper mask wearing (conditional on a free mask), but promotion and reminders at the market-level do seem to matter.

Our main finding from these results are that married women see a smaller impact on their profit, with a treatment effect half that of an unmarried women ( $p = 0.036$ ). Moreover, treated married women are no more likely to be open than control owners and have similar daily hours. Food expenditures are similarly lower, but noisily estimated. One possibility is that this is a function of intra-household bargaining or the particular costs of the pandemic borne by married women.<sup>17</sup> The alternative is that they use the transfer for higher marginal value activities other than their business. Indeed, over 40 percent of treated firm owners claim that at least part of the transfer is spent directly on household items (food, rent, etc.).<sup>18</sup>

We lack the data to probe these questions more deeply, and therefore caution the interpretation of these effects as a measure of household welfare. We note that better understanding this heterogeneous impact in the context of emergency transfers is an important avenue for future work.

## 5. Conclusion

This paper provides new experimental evidence on the impact of a one-time cash transfer during a severe global downturn. We utilize mobile money to deliver transfers to female micro-entrepreneurs in Dandora, Kenya, a group that was both particularly vulnerable to the economic consequences of the COVID-19 pandemic and received little assistance from the government and NGOs.

This paper helps to inform the recent debate about policy responses to COVID-19. Our results show that UCTs are effective at helping microenterprise owners maintain their livelihoods and engage in consumption smoothing when needed public health measures are taken. Profit increases by 40 percent, making up approximately one-third of the decline observed during the initial shutdown implemented by the Kenyan government, while simultaneously increasing inventory and food consumption. We further find that mitigation practices increase, but only among those with sufficiently high beliefs about COVID-19's severity. Thus, our results bring new evidence on the potentially important complementarity between information and economic interventions. These results demonstrate that UCTs may play an important role in mitigating the economic costs of a public health crisis for entrepreneurs who make up a large part of the urban workforce in developing countries.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Data availability

Replication files available at <https://doi.org/10.17632/zs5p47vx8k>

<sup>17</sup> Field et al. (2021), for example, shows how the structure of the household may impact outcomes in normal times. Moreover, the large cost of the pandemic on women has been pointed out in many developed countries (Alon et al., 2020a) and corroborated locally with qualitative survey evidence in Kenya (Population Council, 2020).

<sup>18</sup> Almost no one claims it was given directly to a spouse (1 individual) or a friend (3 individuals). Sixty-three percent claim it was used on business activities. Though these categories are not exclusive, there is a correlation coefficient of  $-0.40$  between reporting spending on household items versus business items.

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## Appendix A. Supplementary data

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.jdeveco.2022.102929>.

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