Economic and Psychological Effects of Health Insurance and Cash Transfers: Evidence from a Randomized Experiment in Kenya*

Johannes Haushofer†, Matthieu Chemin‡,
Chaning Jang§, and Justin Abraham¶

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Abstract

We use a randomized experiment in Nairobi to compare the effect of free health insurance to an unconditional cash transfer of the same value and a control group. Despite high baseline rates of injury and illness, the median insurance taker does not use the insurance. We observe no significant effects of either insurance or cash on economic outcomes, self-reported health, and healthcare utilization. We find some evidence that the provision of health insurance reduced levels of self-reported stress and the stress hormone cortisol relative to cash and control. This result suggests that insurance may have a "peace of mind" effect, although the most conservative bounds for attrition and multiple inference correction render it statistically insignificant. Together, our results suggest that health insurance may reduce stress in our setting, but its benefits are otherwise limited.
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†Princeton University, NBER, and Busara Center for Behavioral Economics. Corresponding author. haushofer@princeton.edu. Contributed equally.

‡McGill University. matthieu.chemin@mcgill.ca. Contributed equally.

§The Busara Center for Behavioral Economics. chaning.jang@busaracenter.edu.

¶University of California, San Diego. jabraham@ucsd.edu

1. Introduction

Recent years have witnessed a surge in research testing the effect of interventions on welfare outcomes in developing countries. Two prominent candidate interventions are unconditional cash transfers (UCTs) and health insurance. Which of these two interventions, health insurance or the cash equivalent, provides the greatest benefits remains incompletely understood. Health insurance is potentially welfare-enhancing because it can reduce catastrophic healthcare spending, allowing households to smooth consumption, save, and make long-term investments (Morduch, 2006). UCTs are theoretically attractive because they allow the household to allocate funds to their most productive use.

In this study, we compare the effects of free health insurance and unconditional cash transfers on economic outcomes, health and healthcare utilization, and psychological well-being in one particular setting. We conducted a randomized controlled trial with 789 informal workers in Nairobi, Kenya, in which one group received a free health insurance policy for themselves and their families for one year, a second group received an unconditional cash transfer worth the retail price of the insurance, USD 338 PPP on average, and a third group received no intervention.

Three features distinguish our studies from previous research. First, our study is the first to directly compare health insurance to UCTs, allowing us to assess how different outcomes respond to each of these interventions. Many randomized evaluations compare policy interventions against a pure control group, but given a range of policy options, the relevant counterfactual should be a *different* intervention. Our approach therefore has the potential to provide more policy-relevant evidence. In addition, by using UCTs as a comparison intervention, we follow recent suggestions to use cash as a "benchmark" intervention which can be used to compare the effects of alternative interventions across contexts (Shapiro, 2014).

Second, previous studies of health insurance in developing countries face a dilemma: if providers charge for the insurance product, takeup is often low, raising concerns about selection and statistical power (Field, Thornton, Hyatt, Islam, & Solis, 2010). If providers offer subsidized insurance, takeup is higher, but they now measure the income effect in addition to the effects of insurance per se (King et al., 2009; Ansah et al., 2009). In our study, the UCT treatment controls for the income effect of receiving free insurance, while achieving high takeup of insurance.

Finally, health insurance may not have effects on health, healthcare utilization, or economic outcomes when individuals have access to credit markets or

informal insurance. In these cases, health shocks can be dealt with despite a lack of insurance, and providing insurance may do little more than induce substitution towards formal healthcare (Field et al., 2010). However, this view neglects that insurance may provide a *psychological* benefit by reducing the expected impact of health shocks. Our final innovation is to measure carefully the effects of insurance and UCTs on psychological well-being. We achieve this through self-reported questionnaires on stress and depression, and by measuring levels of the stress hormone cortisol, both before and one year after the provision of health insurance and UCTs. In addition, our survey measures a broad set of economic, health, and healthcare utilization outcomes.

A year after the beginning of the intervention, we find no statistically significant impacts of either health insurance or UCTs on most economic outcomes, and few effects on health and healthcare utilization. Specifically, among our pre-specified main outcomes, an index of asset ownership is slightly increased in the insurance and UCT groups relative to the control group, but neither effect is significant at the 5 percent level, and neither is the difference between them. We also find no significant effects on an index of production and labor mobility, nor on an index of job risk. For all outcome indices, standard errors are on the order of 0.1 SD, allowing us to rule out moderate and large but not small treatment effects.

Similarly, health outcomes were not significantly affected by the insurance treatment. We observe a small reduction in self-reports of being sick or injured in the past month, and a small increase in the likelihood of having consulted a doctor in the past month, but these effects are not statistically significant. The UCT group experiences improvements in some health outcomes, such as a 9 percentage point reduction in the percentage of children in the household who were sick in the past month ($p < 0.05$, control: 23 percent), and an 8 percentage point reduction in the probability that any household member was hospitalized in the past year ($p < 0.10$, control: 30 percent); however, other outcomes are unaffected. Most health outcomes are measured in shares or as indicator variables and have standard errors of around 0.03–0.05, again allowing us to rule out moderate and large but not small treatment effects.

Thus, neither health insurance nor UCTs had strong effects on economic, health, and healthcare utilization outcomes. These results contrast with recent evidence that UCTs increase asset holdings, consumption, and psychological well-being among recipients (Blattman, Fiala, & Martinez, 2013; Baird, McIntosh, & Özler, 2011; Baird, de Hoop, & Özler, 2013; Haushofer & Shapiro, 2016; Kilburn, Handa, Angeles, Tsoka, & Mvula, 2018; Eyal & Burns, 2019; Angeles et al., 2019),

and suggest that when UCTs are relatively small compared to existing programs they may have limited effects.[1] Our findings on health insurance are in line with existing evidence suggesting that health insurance provision has limited effects on health outcomes (Field et al., 2010; Ansah et al., 2009; King et al., 2009; Dow & Schmeer, 2003; Brook et al., 1983; Finkelstein et al., 2012; Baicker et al., 2013).

We observe suggestive evidence of a decrease in stress in the insurance group: this group shows a 0.29 SD decrease in self-reported stress as measured by the Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), and a 16 percent reduction in cortisol levels relative to control. There is no such reduction in the cash group, and most specifications show a significant difference in cortisol levels between the insurance and cash groups. The effect on cortisol accounts for roughly 60 percent of the difference in morning cortisol levels between depressed and non-depressed individuals reported by a recent meta-analysis (Knorr, Vinberg, Kessing, & Wetterslev, 2010). These effects are specific to stress and do not extend to other measures of psychological well-being, resulting in no significant effect on an overall index of psychological wellbeing. In addition, the effects are not robust to conservative bounds for attrition. We therefore consider them suggestive only.

This possible reduction in stress and cortisol levels complements a small number of existing studies on the effect of health insurance and cash transfers on stress and cortisol: (Baicker et al., 2013) find a 31 percent reduction in depression among insurance beneficiaries in the Oregon Health Insurance Lottery; (Haushofer & Shapiro, 2016) find a decrease in cortisol levels of similar magnitude as the one we observe for insurance after a USD 1,520 PPP cash transfer, but no effect with USD 400 PPP cash transfers. In line with this literature, we find no reduction in stress with a USD 338 PPP cash transfer. Our study also complements existing work on the effect of droughts and weather insurance on worries and cognitive performance: Lichand and Mani (2016) find that a prime related to an uninsured risk of drought increases worries and decreases cognitive performance.

What might be the channel through which insurance, but not the cash equivalent, reduces self-reported stress and cortisol levels? We consider several candidate mechanisms that might underlie the effect. First, as described above, we find no evidence that insurance improved economic outcomes such as asset holdings or consumption, arguing against the possibility that improvements in economic outcomes led to decreased stress and cortisol levels. Second, insurance provision did not improve health care utilization or health status: the cash and control groups

[1]Each of our interventions was worth USD 338 PPP per family, while e.g. GiveDirectly, the program studied in Haushofer and Shapiro (2016), makes transfers of up to USD 1500 PPP.

visited health facilities just as often as the insurance group and were equally likely to be sick one year after the interventions. The reduction in stress also does not depend on usage of the insurance product: we find an equivalent reduction in stress for both users and non-users, using propensity score matching to create comparable groups. Third, variables that can confound cortisol levels, such as eating, drinking, and exercise, also do not account for the treatment effect of insurance on cortisol levels, as controlling for these variables does not change our estimates.

The most plausible mechanism for the effect of insurance on stress and cortisol levels is a "peace of mind" effect that results from merely having coverage, and that is not produced by receiving a cash transfer of equal magnitude. In this sense, our findings are in line with the core insight of expected utility theory: risk-averse individuals dislike variance, and insurance reduces variance and thereby increases utility. An interesting complement to this argument is the post-hoc discovery that insurance recipients sleep significantly longer than the control group.

The remainder of the paper is structured as follows. Section 2 describes the insurance policy and cash transfer. Section 3 outlines the experimental design. Section 4 lays out the econometric framework. Section 5 presents the main results, and Section 6 concludes.

2. Interventions

To identify the causal impact of health insurance and cash transfers on health and welfare outcomes, we randomized a sample of informal workers into two treatment groups and one control group. The first treatment group received an insurance product free of charge, while the second treatment group received an unconditional cash transfer equal to the cost of the insurance. Comparing the two treatment arms controls for any income effect of insurance, and allows us to evaluate the impact of providing insurance relative to a cash transfer. The control group received no intervention. IRB approval was obtained at the Kenya Medical Research Institute (protocol 171) and Princeton University (protocol 6799).

2.1 Health insurance

Respondents in the insurance group were enrolled in the *Afya Bora* plan, a combined inpatient and outpatient family health insurance policy offered by the Cooperative Insurance Company (CIC). These treated households were eligible for inpatient benefits of up to USD 6,437 PPP per family that covered the costs of a broad array of services, including hospital accommodation, doctor's fees, rou-

tine lab tests, UCI charges, medications, and maternity services. Chronic and pre-existing conditions were covered up to USD 1,931 PP. Households were also eligible for outpatient benefits of up to USD 1,287 PPP per family that covered routine outpatient consultations, medication (including ARVs), laboratory services, pre- and post-natal care, oncology, and psychiatry and psychotherapy. Both inpatient and outpatient covers included chronic and pre-existing conditions, including HIV/AIDS, up to USD 515 PPP, but excluded treatment outside Kenya, cosmetic treatment, treatment by non-qualified persons, infertility, self-inflicted injury, experimental treatment, and dental treatment unless occasioned by accidental injury. Beneficiaries could access these benefits through CIC's network of providers that included 26 mission and faith-based hospitals in Nairobi. Full details of the insurance cover are given in Appendix A. Beneficiaries paid no more than KES 100 (USD 2.60 PPP) co-pay for each outpatient visit.

The plan provided benefits to principals and spouses under 72 years of age, and children dependents younger than 25 years with proof of enrollment in school or college. Respondents were enrolled in the *Afya Bora* plan free of charge for one year, a value of USD 328 PPP for the principal, spouse and up to five dependents. Each additional child dependent increased the annual premium by USD 52 PPP per child. The project fully covered households for the base cost and any added premium for more than five dependents. The average cost of the policy in our sample was USD 338 PPP.[2] The one-year duration of the free coverage was clearly communicated to participants at the outset. If they wished they could continue their coverage beyond the first year at the regular cost. In practice none of the participants did so.

2.2 Unconditional cash transfer

Respondents in the second treatment group received an unconditional cash transfer equal to the annual premium they would have had to pay had they enrolled in the *Afya Bora* plan. The magnitude of this transfer was USD 328 PPP for households with up to five dependents, with an additional USD 52 PPP for each dependent beyond the first five, for an average of USD 338 PPP across the sample. The transfer was delivered to recipients electronically using the M-Pesa mobile money service. M-Pesa is a mobile money system offered by *Safaricom*, the largest

[2]This study was conducted with Kenyan shillings (KES). We report USD values calculated at purchasing power parity using a conversion factor for private consumption of 38.15 in 2013. The price level ratio of PPP conversion factor (GDP) to KES market exchange rate for 2011 was 0.444.

Kenyan mobile phone operator. Using M-Pesa requires a registered SIM card and a valid Kenyan national ID card. The money was transferred from Innovations for Poverty Action Kenya's M-Pesa account to that of the recipient. To facilitate the transfers, we encouraged recipients to sign up for M-Pesa and helped them obtain, where necessary, the documents required for registration. As a consequence, encouragement to sign up for M-Pesa should be considered part of the UCT treatment. The money was transferred to the registered SIM card and the recipient could withdraw the balance at any of the large number of M-Pesa agents in Kenya by putting the SIM card into the agent's cell phone or by using their own phone. Transfers were made at the beginning of the intervention period, to parallel the fact that paying for insurance coverage would also have required a one-time upfront payment of the entire premium amount. Participants were clearly told that this was the only cash transfer they would receive, and that it was non-recurring.

3. Experimental Design

3.1 Setting

We conducted the study with workers in Kenya's informal sector, commonly known as *jua kali*, meaning "under the hot sun". Employment in *jua kali* accounts for over 70 percent of non-farm employment in Kenya (Adams, de Silva, & Razmara, 2013). The artisans, vendors, and mechanics in the *jua kali* sector face extreme vulnerability to illness, economic dislocation, and natural disasters. *Jua kali* workers supply goods to local markets using predominantly manual labor, little capital, and often handmade tools. The *jua kali* area in Kamukunji, Nairobi, where our study takes place, consists mostly of metalworkers and vendors working in hazardous conditions with minimal safety equipment. In our sample, 21 percent of the control group were sick or injured in the month prior to being surveyed. Less than 4 percent of our sample were hospitalized at baseline, and average monthly medical expenses for the respondents were USD 17 PPP. This average masks considerable heterogeneity in medical expenses; the 95th percentile of this distribution of medical expenses is USD 79 PPP, and the 99th percentile is USD 236 PPP. Thus, catastrophic health expenditures occur in our sample, and therefore health insurance might be useful. However, less than 7 percent of respondents had any type of insurance policy.

Because randomization occurred at the individual level within Kamukunji, spillovers are a potential concern. However, we worry less about spillovers in this study than in others, for three reasons. First, the core intervention which we test is

health insurance; its use is tied to the family of the recipient, and so we expect little in the way of "automatic" spillovers, such as repayments of debt which we might expect e.g. with cash transfers. Second and more importantly, the setting which we study is a workplace, not a place of living: people go there during working hours, but live elsewhere, usually quite far away and scattered across Nairobi. The potential for spillovers in the workplace is small: most of our respondents are employees and thus have little reason to spend money in the workplace. Finally, studies with comparable unconditional cash transfers have shown little evidence of spillovers at this time horizon. Most relevantly, Haushofer and Shapiro (2016) test the effect of unconditional cash transfers on a broad range of household outcomes in a similar setting. The "small" transfers in that study were USD 400 PPP, and thus not dissimilar to the USD 338 PPP transfers in the present paper – although somewhat larger both in absolute terms and in terms of purchasing power because that study happened in the countryside rather than in Nairobi – and the average transfer of USD 700 PPP was significantly larger than that of the present study. Importantly, Haushofer and Shapiro (2016) find little evidence of spillover effects at the village level, as discussed in that paper; in fact, because of the lack of such spillovers, the main comparison in that paper is between treatment and control households in the same village. It should be noted, however, that a follow-up paper found some evidence of spillovers when analyzed using treatment intensity at the village level, rather than the comparison of treatment to control villages (Haushofer, Reisinger, & Shapiro, 2019). In addition, other studies have provided some evidence of spillovers of cash transfers (Baird et al., 2013; Angelucci & De Giorgi, 2009). Therefore, to test for potential spillover effects, we run specifications in which we control for the proportion of individuals in the respondent's "shed", the workplaces into which Kamukunji is organized. Details are reported in Section 5.3.

3.2 Sampling strategy

We studied a randomly selected sample of metalworkers of the Kamukunji Jua Kali Association (JKA) in Nairobi, an organization of an estimated 4,000 *jua kali* workers. All adult JKA members working in an area of Kamukunji that made them eligible for voting rights in the JKA (those who were over age 18 and working) were eligible to participate in the study. We randomly drew 900 participants for the randomized controlled trial. These respondents were stratified into three groups by weekly household income: 313 respondents with a weekly income greater than

USD 103 PPP comprised the high income group; 300 participants with a weekly income between USD 52 PPP and USD 103 PPP comprised the middle income group; and 242 respondents with a weekly income under USD 52 PPP comprised the low income group. Within each income stratum, we randomly selected a third of respondents for one of the two treatment arms and the control group. Because only individuals with national ID cards could receive insurance, we faced differential attrition across treatment arms. We therefore exclude from our analysis respondents who did not have a valid national ID by the time we conducted the baseline survey, for a final sample size of 789 individuals. The motivation for this choice is explain in greater detail in Section 4.3.

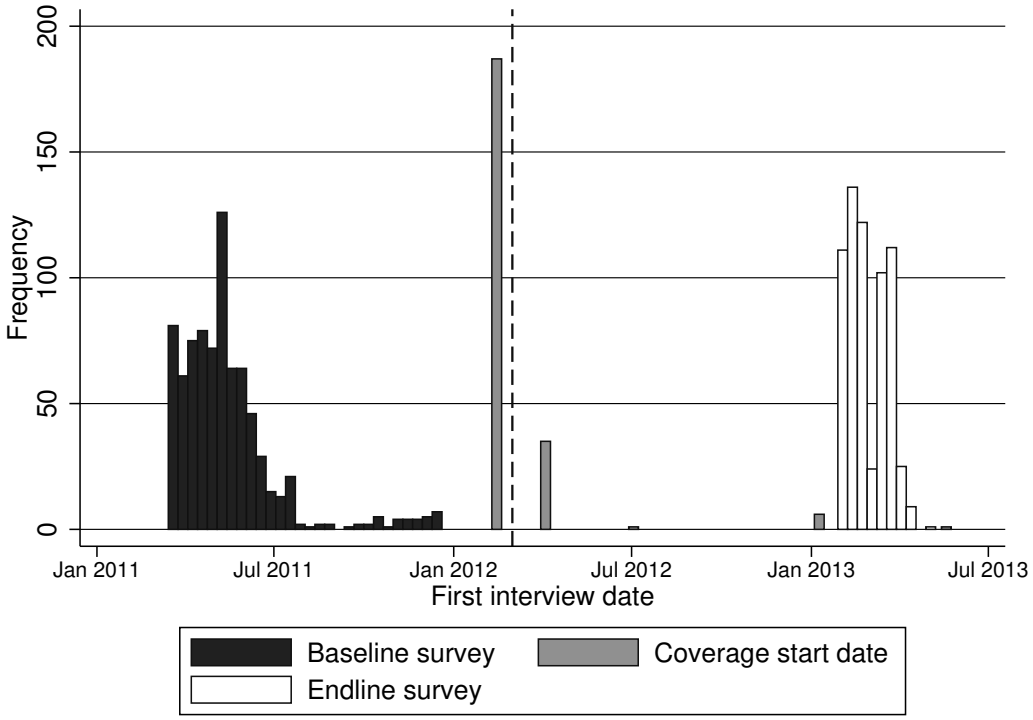
3.3 Data collection

Data collection for baseline occurred between March 2011 and December 2011. Endline data collection occurred between January 2013 and April 2013, at least one year after the baseline. Figure 1 presents a timeline of the experiment. Trained interviewers used netbooks to administer the surveys in an office at JKA or at the respondent's place of work. Respondents received KES 200 (USD 5.20 PPP) as payment for participating in each interview, in addition to further payouts determined by responses in the time and risk preferences section of the survey. Participants who completed all survey rounds received a bonus of KES 1,000 (USD 26.20 PPP), and were entered into a lottery with prizes of KES 20,000, 10,000, and 5,000, for an expected additional payment of about KES 50 (USD 1.30 PPP) per person. To ensure data quality, we performed back-checks on 10 percent of all interviews, focusing on non-changing information. This procedure was known to field officers *ex ante*.

Respondents were informed of their treatment status after completing the baseline survey. In March 2012, respondents in the cash transfer group who completed the baseline and had a registered SIM card received an unconditional cash transfer via M-Pesa equal to the amount of the annual premium they would have had to pay under CIC *Afya Bora*. Respondents in the insurance group were offered to enroll in CIC's *Afya Bora* insurance free of cost for one year. Project staff assisted this group with preparing required documents, and submitted the applications to CIC on their behalf. Beneficiaries then received an ID card from CIC which they could use to claim benefits in CIC's network of 26 providers across Nairobi.

The survey instruments asked respondents about household characteristics,

Figure 1: Project timeline



Notes: This figure plots the number of respondents who were surveyed and received treatment during each phase of the project. Data collection for baseline occurred between March 2011 and December 2011. Endline data collection occurred between January 2013 and April 2013. The dashed line indicates the date of disbursement of the unconditional cash transfers in March 2012.

expenditure, asset holdings, workplace, insurance usage, health, self-reported well being, and time and risk preferences. An important feature of this study is that, in addition to questionnaire measures of psychological well-being, we also obtained saliva samples from all respondents, which were assayed for the stress hormone cortisol. Cortisol has been used extensively in psychological and medical research (C. Kirschbaum, Kudielka, Gaab, Schommer, & Hellhammer, 1999), and more recently in randomized trials in developing countries similar to the present study (Fernald & Gunnar, 2009; Haushofer & Shapiro, 2016). Cortisol has several advantages over other outcome variables. First, it is an objective measure not prone to survey effects such as social desirability bias, from which self-report measures can suffer (Zwane et al., 2011; De Quidt, Haushofer, & Roth, 2018), and it has several practical advantages which make it attractive to analyze in field studies. Second, cortisol is a useful indicator of both acute stress (Kirschbaum & Hellhammer, 1989) and more permanent stress-related conditions such as major depressive disorder (Holsboer, 2000; Hammen, 2005). Third, cortisol is a good predictor of long-term

health through its effects on the immune system. To measure cortisol levels, we collected saliva samples using the Salivette (Sarstedt, Germany). Respondents chewed on the cellulose swab for two minutes, and it was then centrifuged, stored at -20° C, and analyzed for salivary cortisol. Field officers collected a total of two saliva samples from each respondent at both baseline and endline, one each before and after the survey.[3]

We first obtained the average cortisol level in each participant by averaging the values of the two samples. Because cortisol levels in population samples are usually heavily skewed, it is established practice to log-transform them before analysis. We follow this standard approach here. Salivary cortisol is subject to a number of confounds; it is affected by food and drink, alcohol and nicotine, medications, and strenuous physical exercise. Cortisol levels also follow a diurnal pattern: they rise sharply in the morning, and then exhibit a gradual decline throughout the rest of the day. To control for these confounds, but at the same time avoid the risk of "cherry-picking" among different measures of cortisol, we present results for several versions of the cortisol variable in the analysis, which were pre-specified in our pre-analysis plan. First, we use both the log-transformed raw cortisol levels, averaged over the two samples collected from each respondent during each survey round, as well as the same variable after trimming at 100 $nmol/L$ or winsorization at the 99 percent level to account for outliers. Second, we present results both with and without the inclusion of control variables, which consist of dummies for having ingested food, drinks, alcohol, nicotine, or medications in the two hours preceding the interview, for having performed vigorous physical activity on the day of the interview, and for the time elapsed since waking, rounded to the next full hour. Figure C.1 displays the distribution of log cortisol for the sample at baseline.

4. Econometric Strategy

A pre-analysis plan was registered in the AEA RCT registry under AEARCTR-0000647 and is available at https://www.socialscienceregistry.org/trials/647. Note that this plan was filed after data collection ended, but before data analysis began. To identify the impact of health insurance and cash transfers, we estimate the following model:

[3]In addition, we collected blood samples from respondents at the end of each survey. Trained phlebotomists took blood draws in the JKA office. We list cytokine levels as an outcome of interest in the pre-analysis plan, but funding for the analysis of blood samples was not available and the results are therefore not included in this paper.

$$y_{i,t=1} = \alpha_s + \beta_1 INS_i + \beta_2 UCT_i + \delta y_{i,t=0} + \varepsilon_i \quad (1)$$

Here, $y_{i,t=1}$ is the outcome of interest for individual i measured at endline. INS_i indicates assignment to the insurance group. UCT_i indicates assignment to the cash transfer group. ε_i is the idiosyncratic error term. α_s captures stratum-level fixed effects. β_1 is the average treatment effect of free health insurance, β_2 is the average treatment effect of a cash transfer equal to the value of the insurance policy, and $\beta_1 - \beta_2$ captures the differential effect between health insurance and the cash equivalent. $\beta_1 - \beta_2$ thus quantifies the value of health insurance over and abov a cash transfer of equal value.[4] We estimate equation 1 using intent-to-treat.

Following McKenzie (2012), we condition on the baseline level of the individual outcome, $y_{i,t=0}$, where available, to improve statistical power. When baseline values are missing for an observation, we include an indicator variable for missing observations, and replace the missing observations with 0. We test joint significance across outcome variables with seemingly unrelated regression (SUR) Zellner, 1962.

4.1 Minimum detectable effect sizes

To determine whether our null findings identify the absence of a true effect or signify a lack of statistical power, we report the minimum detectable effect size (MDE) for each outcome:

$$MDE_{\hat{\beta}} = (t_{1-\kappa} + t_{\alpha/2}) \times SE(\hat{\beta})$$

This metric is the smallest effect that would have been detectable given our current sample size. Commonly used in experimental design, we calculate MDEs with $\alpha = 0.05$ and 0.80 power for each pairwise comparison of our treatments (Haushofer & Shapiro, 2016). Note that this approach is much more conservative than simply stating the bounds of the 95% confidence interval; it corresponds to the 0.995 confidence interval.

4.2 Accounting for multiple inference

Because our interventions are likely to impact a large number of economic behaviors and dimensions of welfare and given that our survey instrument often included several questions related to a single outcome, we account for multiple inference in three ways. First, we pre-defined primary outcome groups in the pre-analysis plan before the beginning of analysis. Second, for each of these outcome groups,

[4]We present a simple model for the utility gains from insurance in Appendix B.

we construct a summary index following the procedure proposed by (Anderson, 2008). For each outcome, we invert scores where necessary so that the positive direction always indicates a "better" outcome. We demean all outcomes and convert them to effect sizes by dividing each outcome by its control group standard deviation. Finally, we weight each outcome by the sum of the entries in the row of the inverted covariance matrix corresponding to that outcome to create a single index.

Third, because combining individual outcome variables in indices as described above still leaves us with multiple index variables, we additionally control for the family-wise error rate (FWER) using the free step-down resampling method to compute adjusted p-values. (Westfall & Young, 1993). This approach sets the size of the test to exactly the desired critical value. For each index variable, we report both unadjusted standard errors, as well as p-values adjusted for multiple inference.

4.3 Assessing potential attrition bias

Three factors made attrition a concern in this study: the high mobility among informal workers in Kenya, the collection of biomarkers, and the requirement for a national ID to obtain insurance or an M-Pesa account. In a pilot study which did not involve biomarkers nor national IDs, we found attrition rates of over 20 percent. To mitigate this problem, we therefore compensated each respondent who completed both baseline and endline with USD 26 PPP in addition to the individual fees for each survey. Moreover, we conducted a lottery in which three respondents among those who had completed all surveys won prizes of USD 515 PPP, USD 258 PPP, and USD 129 PPP, respectively.

Despite these efforts, rates of attrition were relatively high, at 18 percent in the control group, 28 percent in the insurance group, and 24 percent in the cash group. Table D.1 reports attrition rates between baseline and endline surveys. Factors that may have contributed to higher dropout rates include tracking issues and unwillingness to provide saliva and blood samples. In addition, due to a miscommunication with the field team, respondents were not interviewed in the endline if they were assigned to the insurance group but did not enroll in the insurance, or assigned to the cash transfer group but did not receive the cash transfer. This occurred mainly for respondents without a national ID card; these respondents could not be enrolled in insurance, or receive the cash, because CIC requires a valid ID to register insurance recipients, and Safaricom requires a national ID to

register an M-Pesa account. To mitigate potential selection bias arising from this issue, we therefore exclude from our analysis respondents who did not have a valid national ID during baseline. Note that while having a national ID is of course an endogenous outcome, this restriction of the sample is applied to all experimental groups, and therefore it only affects external and not internal validity of the study. This approach reduces attrition from non-compliance to 37 individuals (27 in the insurance group, 10 in the cash group), and reduces the attrition rates to 16 percent (control), 21 percent (insurance), and 16 percent (UCT). Four considerations suggest that with this sample restriction in place, differential attrition is no longer a significant concern. First, with the exclusion in place, average differential attrition between treatment and control is reduced to 4 percentage points; this figure is small enough to not worry about bias due to this difference. Second, baseline balance in outcome variables was good after this restriction, as shown in Table 1. We report statistics for participants included in our endline sample, separately for each of the treatment arms and the control group, with t-tests to compare means. Overall, we find no strong evidence of differences. Some individual variables in the insurance and UCT groups show significant differences, but none of these survive multiple hypothesis correction, and in the joint test we find no evidence for imbalance between treatment groups at the 5 percent level. In addition, Online Appendix Section E.1 shows baseline balance for all individual outcome variables, as well as demographics, again not finding worrying levels of imbalance. Third, baseline variables were not predictive of exclusion and attrition. Online Appendix Table 29 examines the baseline predictors of exclusion, and shows that after controlling for having an ID at baseline, none of our main outcome indices are predictive. The table also shows that baseline outcomes are not jointly predictive of attrition. Together, these results suggest that differential attrition is not a significant concern after restriction of our sample to participants with a national ID at baseline.

However, to further control for differential attrition, Online Appendix D presents robustness checks for our main results in which we compare them to a two-stage correction (Heckman, 1979) and treatment effect bounds (Lee, 2009). The results are very similar to those presented below, further corroborating the claim that differential attrition did not materially affect our results.

Table 1: Summary statistics – Baseline levels of summary indices by treatment group

	(1) Control mean (SD)	(2) Ins. - Control	(3) UCT - Control	(4) Ins. - UCT	(5) Obs.
Subjective well-being index	0.00	-0.15	0.09	-0.24**	642
	(1.03)	(0.10)	(0.09)	(0.10)	
		[0.65]	[0.92]	[0.11]	
Log avg. cortisol level	2.18	0.04	0.04	-0.00	637
	(0.72)	(0.08)	(0.08)	(0.08)	
		[0.99]	[0.98]	[1.00]	
Insurance ownership index	-0.01	0.01	0.19	-0.18	641
	(1.08)	(0.11)	(0.15)	(0.16)	
		[0.99]	[0.84]	[0.85]	
Insurance WTP index	-0.04	0.13	-0.11	0.23**	641
	(0.95)	(0.11)	(0.08)	(0.10)	
		[0.88]	[0.76]	[0.18]	
Asset ownership index	0.04	-0.03	-0.04	0.01	640
	(1.01)	(0.09)	(0.10)	(0.10)	
		[0.99]	[0.98]	[1.00]	
Labor mobility index	0.03	0.01	-0.04	0.05	641
	(1.09)	(0.10)	(0.10)	(0.10)	
		[0.99]	[0.98]	[0.99]	
Labor productivity index	-0.06	0.07	0.02	0.05	640
	(0.90)	(0.09)	(0.08)	(0.09)	
		[0.97]	[0.98]	[0.99]	
Job risk index	-0.00	0.04	0.06	-0.02	641
	(1.01)	(0.10)	(0.10)	(0.11)	
		[0.99]	[0.98]	[1.00]	
Joint p-value		0.69	0.51	0.09*	

Notes: This table tests for baseline balance among participants with a national ID surveyed at endline. Column 1 reports the mean of the control group with SD in parentheses for each row variable. Columns 2-3 report the difference of means across treatment groups with SEs in parentheses and FWER-adjusted p-values in brackets. The bottom row reports the p-value for a difference of means test across models using SUR. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

5. Results

5.1 Treatment effects on economic outcomes

We analyze the impact of insurance provision on a set of pre-specified summary indices. In addition to a subjective well-being index and cortisol, these variables

include indices for insurance ownership (weighted standardized number of different insurance products owned by the household); willingness to pay for insurance (weighted standardized average of WTP for the same insurance products); asset ownership (weighted standardized average of the number of assets owned from a list of common assets); labor mobility (weighted standardized average of variables measuring intentions to change jobs or leave the Jua Kali area); labor productivity (weighted standardized average of several measures of income, hours worked, and number of goods produced); and job risk (weighted standardized average of "objective" and perceived and job risk, i.e. risks faced and worried about).[5]

Table 2 presents estimates from Equation 1. We find no evidence of an impact of insurance on any of our economic outcomes.[6] One possible reason for these null findings is lack of power; Table 3 reports MDEs for the main outcome variables and shows that we were powered to detect effect sizes between 0.21–0.32 SD for these outcomes, and it is therefore possible that we were unable to detect smaller effects. However, very few of the point estimates show treatment effect estimates in excess of 0.10 SD, and our standard errors are on the order of 0.10 SD, suggesting that the effects are economically small.

The appendix extends this analysis to a large number of other economic outcome variables. We find no effects of insurance ownership on variables related to savings and credit (Table D.2), labor mobility and labor conditions (Table D.3), detailed variables on production (Table D.4), a number of variables related to enterprise ownership and operation (Table D.5), and food security (Table D.6). Insurance recipients decrease savings by USD 162 relative to a control group mean of USD 640 (a 25 percent decrease), and UCT recipients increase savings by USD 285 (45 percent). One possible explanation for this pattern of results is that insurance may have reduced precautionary savings; recipients no longer need to save for unanticipated health expenditures. The increase in savings following the cash transfer may be mechanical. At the same time, we hesitate to interpret these results strongly: all pairwise comparisons are non-significant, and while the treatment effects are large, statistical precision is low. Expenditure (consumption) was not among the pre-specified indices, but a short expenditure module was included in the questionnaire, and results are reported in Table D.7. Total expenditure in the past month is increased by USD 35 PPP (4 percent) in the insurance group and

[5]See Online Appendix A for exact definition and composition of the indices, as well as analysis of the constituent outcomes. Cortisol was pre-specified to be part of a "neurobiological outcome" index together with cytokines, but funding for the cytokine analysis was not available; we therefore report only cortisol.

[6]Results on stress and subjective well-being are discussed in Section 5.3

USD 1 PPP (0.1 percent) in the UCT group, but these effects are not statistically significant. Again we note that these effects are large, but imprecisely estimated. The effects on individual expenditure categories are also not significant, with the exception of a USD 29 PPP (23 percent) decrease in social expenditure in the UCT group, significant at the 5 percent level, but not jointly significant with the other coefficients using SUR.

Thus, it appears that in this sample, both health insurance and cash transfers had no large overall effects on asset ownership, labor mobility, income and productivity, job risk, or other economic outcomes. These findings contrast with previous evidence on the effect of UCTs on a broad array of economic outcomes, including asset holdings, productivity, and expenditure Haushofer and Shapiro, 2016; Blattman et al., 2013; De Mel, McKenzie, and Woodruff, 2012; Blattman, Jamison, and Sheridan, 2017. One possible explanation for this finding is that the cash transfers made here were small relative to other existing programs; for instance, the NGO GiveDirectly, studied by Haushofer and Shapiro (2016), makes cash transfers up to USD 1500 PPP, while the average transfer in our study was USD 338 PPP. In addition, the transfers used here are also smaller in relative terms compared to existing programs, since participants in our sample are comparatively wealthy.

5.2 Treatment effects on health and healthcare use

We now analyze in detail the effects of our treatments on health outcomes and healthcare utilization. Baseline balance for these outcomes was good (Online Appendix E.1). Treatment effects are reported in Table 4. The outcome variables tested include measures of health status of the respondent and their children, including whether they or other household members were sick or injured last month, and how many days the of work respondent missed for this reason; whether the respondent or a family member was or should have been hospitalized in the previous year, and associated costs; whether children are vaccinated; and whether the respondent or household members had medical consultations in the previous six months. The coefficients on the insurance arm for these outcome variables are not jointly significant using SUR, although we find a reduction in the number of nights the respondent should have been hospitalized in the previous year. This reduction is quantitatively large (a 0.69 night reduction relative to a control group

Table 2: Treatment effects – Summary indices

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Subjective well-being index	0.07	0.03	0.73	0.00	640
	(0.10)	(0.10)	[1.00]	(1.00)	
	[0.98]	[0.99]			
Log avg. cortisol level	-0.14**	-0.02	0.04**	2.48	579
	(0.06)	(0.07)	[0.27]	(0.66)	
	[0.12]	[0.99]			
Insurance ownership index	-0.03	0.04	0.39	-0.00	640
	(0.08)	(0.09)	[0.94]	(1.00)	
	[1.00]	[0.99]			
Insurance WTP index	-0.09	-0.11	0.77	0.00	640
	(0.09)	(0.08)	[0.96]	(1.00)	
	[0.97]	[0.90]			
Asset ownership index	0.02	0.04	0.85	-0.00	640
	(0.08)	(0.08)	[1.00]	(1.00)	
	[1.00]	[0.99]			
Labor mobility index	0.02	0.01	0.94	0.00	626
	(0.11)	(0.10)	[1.00]	(1.00)	
	[1.00]	[1.00]			
Labor productivity index	-0.04	-0.14	0.37	-0.00	638
	(0.11)	(0.09)	[0.94]	(1.00)	
	[1.00]	[0.65]			
Job risk index	-0.01	-0.13	0.21	0.00	640
	(0.09)	(0.09)	[0.91]	(1.00)	
	[1.00]	[0.88]			
Joint test p-value	0.43	0.52	0.51		

Notes: This table reports the estimated treatment effect of insurance and UCT on each row variable. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

mean of 0.75 nights), but statistically weak (significant at the 10 percent level). None of the other outcome variables are significantly different from control in the insurance treatment. In the UCT arm, the variables are jointly significant at the 10 percent level, driven by a 9 percentage point reduction in the proportion of children being sick in the previous month (a 39 percent reduction relative to a control group mean of 23 percent), and weakly significant reductions in the like-

Table 3: Minimum detectable effects – Summary indices

	MDE		Sample	
	(1) Insurance	(2) UCT	(3) Control Mean (SD)	(4) Obs.
Subjective well-being index	0.28	0.28	0.00 (1.00)	628
Log avg. cortisol level	0.16	0.18	2.48 (0.66)	566
Insurance ownership index	0.24	0.25	-0.00 (1.00)	628
Insurance WTP index	0.26	0.22	0.00 (1.00)	628
Asset ownership index	0.21	0.22	-0.00 (1.00)	628
Labor mobility index	0.31	0.29	0.00 (1.00)	614
Labor productivity index	0.32	0.26	-0.00 (1.00)	626
Job risk index	0.26	0.26	0.00 (1.00)	628

Notes: Column 1 reports the minimum detectable effect sizes of insurance compared to control on the row variables with $\alpha = 0.05$ and 0.8 power. Columnt 2 reports the minimum detectable effect sizes for the UCT. The last columns report the control group means and SDs and the number of observations, respectively.

lihood of children having received a checkup in the previous six months, or any household member having been hospitalized. Consequently, participants in the UCT arm contributed on average USD 6 less than the control group and USD 57 less than the insurance arm for hospitalization costs. Thus, the cash transfer arm appears to have some effects on health outcomes and healthcare utilization, while the insurance arm appears not to affect these outcomes. Table 5 reports *ex post* minimum detectable effect sizes and shows that while we were not powered to detect very small effects, we could expect to detect moderate and large effects. In addition, most of the insurance effects we estimate for health and healthcare fall between 0.1 and 0.2 SD, suggesting again that they are not economically large.

One possible reason for this lack of effects on health and healthcare usage is that very few respondents actually used their health insurance. Table D.8 show that only 37 percent of those enrolled in insurance ever made a claim. The average amount claimed by all insurance takers across the study period was USD 157 PPP,

suggesting that the cost of insurance (USD 338 PPP on average) exceeded the value of claims.

Our finding that health insurance does not strongly affect health outcomes is consistent with a number of previous randomized evaluations of health insurance in developed and developing countries, which found limited effects of health insurance provision on healthcare utilization and health: Field et al. (2010) randomized the price of health insurance among informal workers in Nicaragua (a similar setting to the one we use here), and find no significant impact of health insurance on visits to health facilities; out-of-pocket health care expenditures are reduced, but by an amount less than the cost of the insurance premium, underscoring the argument that insurance provision has to be distinguished from its income effect as we do here. Ansah et al. (2009) find no effect of subsidized insurance in Ghana on anemia and mortality in children; and King et al. (2009) find no impact of health insurance on self-reported health in Mexico. Gertler and Gruber (2002) show that insurance provision in the Philippines did not reduce out-of-pocket health expenditure of insurance beneficiaries, mainly because providers price-discriminated between insured and uninsured patients. Dow and Schmeer (2003) analyze the effect of the rollout of health insurance for children in Costa Rica in the 1970s, and find little effect on health that cannot be explained by pre-existing trends. Brook et al. (1983) find no effect of free care versus copay on eight measures of health status and health habits in the RAND health insurance experiment. Finally, in the Oregon Health Insurance experiment, insurance had a positive impact on self-reported health, but not physical health (Baicker et al., 2013; Finkelstein et al., 2012). In sum, the effects of health insurance provision on health outcomes are limited; Acharya et al. (2012) survey 34 experimental and non-experimental studies on the effects of health insurance, and conclude that "there is little evidence on the impact of social health insurance on changes in health status".[7] Together with the findings from the present study, this lack of improvement on health outcomes after insurance provision may partly explain the low take-up of health insurance in developing countries (Jowett, Contoyannis, &

[7]A small number of papers report positive health effects as a result of health insurance provision. Alcaraz, Chiquiar, Orraca, and Salcedo (2012) find that public provision of health insurance in Mexico increases standardized test scores among primary school children. Bloom et al. (2006) find that Colombia's *Régimen Subsidiado*, in which government health services were expanded by contracting with NGOs, resulted in increased use of government clinics relative to traditional healers, and concomitant improvements in health outcomes. The Accelerated Benefits (AB) Demonstration funded by the U.S. Social Security Administration in 2006, which provided previously uninsured individuals with Social Security Disability Insurance (SSDI) benefits, increased health care usage during the first year (Michalopoulos, Wittenburg, Israel, & Warren, 2012).

Vinh, 2003; Morduch, 2006).

Similar to most of the studies cited above, we measure endline outcomes one year after the provision of health insurance, which may be too soon to observe changes in health status. However, Baicker et al. (2013) find no significant effects of health insurance on objective health outcomes (hypertension, high cholesterol levels, or diabetes) even after a two year evaluation period.

5.3 Treatment effects on stress and subjective well-being

We next turn to effects on subjective well-being. Baseline balance for these outcomes was good (Online Appendix E.1). Table 6 shows detailed results for variables measuring psychological well-being, as well as the subjective well-being (SWB) index, which is a weighted standardized average of the individual variables. Columns 1–3 present ITT estimates; Columns 4–6 present estimates using the Heckman two-step correction for attrition, using having a national ID, income strata dummies, gender, age, cash transfer amount, marital status, cohabitation status, and years of education as independent variables in the first stage equation. Columns 8–9 list the control group mean and standard deviation for the outcome variable in question and the number of observations, respectively.

In the ITT results, we find no significant effects of insurance or UCTs on the index variable of psychological well-being, and the coefficients for the insurance and UCT arms are not jointly significant using SUR. However, insurance leads to a significant and relatively large 0.26 SD decrease in scores on self-reported stress, measured by the Perceived Stress Scale, compared to the control group. The decrease in self-reported stress is also significantly larger than that in the cash group, which itself does not differ from control. The result is robust to the inclusion of control variables (Table D.11). Note, however, that it does not survive multiple hypothesis correction with the conservative family-wise error rate ($p_{FWER} = 0.11$; Table D.11). The remainder of the coefficients are non-significant after including control variables.

Columns 4–6 show that the results are relatively robust to controlling for attrition using a Heckman selection model instead of restricting the sample to those with national ID at baseline. In particular, the coefficient on self-reported stress is quantitatively similar to that using the ITT approach (a 0.25 SD reduction), and is also statistically significant at the same level. The same is true for the difference

Table 4: Treatment effects – Health and healthcare use

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Sick/injured (1 month)	-0.04	0.01	0.31	0.28	640
	(0.04)	(0.04)	[0.94]	(0.45)	
	[0.99]	[0.95]			
Days missed due to sickness (1 month)	0.06	-0.10	0.41	0.46	567
	(0.20)	(0.16)	[0.95]	(1.58)	
	[1.00]	[0.95]			
Prop. of household sick (1 month)	-0.02	-0.03	0.70	0.26	642
	(0.04)	(0.03)	[0.95]	(0.37)	
	[1.00]	[0.90]			
Prop. children in household sick (1 month)	-0.04	-0.09**	0.20	0.23	526
	(0.04)	(0.04)	[0.94]	(0.35)	
	[0.94]	[0.13]			
Consulted for illness/injury (1 month)	0.02	-0.02	0.28	0.16	640
	(0.04)	(0.03)	[0.93]	(0.37)	
	[1.00]	[0.95]			
Any HH member hospitalized (1 year)	-0.03	-0.08*	0.32	0.30	640
	(0.04)	(0.04)	[0.94]	(0.46)	
	[1.00]	[0.45]			
Children vaccinated	-0.02	0.01	0.26	0.93	517
	(0.03)	(0.03)	[0.92]	(0.26)	
	[1.00]	[0.95]			
Child check-up (6 months)	-0.03	-0.10*	0.22	0.39	517
	(0.06)	(0.05)	[0.92]	(0.49)	
	[1.00]	[0.44]			
Contribution to hosp. costs (USD PPP)	50.14	-6.42	0.45	55.88	637
	(75.20)	(15.11)	[0.95]	(148.81)	
	[1.00]	[0.95]			
Nights hospitalized (1 year)	-0.00	-0.29*	0.20	0.40	640
	(0.27)	(0.16)	[0.92]	(2.39)	
	[1.00]	[0.45]			
Nights should have been hospitalized (1 year)	-0.69*	-0.71*	0.65	0.75	640
	(0.39)	(0.40)	[0.95]	(6.15)	
	[0.51]	[0.45]			
Took medicine today	0.01	-0.02	0.36	0.10	640
	(0.03)	(0.03)	[0.95]	(0.30)	
	[1.00]	[0.95]			
Joint test p-value	0.49	0.06*	0.15		

Notes: This table reports the estimated treatment effect of insurance and UCT on each row variable. Column 1 reports estimates of the treatment effect of insurance with respect to the control group, and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. "Children vaccinated" and "Child check-up" are measured in terms of the share of children in the household. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

between perceived stress in the insurance vs. UCT groups, which is statistically significant at the 5 percent level using both ITT and the Heckman correction. Lee bounds paint a similar overall picture, although the upper bound is not significantly smaller than zero, and the Manski-Imbens 95% confidence interval includes

Table 5: Minimum detectable effects – Health and healthcare use

	MDE		Sample	
	(1) Insurance	(2) UCT	(3) Control Mean (SD)	(4) Obs.
Sick/injured (1 month)	0.12	0.12	0.28 (0.45)	628
Days missed due to sickness (1 month)	0.55	0.44	0.46 (1.58)	508
Prop. of household sick (1 month)	0.10	0.09	0.26 (0.37)	630
Prop. children in household sick (1 month)	0.10	0.10	0.23 (0.35)	451
Consulted for illness/injury (1 month)	0.10	0.10	0.16 (0.37)	628
Any HH member hospitalized (1 year)	0.12	0.12	0.30 (0.46)	628
Children vaccinated	0.09	0.08	0.93 (0.26)	438
Child check-up (6 months)	0.16	0.15	0.39 (0.49)	437
Contribution to hosp. costs (USD PPP)	211.42	42.48	55.88 (148.81)	622
Nights hospitalized (1 year)	0.76	0.45	0.40 (2.39)	628
Nights should have been hospitalized (1 year)	1.10	1.13	0.75 (6.15)	628
Took medicine today	0.08	0.07	0.10 (0.30)	628

Notes: Column 1 reports the minimum detectable effect sizes of insurance compared to control on the row variables with $\alpha = 0.05$ and 0.8 power. Column 2 reports the minimum detectable effect sizes for the UCT. The last columns report the control group means and SDs and number of observations, respectively. The differing number of observations across variables reflects sample restrictions based on being employed and having children.

zero (Table D.12). We note that these bounds are very conservative.

The treatment effect of health insurance on stress of -0.26 SD for on average USD 338 PPP worth of insurance, or 0.08 SD for each USD 100 PPP of insurance, is of comparable absolute magnitude, but higher relative magnitude, to the effect of UCTs on self-reported stress obtained in Haushofer and Shapiro (2016). That study found a reduction of 0.26 SD in the same Perceived Stress scale for the average transfer of USD 709 PPP, or a 0.04 SD for USD 100 PPP of cash transfers. Thus, the effect per dollar spent on insurance in the present study is about twice as large as the effect per dollar spent on cash transfers in Haushofer and Shapiro (2016).

These results are also broadly consistent with those reported by Baicker et al. (2013), who conducted one of the few evaluations to examine the effect of health insurance provision on mental health outcomes. They find that insurance coverage reduced rates of depression by 31 percent (measured by the Patient Health Questionnaire, PHQ-8; $p < 0.05$) and increased overall self-reported mental health. It should be noted, however, that we find no effects of either insurance or cash transfers on self-reported depression and indicators of psychological well-being other than stress.

In addition, our results are in line with those of Lichand and Mani (2016), who find that priming people with the thought of a drought increases worries and decreases cognitive performance. However, these authors also find that providing an insurance product does not alleviate worries. One possible reason for the discrepancy between these results and ours is that participants in the sample of Lichand and Mani (2016) had access to a government-run insurance product which was superior to that offered by the study; the offer of the study insurance may thus not have had a large additional effect.

To corroborate the results obtained from self-reports, Table 7 reports treatment effects on the stress hormone cortisol, again with ITT effects in Columns 1–3 and results after Heckman correction in Columns 4–6. Column 1 shows that cortisol decreases by between 0.14–0.15 log units in the insurance group relative to control. This effect is statistically significant and robust to different transformations of the cortisol variable and to the inclusion of a full set of baseline control variables and FWER correction (Table D.13). Cash transfers do not impact cortisol in any of the specifications. Moreover, we reject the null hypothesis of equality between the insurance and cash transfer groups for most specifications. This result suggests that insurance reduces stress above and beyond the income effect from receiving free insurance coverage. The results are robust to controlling for attrition using a Heckman selection model instead of restricting the sample to those with national ID at baseline in columns 4–6. The impacts of the insurance treatment range from 0.12 to 0.14 log units using the Heckman approach, compared to 0.14 to 0.15 log units using ITT. The difference between the insurance and cash groups is significant using both the ITT and the Heckman approach for two out of the three cortisol variables. . Again Lee bounds paint a similar overall picture, although the upper bound is not significantly smaller than zero, and the Manski-Imbens 95% confidence interval includes zero (Table D.14).

As a further robustness check for the impacts on both perceived stress and cortisol, Table D.15 reports bounds following Kling and Liebman (2004). This

approach makes gradually changing assumptions about all missing data. Column 1 is the extreme assumption that imputes 2 SD above the group mean to survey attriters in the insurance group and 2 SD below the mean for the comparison group. Column 7 imputes 2 SD below the group mean to survey attriters in the insurance group and 2 SD above the mean for the comparison group. Columns 2–6 impute with intermediate assumptions. The first panel reports treatment effects relative to the control group and the second panel relative to the UCT group. We find that the results are relatively robust to these assumptions about the outcomes of attriters; the point estimates for both perceived stress and the cortisol variables are negative and relatively sizable under all but the most extremely unfavorable imputation scenarios.

These results complement those of Haushofer and Shapiro (2016), who analyze the effects of unconditional cash transfers on cortisol levels, and find a significant 1.63 $nmol/L$ decrease in cortisol levels nine months after a USD 1,520 PPP cash transfer (or 0.11 $nmol/L$ for every USD 100 PPP on average), but no effect with USD 400 PPP cash transfers. Here, we find a reduction in stress levels with health insurance, but not with a USD 338 PPP cash transfer. The reduction in cortisol levels by 0.15 log units we observe in the insurance group corresponds to 1.56 $nmol/L$, or a 0.48 $nmol/L$ reduction for every USD 100 PPP worth of insurance. This effect is almost as large in absolute terms as the cortisol reduction reported after USD 1,520 PPP cash transfers in Haushofer and Shapiro (2016), and amounts to 60 percent of the difference of 2.58 $nmol/L$ between depressed and non-depressed individuals reported by a recent meta-analysis (Knorr et al., 2010). The reduction in cortisol levels from our USD 338 PPP cash transfer in the UCT group is not significant, and the average point estimate relative to control is 0.04 log units, corresponding to a 0.47 $nmol/L$ reduction for a USD 338 PPP transfer, or 0.14 $nmol/L$ for every USD 100 PPP of transfers. Thus, we find similar magnitudes for the impact of cash transfers across these studies, with a 0.14 $nmol/L$ reduction per USD 100 PPP in the present study and a 0.10 $nmol/L$ reduction per USD 100 PPP in Haushofer and Shapiro (2016). With 0.48 $nmol/L$ cortisol reduction per USD 100 PPP of insurance, health insurance provision appears to be more successful in lowering cortisol levels than cash transfers.

As mentioned above, the fact that our intervention was randomized at the individual level raises the possibility that there were spillover effects. We have described in Section 3 why we deem such effects unlikely in the present study. In line with these arguments, the treatment effects of insurance on stress and cortisol levels are virtually unchanged when we add control variables for the proportion

Table 6: Treatment effects – Subjective well-being

	Intent-to-treat			Heckman Two-Stage				Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Insurance	(5) UCT	(6) Difference p-value	(7) Mills' Coefficient	(8) Control Mean (SD)	(9) Obs.
Subjective well-being index	0.07	0.03	0.73	0.06	0.03	0.71	0.15	0.00	751
	(0.10)	(0.10)		(0.09)	(0.09)		(0.26)	(0.92)	
Perceived stress	-0.26**	-0.01	0.03**	-0.25**	0.00	0.02**	0.25	0.02	690
	(0.10)	(0.10)		(0.10)	(0.10)		(0.25)	(0.99)	
Optimism	0.02	0.15	0.21	-0.01	0.14	0.17	-0.52*	-0.03	690
	(0.10)	(0.09)		(0.10)	(0.10)		(0.25)	(1.03)	
Self-esteem	-0.02	-0.04	0.84	-0.02	-0.04	0.89	-0.38	-0.05	690
	(0.10)	(0.09)		(0.10)	(0.09)		(0.24)	(1.01)	
Depression	-0.08	-0.07	0.95	-0.08	-0.08	0.98	-0.13	0.02	690
	(0.10)	(0.09)		(0.10)	(0.09)		(0.24)	(1.02)	
Internal locus of control	-0.08	-0.17*	0.37	-0.06	-0.20**	0.16	0.14	0.02	690
	(0.10)	(0.10)		(0.10)	(0.10)		(0.24)	(1.03)	
Happiness	0.01	0.02	0.94	0.00	0.03	0.82	0.27	0.01	690
	(0.09)	(0.09)		(0.09)	(0.09)		(0.23)	(1.05)	
Life satisfaction	0.05	0.03	0.88	0.01	-0.01	0.85	-0.33	-0.02	690
	(0.10)	(0.10)		(0.10)	(0.10)		(0.24)	(1.01)	
Joint p-value	0.12	0.44	0.11						

Notes: This table reports the estimated treatment effect of insurance and UCTs on each row variable. Columns 1–3 report estimates from an intent-to-treat analysis without correcting for selection. Columns 4–6 applies the Heckman two-step correction, with having a national ID, income strata dummies, gender, age, cash transfer amount, marital status, cohabitation status, and years of education as independent variables in the first stage equation. Columns 3 and 6 report the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Column 7 reports the coefficient on the inverse Mills' ratio. Standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

of individuals in the respondent's shed who received the interventions (Online Appendix Table 302).

The reduction in self-reported stress and cortisol levels suggest that insurance may have led to a "peace of mind" effect. In additional support of this view, the reduction in cortisol levels is still observed when we restrict the sample to the 63 percent of the insurance recipients who never used the insurance (using propensity score matching to find comparable cash and control group samples; Table D.16). In addition, Table D.17 shows an increase of 23 minutes (0.39 hours) of sleep in the insurance group, relative to a control group mean of 7 hours 14 minutes (7.23 hours), significant at the 1 percent level. This effect is also significantly larger than the smaller 9 minute (0.15 hour) increase in the cash group, which is not itself significant. We stress that this result is a post-hoc discovery. Finally, the effects remain significant at the 5 percent level and are nearly identical in magnitude when we restrict the sample to participants whose policy expired before their endline survey date, suggesting that insurance may have had a cumulative effect on stress levels (Blair, Berry, Mills-Koonce, Granger, and FLP Investigators, 2013; Table D.18).

Table 7: Treatment effects – Cortisol

	Intent-to-treat			Heckman Two-Stage				Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Insurance	(5) UCT	(6) Difference p-value	(7) Mills' Coefficient	(8) Control Mean (SD)	(9) Obs.
Log avg. cortisol level	-0.14**	-0.02	0.04**	-0.12**	-0.01	0.07*	0.43**	2.49	621
	(0.06)	(0.07)		(0.06)	(0.06)		(0.15)	(0.67)	
Log avg. cortisol less 100	-0.15**	-0.07	0.16	-0.14**	-0.06	0.16	0.31*	2.48	616
	(0.06)	(0.06)		(0.06)	(0.06)		(0.14)	(0.65)	
Log avg. cortisol (.99 Wins.)	-0.14**	-0.03	0.05**	-0.12*	-0.01	0.09*	0.44**	2.49	621
	(0.06)	(0.06)		(0.06)	(0.06)		(0.15)	(0.66)	
Joint p-value	0.06*	0.17	0.16						

Notes: This table reports the estimated treatment effect of insurance and UCTs on each row variable. Columns 1–3 report estimates from an intent-to-treat analysis without correcting for selection. Columns 4–6 applies the Heckman two-step correction, with having a national ID, income strata dummies, gender, age, cash transfer amount, marital status, cohabitation status, and years of education as independent variables in the first stage equation. Columns 3 and 6 report the p-values for tests of the equality of the UCT and insurance coefficients. Column 7 reports the coefficient on the inverse Mills' ratio. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

6. Conclusion

In this study we provided free health insurance to a randomly chosen group of informal metal-workers in Nairobi, Kenya. We find no large economic and health effects, but observe large reductions in cortisol levels and self-reported stress, relative to both a control group and a group that received an equivalent cash transfer. These effects are significant using conventional approaches, but not robust to conservative bounds for attrition, and are thus suggestive. We observe these suggestive effects despite the fact that insurance does not lead to improvements in economic outcomes, increased healthcare utilization or health status, or variables that might bias cortisol measurements. We argue that the most likely mechanism that accounts for our findings is that insurance may convey "peace of mind", even when it does not improve health outcomes.

At the same time, we find that demand for health insurance is low, in three respects. First, no members of the UCT or control groups bought the health insurance product, even though it was available to them. This finding is especially salient for the UCT group, who could have afforded the insurance because their transfer amounted exactly to the cost of a policy for their particular family. Although we did not explicitly make aware to the participants in the UCT or control group that this study's insurance policy was available to them, the intervention was relatively well-known among our study population. Second, we find that no members of the insurance group continue their insurance coverage after the study period. Finally, additional evidence for low demand comes from data on willingness to pay for insurance collected at endline: Table D.19 shows that willingness to pay (WTP) for the type of insurance provided by the CIC product we studied

here is USD 26 PPP in the control group, and slightly but not significantly lower in the UCT and insurance groups. In all three groups, WTP for insurance is thus dramatically lower than the average cost of the policy, USD 338 PPP.

Why is demand for health insurance so low, despite its possible stress-reducing effects? At endline, we asked respondents in the insurance group why they discontinued their insurance coverage. Table D.20 shows that the two most frequently reported reasons for dropping the product were unaffordability and low trust in insurance companies. In our view, cost is unlikely to be sufficient to account for the lack of take-up, since none of the respondents receiving the cash transfer purchased the insurance product despite being aware of it due to the relatively public profile of the study in the area. However, it remains possible that experience with insurance and liquidity interact to generate demand for insurance; in other words, if insurance recipients had received a cash transfer at the end of the study, it is conceivable that they might have bought insurance.

The second most frequently cited reason against buying insurance was low trust in insurance companies. This factor has previously been identified as a major concern for the take-up of health insurance (Dercon, Gunning, & Zeitlin, 2015); if insurance takers do not trust that companies will reimburse their claims, demand for the product is likely to be low. We find that providing free health insurance significantly increases trust in insurance companies by 0.50 SD (Table D.21). Interestingly, this increase in trust occurs despite the fact that most insurance recipients do no use the product; thus, the simple interaction with the insurance company at signup appears to be sufficient to generate this effect. This increase was not sufficient to increase insurance purchase after one year, but raises the possibility that longer exposure to the product, or the addition of a cash transfer to relieve liquidity constraints, might increase trust to the point where the product becomes attractive.

Finally, an additional important reason for low demand is that respondents accurately predict that their insurance usage will be lower than its cost. Specifically, we find that the average amount claimed from the insurance by an individual enrolled in the plan is USD 157 (Table D.22), i.e. only about half as much as the cost of the insurance. Thus, *ex post* the policy is not actuarily fair.

Taken together, our results suggest that affordability, trust, and a low ratio of claims to premium are obstacles to insurance take-up, and that experience with insurance can increase trust in insurance companies. Future interventions might attempt to target these variables to increase insurance usage. In addition, an important question for future work is how the effects of insurance on stress levels

compare to those of psychological interventions, such as psychotherapy (Bolton et al., 2003; Blattman, Jamison, & Sheridan, 2015).

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Appendix

A. CIC *Afya Bora* Details

Participants receiving insurance enrolled in the CIC *Afya Bora* plan, a combined inpatient and outpatient family health insurance policy. These treated households received inpatient benefits of up to USD 6,437 PPP per family that covered the costs of:

1. Hospital accommodation charges for a general ward bed in contracted hospitals
2. Doctor and healthcare professional fees
3. Prescribed routine lab tests
4. X-ray and ultrasound tests
5. ICU, HDU, and theatre charges
6. Prescribed medicines, dressings, and internal surgical appliances
7. Routing diagnostic lab tests
8. Day care surgery
9. Maternity including non-elective caesarean section with 6 mo. waiting period
10. Chronic and pre-existing conditions up to USD 1,931 PPP

Households also received outpatient benefits of up to USD 1,287 PPP per family that covered:

1. Routine outpatient consultation
2. Diagnostic laboratory and radiology services
3. Prescribed medicine and dressings
4. HIV/AIDS related conditions and prescribed ARVs
5. Routine immunizations
6. Routine prenatal check ups
7. Postnatal care up to six weeks after delivery

8. Pre-existing and chronic conditions up to KES 20,000
9. Outpatient oncology
10. Psychiatry and psychotherapy

Beneficiaries paid around USD 2.60 PPP for each outpatient visit. Both covers included chronic and pre-existing conditions, including HIV/AIDS but excluded treatment outside Kenya, cosmetic treatment, treatment by non-qualified persons, infertility, self-inflicted injury, experimental treatment, and dental treatment unless occasioned by accidental injury. Children dependents are covered from age 30 days old to 25 years with proof of school or college.

B. Theoretical Framework

In this section, we present a simple model for the value of insurance that illustrates the contribution of this study, namely to isolate the "peace of mind" effect of insurance by controlling for the income effect of providing free healthcare through a separate treatment arm that delivers cash transfers. Let y be income, p the probability of an accident, c the cost of medical treatment, I the insurance premium, and B the benefit paid by the insurance company.

The expected utility of having no insurance is

$$EU_{NoInsurance} = (1-p)u(y) + pu(y-c) \tag{2}$$

while the expected utility of having insurance is

$$EU_{Insurance} = (1-p)u(y-I) + pu(y-I-c+B). \tag{3}$$

The value of insurance is thus $EU_{Insurance} - EU_{NoInsurance}$, which can be shown to be positive with a concave utility function. In practice, however, this value is impossible to estimate for two reasons. First, the exact form of the utility function is unknown. Structural models can be used, but must assume a functional form for u. Second, the decision to take up insurance is endogenous: one cannot compare people who choose to purchase insurance or not to estimate the causal impact of health insurance. However, random assignment to health insurance versus a cash transfer makes it possible to estimate this difference, as we illustrate below.

Denote by INS the treatment group that receives free health insurance for one year, and by UCT the group that receives an unconditional cash transfer amounting to the market value I of this insurance product. This experimental

design allows us to control for the income effect of receiving free health insurance, as both groups receive a transfer of the same amount.[8] Thus, this design measures the "peace of mind" effect of obtaining health insurance, since compared to the UCT group, the INS group has health insurance and a lower income by an amount I. Formally:

$$EU_{UCT} = (1-p)u(y+I) + pu(y+I-c) \tag{4}$$

$$EU_{INS} = (1-p)u(y) + pu(y-c+B) \tag{5}$$

Equation 5 can be rewritten as follows:

$$EU_{INS} = (1-p)\,u\left((y+I)-I\right) + pu\left((y+I)-I-c+B\right) \tag{6}$$

The expected utility of the insurance group compared to the cash transfer group is therefore:

$$EU_{INS} - EU_{UCT} = (EU_{Insurance} - EU_{NoInsurance}) \text{ estimated at } y+I \tag{7}$$

Thus, this design allows us to estimate the expected utility of having health insurance, controlling for the income effect of having received the insurance free of charge. For risk-averse individuals, if p is large enough, we have $EU_{INS} - EU_{UCT} \geq 0$. In contrast, if p is very low, or perceived to be very low, then $EU_{UCT} \approx u(y+I) \geq u(y) \approx EU_{INS}$, and expected utility from cash is greater than from free insurance. Thus, theoretical predictions as to the value of insurance are ambiguous.

One concern with this experimental design is that it evaluates the impact of insurance at $y+I$, not y. Because the utility of receiving insurance relative to cash is decreasing in y [9], it is conceivable that I is large enough to make the effect of insurance very small. However, this is unlikely to be a concern in our case, since

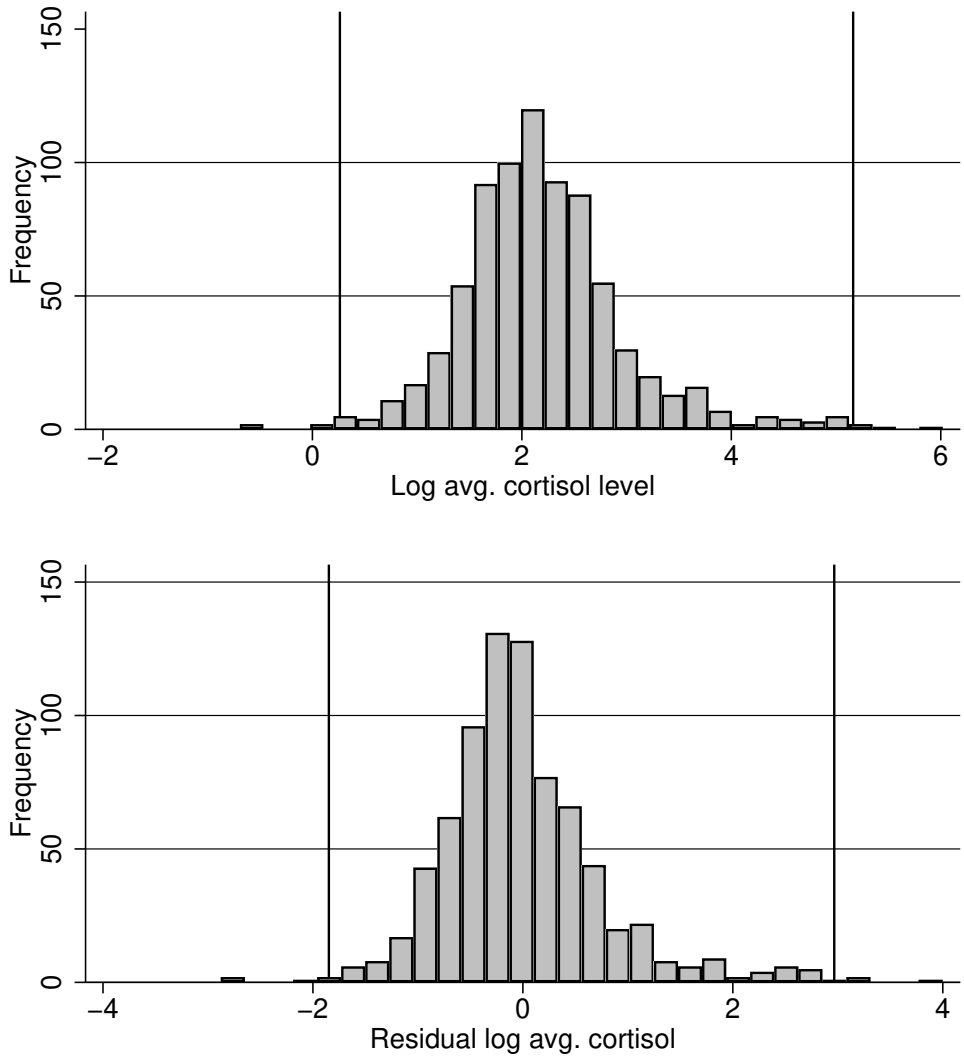
[8] This analysis assumes that individuals value the health insurance at market rates. If this is not the case, our estimates would provide either upper or lower bounds on the impact of insurance. Participants in our study reporterd a willingness-to-pay of USD 12.41 PPP per month for inpatient insurance, USD 6.82 PPP for outpatient insurance with copay, and USD 8.13 PPP for outpatient insurance without copay. Because the actual monthly premium for the policy we provided was USD 27.35 PPP, this evidence suggests that our results provide *lower* bounds on the effects of insurance.

[9] Set $p = 1$ and notice that, by Jensen's inequality, $\frac{\partial(EU_{Insurance} - EU_{NoInsurance})}{\partial y} = \frac{\partial(u(y-I-c+B) - u(y-c))}{\partial y} < 0$

the market value of health insurance is at an average of USD 338 PPP, which corresponds to only 8 percent of our sample households' average yearly income.

C. Distribution of cortisol levels at baseline

Figure C.1: Raw and residual log average cortisol with boundaries at the 1 and 99 percentiles



Notes: Top panel: distribution of cortisol levels at baseline, averaged across the two samples taken from each respondent, in log nmol/L. Bottom panel: baseline distribution of the residuals after regressing the raw cortisol values on control variables. Vertical lines denote the 1^{st} and 99^{th} percentiles.

D. Additional Tables

Table D.1: Treatment group by survey participation

	Observed		Attrition		
	Baseline	Endline	Total attrition	Non-complier	Non-complier without ID
Control	326	268	58	0	0
Insurance	286	206	80	46	19
UCT	288	219	69	34	24
Total	900	693	207	80	43

Notes: This table displays a cross-tabulation of treatment assignment and participation status. The first column includes all respondents surveyed at baseline. The second column includes the respondents who successfully completed the endline survey. The third column includes all respondents who attrited between baseline and endline surveys. The fourth column counts respondents who were mistakenly excluded from endline. The fifth column counts excluded respondents who did not have a valid national ID at baseline.

Table D.2: Treatment effects – Savings and credit

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Borrowed money in past year	0.02	-0.02	0.46	0.47	489
	(0.06)	(0.05)	[0.99]	(0.50)	
	[0.97]	[1.00]			
Total size of all loans taken in past year (USD PPP)	-103.18	-262.80	0.46	573.98	405
	(226.68)	(187.45)	[0.98]	(1969.32)	
	[0.74]	[0.99]			
Total mo. installments (USD PPP)	-13.38	-18.95	0.78	65.62	403
	(21.42)	(18.48)	[1.00]	(191.74)	
	[0.59]	[1.00]			
Total amount outstanding (USD PPP)	-151.60	-92.39	0.61	299.48	403
	(114.54)	(102.22)	[1.00]	(1144.79)	
	[0.31]	[1.00]			
Able to pay all loans	0.03	0.01	0.67	0.84	789
	(0.03)	(0.03)	[1.00]	(0.37)	
	[0.86]	[1.00]			
Total savings (USD PPP)	-161.84	284.79	0.18	639.60	622
	(145.16)	(340.93)	[0.88]	(1825.53)	
	[0.86]	[1.00]			
Total deposits past mo. (USD PPP)	-68.44	18.19	0.14	146.00	630
	(43.06)	(65.70)	[0.81]	(551.71)	
	[0.76]	[1.00]			
Informal group savings (USD PPP)	15.69	9.59	0.68	40.37	629
	(13.88)	(10.73)	[1.00]	(103.12)	
	[0.86]	[1.00]			
Total withdrawals past mo. (USD PPP)	-21.80	4.04	0.71	186.10	629
	(69.43)	(78.48)	[1.00]	(833.89)	
	[0.97]	[1.00]			
Feel secure with savings	-0.18	-0.03	0.33	4.07	479
	(0.15)	(0.14)	[0.98]	(1.24)	
	[0.86]	[1.00]			
Savings cover health exp.	0.02	-0.01	0.62	0.52	478
	(0.06)	(0.06)	[1.00]	(0.50)	
	[0.97]	[1.00]			
Total net remittances	-6137.25	-3119.88	0.33	3726.40	294
	(4088.36)	(3384.40)	[0.98]	(21236.36)	
	[0.76]	[1.00]			
Joint test p-value	0.42	0.84	0.67		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.3: Treatment effects – Labor

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Labor mobility index	0.02	0.01	0.94	0.00	626
	(0.11)	(0.10)	[1.00]	(1.00)	
	[1.00]	[1.00]			
Job risk index	-0.01	-0.13	0.21	0.00	640
	(0.09)	(0.09)	[0.94]	(1.00)	
	[1.00]	[0.92]			
Will leave JKA	0.01	0.01	0.97	0.02	640
	(0.01)	(0.01)	[1.00]	(0.13)	
	[1.00]	[0.98]			
Will change workplaces	0.00	0.00	0.94	0.00	626
	(0.01)	(0.01)	[1.00]	(0.07)	
	[1.00]	[1.00]			
Self-employed	0.03	-0.03	0.10	0.30	636
	(0.04)	(0.04)	[0.65]	(0.46)	
	[1.00]	[0.96]			
No. of jobs held	-0.04	-0.04	0.96	1.09	636
	(0.02)	(0.02)	[1.00]	(0.28)	
	[0.58]	[0.69]			
Perceived job risk	-0.03	-0.14	0.29	2.65	640
	(0.11)	(0.10)	[0.97]	(1.15)	
	[1.00]	[0.92]			
Objective job risk	0.13	0.01	0.18	3.38	539
	(0.08)	(0.08)	[0.92]	(0.83)	
	[0.78]	[1.00]			
Protection taken at work (1 - 3)	0.06	0.20	0.35	0.49	361
	(0.14)	(0.14)	[0.98]	(0.64)	
	[1.00]	[0.90]			
Shed leader	0.01	0.05*	0.17	0.09	637
	(0.03)	(0.03)	[0.83]	(0.28)	
	[1.00]	[0.61]			
Trust people in workplace	0.04	0.09	0.55	3.11	637
	(0.08)	(0.08)	[0.98]	(0.87)	
	[1.00]	[0.93]			
Formal training course	-0.01	-0.00	0.58	0.04	640
	(0.02)	(0.02)	[0.98]	(0.20)	
	[1.00]	[1.00]			
Informal training course	0.00	-0.01	0.43	0.05	640
	(0.02)	(0.02)	[0.98]	(0.22)	
	[1.00]	[0.98]			
Joint test p-value	0.64	0.33	0.70		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.4: Treatment effects – Productivity

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Labor productivity index	-0.04	-0.14	0.37	-0.00	638
	(0.11)	(0.09)	[0.96]	(1.00)	
	[0.98]	[0.59]			
Total weekly HH inc. last week (USD PPP)	-10.84	8.84	0.43	179.70	632
	(23.39)	(22.53)	[0.97]	(242.30)	
	[0.99]	[1.00]			
Weekly inc. last week for member 1 (USD PPP)	-0.88	11.01	0.55	153.71	632
	(18.63)	(19.36)	[0.98]	(199.14)	
	[0.99]	[0.98]			
Weekly inc. last year for member 1 (USD PPP)	33.56	12.25	0.40	144.83	635
	(21.68)	(18.45)	[0.97]	(151.36)	
	[0.55]	[0.97]			
Weekly inc. next week for member 1 (USD PPP)	-0.56	-0.43	1.00	178.82	602
	(21.71)	(24.03)	[1.00]	(222.69)	
	[0.99]	[1.00]			
Hours worked per day for all jobs	-0.21	-0.38*	0.45	10.03	634
	(0.23)	(0.20)	[0.97]	(2.32)	
	[0.88]	[0.38]			
Days worked per week for all jobs	-0.05	-0.06	0.90	6.18	602
	(0.05)	(0.05)	[0.99]	(0.49)	
	[0.80]	[0.80]			
Avg. pieces/day produced	8.37	1.56	0.49	38.88	501
	(11.67)	(9.01)	[0.99]	(90.76)	
	[0.94]	[1.00]			
Pieces/day produced last week	-5.97	-0.93	0.64	44.19	457
	(11.90)	(10.89)	[0.99]	(98.92)	
	[0.98]	[1.00]			
Joint test p-value	0.36	0.68	0.61		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.5: Treatment effects – Business enterprise

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Owns enterprise	0.01	0.03	0.58	0.16	640
	(0.04)	(0.04)	[0.85]	(0.37)	
	[0.99]	[0.81]			
Total profits earned in past year (USD PPP)	-107.28	1003.94	0.23	582.91	595
	(257.31)	(912.21)	[0.64]	(2937.95)	
	[0.99]	[0.76]			
Total revenue earned in past year (USD PPP)	-107.59	1095.07	0.21	699.36	595
	(288.11)	(948.23)	[0.60]	(3204.21)	
	[0.99]	[0.73]			
Total input costs in past year (USD PPP)	-33.72	59.90	0.28	171.16	640
	(77.21)	(95.83)	[0.69]	(934.97)	
	[0.99]	[0.81]			
Total durables expenditure in past year (USD PPP)	-14.67	-15.17	0.97	30.36	625
	(19.70)	(18.36)	[0.96]	(251.76)	
	[0.95]	[0.81]			
Non-HH employees	0.00	0.05	0.15	0.04	638
	(0.02)	(0.03)	[0.51]	(0.26)	
	[0.99]	[0.56]			
Months operated any enterprise	0.11	0.41	0.47	1.56	640
	(0.38)	(0.39)	[0.79]	(3.88)	
	[0.99]	[0.76]			
Joint test p-value	0.97	0.66	0.70		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.6: Treatment effects – Food security

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Times skipped meals past mo.	0.07	0.12	0.57	0.52	640
	(0.10)	(0.10)	[0.84]	(0.98)	
	[0.75]	[0.52]			
Times went hungry past mo.	-0.08	-0.14***	0.09*	0.19	640
	(0.05)	(0.04)	[0.31]	(0.58)	
	[0.49]	[0.00]***			
Times children skipped meals past mo.	-0.01	0.05	0.37	0.15	530
	(0.06)	(0.07)	[0.79]	(0.60)	
	[0.92]	[0.76]			
Times children went hungry past mo.	-0.03	-0.04**	0.26	0.04	530
	(0.02)	(0.02)	[0.79]	(0.27)	
	[0.62]	[0.11]			
Times ate meat, eggs, or fish last week	0.17	0.11	0.77	3.46	594
	(0.19)	(0.18)	[0.84]	(1.81)	
	[0.75]	[0.76]			
Joint test p-value	0.28	0.00***	0.20		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.7: Treatment effects – Consumption

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Total expenditure past mo. (USD PPP)	35.48	0.91	0.48	848.10	640
	(54.86)	(49.56)	[0.90]	(667.35)	
	[0.96]	[0.98]			
Medical expenditure past mo. (USD PPP)	-11.62	-9.04	0.73	33.14	636
	(7.97)	(8.20)	[0.94]	(91.48)	
	[0.55]	[0.78]			
Food expenditure past mo. (USD PPP)	-0.74	-10.27	0.43	209.81	635
	(16.93)	(16.66)	[0.90]	(209.33)	
	[0.98]	[0.95]			
Education expenditure past mo. (USD PPP)	-13.85	12.14	0.33	148.02	637
	(29.74)	(31.15)	[0.84]	(384.65)	
	[0.96]	[0.96]			
Temptation goods exp. past mo. (USD PPP)	-0.82	1.48	0.78	30.76	640
	(7.59)	(6.32)	[0.94]	(62.78)	
	[0.98]	[0.98]			
Social expenditure past mo. (USD PPP)	-12.37	-28.60**	0.12	121.98	640
	(15.30)	(14.48)	[0.58]	(196.33)	
	[0.94]	[0.25]			
Joint test p-value	0.27	0.25	0.43		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.8: Usage of insurance in insurance group

	Usage of CIC Microinsurance	
	Freq.	Percent
Not enrolled	27	10.5
Enrolled without claims	146	56.8
Made at least one claim	84	32.7
Total	257	100.0

Table D.9: Heckman selection model – Summary indices

	Intent-to-treat			Heckman Two-Stage				Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Insurance	(5) UCT	(6) Difference p-value	(7) Mills' Coefficient	(8) Control Mean (SD)	(9) N
Subjective well-being index	0.07	0.03	0.73	0.06	0.03	0.71	0.15	0.00	751
	(0.10)	(0.10)	[1.00]	(0.09)	(0.09)		(0.26)	(0.92)	
	[0.99]	[0.98]							
Log avg. cortisol level	-0.14**	-0.02	0.04**	-0.12**	-0.01	0.07*	0.43**	2.49	621
	(0.06)	(0.07)	[0.20]	(0.06)	(0.06)		(0.15)	(0.67)	
	[0.09]*	[0.99]							
Insurance ownership index	-0.03	0.04	0.39	-0.03	0.03	0.44	-0.03	-0.00	751
	(0.08)	(0.09)	[0.84]	(0.07)	(0.07)		(0.22)	(0.92)	
	[1.00]	[0.98]							
Insurance WTP index	-0.09	-0.11	0.77	-0.08	-0.10	0.79	-0.20	0.00	751
	(0.09)	(0.08)	[0.98]	(0.07)	(0.07)		(0.21)	(0.92)	
	[0.94]	[0.69]							
Asset ownership index	0.02	0.04	0.85	0.02	0.02	0.93	-0.26	-0.00	751
	(0.08)	(0.08)	[1.00]	(0.07)	(0.06)		(0.20)	(0.92)	
	[1.00]	[0.99]							
Labor mobility index	0.02	0.01	0.94	0.02	0.01	0.93	-0.07	0.00	737
	(0.11)	(0.10)	[1.00]	(0.09)	(0.09)		(0.25)	(0.92)	
	[1.00]	[0.99]							
Labor productivity index	-0.04	-0.14	0.37	-0.03	-0.13	0.32	-0.24	-0.00	749
	(0.11)	(0.09)	[0.97]	(0.09)	(0.09)		(0.27)	(0.92)	
	[1.00]	[0.84]							
Job risk index	-0.01	-0.13	0.21	-0.01	-0.11	0.22	-0.02	0.00	751
	(0.09)	(0.09)	[0.90]	(0.08)	(0.08)		(0.24)	(0.92)	
	[1.00]	[0.75]							
Joint p-value	0.43	0.52	0.51						

Notes: This table reports the estimated treatment effect of insurance and UCT on each row variable. Columns 1 - 3 report estimates from an intent-to-treat analysis without correcting for selection. Columns 4 - 6 applies the two-step correction with having a national ID, income strata dummies, gender, age, cash transfer amount, marital status, cohabitation status, and years of education as independent variables in the first stage equation. Columns 3 and 6 report the p-values for tests of the equality of the UCT and insurance coefficients. Column 7 reports the coefficient on the inverse Mills' ratio. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.10: Bounded treatment effects – Summary indices

	Insurance		UCT		Difference		Sample
	(1) Upper Bound	(2) Lower Bound	(3) Upper Bound	(4) Lower Bound	(5) Upper Bound	(6) Lower Bound	(7) Control Mean
Subjective well-being index	0.23*	-0.00	0.11	-0.07	0.22	-0.09	0.00
	(0.14) [0.45]	(0.14) [-0.23]	(0.13) [0.32]	(0.13) [-0.28]	(0.14) [0.45]	(0.14) [-0.32]	(1.00)
Log avg. cortisol level	-0.06	-0.18**	0.06	-0.09	0.05	-0.18**	2.48
	(0.11) [0.13]	(0.08) [-0.31]	(0.08) [0.19]	(0.09) [-0.23]	(0.08) [0.19]	(0.08) [-0.31]	(0.66)
Insurance WTP index	-0.05	-0.11	-0.13	-0.18	0.14	0.02	0.00
	(0.25) [0.40]	(0.10) [-0.30]	(0.09) [0.03]	(0.12) [-0.39]	(0.12) [0.33]	(0.09) [-0.13]	(1.00)
Asset ownership index	0.08	-0.11	0.05	-0.02	0.03	-0.13	-0.00
	(0.14) [0.32]	(0.12) [-0.30]	(0.10) [0.23]	(0.13) [-0.25]	(0.14) [0.26]	(0.10) [-0.28]	(1.00)
Labor mobility index	0.08	0.01	0.08	0.01	0.08	0.02	0.00
	(0.08) [0.22]	(0.11) [-0.17]	(0.34) [0.71]	(0.10) [-0.18]	(0.08) [0.22]	(0.10) [-0.16]	(1.00)
Labor productivity index	0.07	-0.15	-0.11	-0.20	0.24	-0.03	-0.00
	(0.17) [0.35]	(0.14) [-0.38]	(0.13) [0.12]	(0.14) [-0.45]	(0.17) [0.52]	(0.15) [-0.27]	(1.00)
Job risk index	0.29**	-0.08	-0.05	-0.22*	0.29*	-0.04	0.00
	(0.13) [0.50]	(0.13) [-0.29]	(0.12) [0.15]	(0.12) [-0.42]	(0.16) [0.56]	(0.13) [-0.26]	(1.00)

Notes: This table reports the Lee (2009) bounds on the treatment effect on respondents with a valid national ID. Columns 1 - 2 report the interval estimates for the effect of insurance. Columns 3 - 4 report the interval estimates for the effect of the cash transfer. Columns 5 - 6 report the interval estimates for the differential effect of insurance over the cash transfer. Standard errors are in parentheses and the Imbens-Manski 95% confidence interval is in brackets. Column 7 reports the mean and SD of the control group.

Table D.11: Treatment effects with FWER correction – Subjective well-being

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Subjective well-being index	0.07	0.03	0.73	0.00	640
	(0.10)	(0.10)	[1.00]	(1.00)	
	[0.94]	[0.99]			
Perceived stress	-0.26**	-0.01	0.03**	0.00	640
	(0.10)	(0.10)	[0.20]	(1.00)	
	[0.11]	[0.99]			
Optimism	0.02	0.15	0.21	0.00	640
	(0.10)	(0.09)	[0.78]	(1.00)	
	[1.00]	[0.54]			
Self-esteem	-0.02	-0.04	0.84	-0.00	640
	(0.10)	(0.09)	[1.00]	(1.00)	
	[1.00]	[0.99]			
Depression	-0.08	-0.07	0.95	0.00	640
	(0.10)	(0.09)	[1.00]	(1.00)	
	[0.94]	[0.91]			
Internal locus of control	-0.08	-0.17*	0.37	0.00	640
	(0.10)	(0.10)	[0.92]	(1.00)	
	[0.91]	[0.49]			
Happiness	0.01	0.02	0.94	0.00	640
	(0.09)	(0.09)	[1.00]	(1.00)	
	[1.00]	[0.99]			
Life satisfaction	0.05	0.03	0.88	-0.00	640
	(0.10)	(0.10)	[1.00]	(1.00)	
	[0.99]	[0.99]			
Joint test p-value	0.12	0.44	0.11		

Notes: This table reports the estimated treatment effect of insurance and UCTs on each row variable. Columns 1–2 report estimates from an intent-to-treat analysis, correcting for selection by restricting the sample to individuals who owned national IDs at baseline. Column 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER p-values in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.12: Bounded treatment effects – Subjective well-being

	Insurance		UCT		Difference		Sample
	(1) Upper Bound	(2) Lower Bound	(3) Upper Bound	(4) Lower Bound	(5) Upper Bound	(6) Lower Bound	(7) Control Mean
Subjective well-being index	0.23*	-0.00	0.11	-0.07	0.22	-0.09	0.00
	(0.14) [0.45]	(0.14) [-0.23]	(0.13) [0.32]	(0.13) [-0.28]	(0.14) [0.45]	(0.14) [-0.32]	(1.00)
Perceived stress	-0.16	-0.39***	0.09	-0.07	-0.12	-0.46***	0.00
	(0.15) [0.08]	(0.14) [-0.62]	(0.13) [0.31]	(0.12) [-0.27]	(0.14) [0.11]	(0.15) [-0.69]	(1.00)
Optimism	0.13	-0.14	0.28**	0.11	0.02	-0.30**	0.00
	(0.14) [0.37]	(0.14) [-0.37]	(0.12) [0.48]	(0.12) [-0.08]	(0.13) [0.24]	(0.13) [-0.52]	(1.00)
Self-esteem	0.08	-0.15	0.06	-0.12	0.17	-0.16	-0.00
	(0.13) [0.29]	(0.15) [-0.39]	(0.12) [0.26]	(0.12) [-0.31]	(0.13) [0.38]	(0.13) [-0.37]	(1.00)
Depression	0.05	-0.21*	-0.03	-0.11	0.14	-0.10	0.00
	(0.14) [0.28]	(0.12) [-0.41]	(0.11) [0.17]	(0.13) [-0.33]	(0.14) [0.36]	(0.12) [-0.31]	(1.00)
Internal locus of control	0.08	-0.20	-0.03	-0.35***	0.22	-0.14	0.00
	(0.14) [0.31]	(0.14) [-0.43]	(0.13) [0.18]	(0.13) [-0.56]	(0.16) [0.48]	(0.15) [-0.38]	(1.00)
Happiness	0.16	-0.48***	0.47***	-0.01	0.09	-0.43***	0.00
	(0.14) [0.40]	(0.12) [-0.67]	(0.11) [0.64]	(0.12) [-0.20]	(0.12) [0.29]	(0.10) [-0.60]	(1.00)
Life satisfaction	0.27**	-0.10	0.03	-0.23*	0.31**	-0.16	-0.00
	(0.13) [0.49]	(0.12) [-0.30]	(0.13) [0.24]	(0.12) [-0.43]	(0.14) [0.54]	(0.16) [-0.42]	(1.00)

Notes: This table reports the Lee (2009) bounds on the treatment effect on respondents with a valid national ID. Columns 1 - 2 report the interval estimates for the effect of insurance. Columns 3 - 4 report the interval estimates for the effect of the cash transfer. Columns 5 - 6 report the interval estimates for the differential effect of insurance over the cash transfer. Standard errors are in parentheses and the Imbens-Manski 95% confidence interval is in brackets. Column 7 reports the mean and SD of the control group.

Table D.13: Treatment effects with FWER correction – Cortisol

	No Controls			With Controls			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Insurance	(5) UCT	(6) Difference p-value	(7) Control Mean (SD)	(8) Obs.
Log avg. cortisol level	-0.14**	-0.02	0.04**	-0.15**	-0.01	0.03**	2.48	579
	(0.06)	(0.07)	[0.06]*	(0.06)	(0.07)	[0.19]	(0.66)	
	[0.02]**	[0.74]		[0.02]**	[0.83]			
Log avg. cortisol less 100	-0.15**	-0.07	0.16	-0.15**	-0.07	0.13	2.48	576
	(0.06)	(0.06)	[0.17]	(0.06)	(0.06)	[2.00]	(0.66)	
	[0.02]**	[0.32]		[0.02]**	[0.38]			
Log avg. cortisol (.99 Wins.)	-0.14**	-0.03	0.05**	-0.15**	-0.02	0.04**	2.48	579
	(0.06)	(0.06)	[0.07]*	(0.06)	(0.06)	[2.00]	(0.66)	
	[0.02]**	[0.69]		[0.02]**	[0.78]			

Notes: This table reports the estimated treatment effect of insurance and UCTs on each row variable. Cortisol outcomes are analyzed in log nmol/L units. We estimate the treatment effect on uncensored cortisol, omitting observations above 100 nmol/L, and Winsorizing the top 1% of the empirical distribution. Columns 1–2 report estimates from an OLS intent-to-treat analysis, correcting for selection by restricting the sample to individuals who owned national IDs at baseline. Columns 4–5 report OLS estimates controlling for hours slept and dummy variables for having eaten, smoked, drunk tea, drunk alcohol, done physical activity, taken medication, taken miraa, and chewed tobacco on the day of survey. Columns 3 and 6 report the p-values for tests of the equality of the UCT and insurance coefficients. The number of observations reflects the restriction of the sample to individuals with national ID at baseline and for whom endline cortisol could be analyzed. Standard errors are in parentheses and FWER p-values in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.14: Bounded treatment effects – Cortisol

	Insurance		UCT		Difference		Sample
	(1) Upper Bound	(2) Lower Bound	(3) Upper Bound	(4) Lower Bound	(5) Upper Bound	(6) Lower Bound	(7) Control Mean
Log avg. cortisol level	-0.06	-0.18**	0.06	-0.09	0.05	-0.18**	2.48
	(0.11) [0.13]	(0.08) [-0.31]	(0.08) [0.19]	(0.09) [-0.23]	(0.08) [0.19]	(0.08) [-0.31]	(0.66)
Log avg. cortisol less 100	-0.06	-0.18**	0.01	-0.09	0.05	-0.14*	2.48
	(0.11) [0.13]	(0.08) [-0.31]	(0.07) [0.13]	(0.09) [-0.24]	(0.08) [0.19]	(0.07) [-0.25]	(0.66)
Log avg. cortisol (.99 Wins.)	-0.06	-0.18**	0.06	-0.09	0.05	-0.18**	2.48
	(0.11) [0.13]	(0.08) [-0.31]	(0.08) [0.18]	(0.09) [-0.23]	(0.08) [0.19]	(0.07) [-0.30]	(0.66)

Notes: This table reports the Lee (2009) bounds on the treatment effect on respondents with a valid national ID. Columns 1 - 2 report the interval estimates for the effect of insurance. Columns 3 - 4 report the interval estimates for the effect of the cash transfer. Columns 5 - 6 report the interval estimates for the differential effect of insurance over the cash transfer. Standard errors are in parentheses and the Imbens-Manski 95% confidence interval is in brackets. Column 7 reports the mean and SD of the control group.

Table D.15: Insurance treatment effects for perceived stress and cortisol under imputation

	+2/-2 SD	+0.5/-0.5 SD	+0.25/-0.25 SD	0 SD	-0.25/+0.25 SD	-0.5/+0.5 SD	-2/+2 SD
Ins. vs. Control							
Perceived stress	0.74***	-0.02	-0.15*	-0.27***	-0.40***	-0.53***	-1.28***
Log avg. cortisol level	0.59***	0.03	-0.06	-0.15***	-0.24***	-0.33***	-0.88***
Log avg. cortisol less 100	0.55***	0.02	-0.07*	-0.16***	-0.25***	-0.34***	-0.87***
Log avg. cortisol (.99 Wins.)	0.58***	0.04	-0.06	-0.15***	-0.24***	-0.33***	-0.88***
Ins. vs. UCT							
Perceived stress	0.92***	0.04	-0.11	-0.26***	-0.41***	-0.55***	-1.44***
Log avg. cortisol level	0.61***	0.06	-0.04	-0.13***	-0.22***	-0.31***	-0.86***
Log avg. cortisol less 100	0.58***	0.07*	-0.01	-0.10***	-0.18***	-0.27***	-0.77***
Log avg. cortisol (.99 Wins.)	0.60***	0.06	-0.03	-0.12***	-0.21***	-0.30***	-0.84***

Notes: This table reports effect sizes for perceived stress and cortisol under various assumptions about all missing data. Column 1 is the extreme assumption that imputes 2 SD above the group mean to survey attriters in the insurance group and 2 SD below the mean for the comparison group. Column 7 imputes 2 SD below the group mean to survey attriters in the insurance group and 2 SD above the mean for the comparison group. Columns 2–6 impute with intermediate assumptions. The first panel reports treatment effects relative to the control group and the second panel reports effects relative to the UCT group.

Table D.16: Treatment effects for non-users by propensity score matching – Perceived stress and cortisol

	(1) Insurance v. control	(2) Insurance v. UCT	(3) Control Mean (SD)	(4) Obs.
Perceived stress	-0.42***	-0.37**	0.02	566
	(0.13)	(0.14)	(0.99)	
Log avg. cortisol level	-0.16**	-0.18**	2.49	511
	(0.07)	(0.07)	(0.67)	

Notes: This table reports the estimated treatment effect of holding insurance and UCTs on each row variable, restricting to sample to individuals who did not make insurance claims. To identify comparable individuals in the UCT and control groups, we match by radius matching with 0.01 radius. Standard errors are in parentheses. The number of observations reflects restriction of the sample to individuals who did not use the insurance, and their matched counterparts in the other experimental groups. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.17: Treatment effects – Daily activities

	Estimates			Sample	
	(1)	(2)	(3)	(4)	(5)
	Insurance	UCT	Difference p-value	Control Mean (SD)	Obs.
Hours of sleep	0.39***	0.15	0.07*	7.23	640
	(0.14)	(0.14)	[0.31]	(1.63)	
	[0.05]*	[0.90]			
Ate today	-0.03	0.00	0.47	0.63	640
	(0.05)	(0.05)	[0.80]	(0.48)	
	[0.78]	[1.00]			
Smoked today	-0.02	-0.01	0.56	0.20	640
	(0.03)	(0.02)	[0.80]	(0.40)	
	[0.64]	[1.00]			
Drank tea today	0.04	-0.01	0.07*	0.90	640
	(0.03)	(0.03)	[0.30]	(0.30)	
	[0.41]	[1.00]			
Drank alcohol today	-0.03*	0.01	0.05**	0.05	640
	(0.02)	(0.02)	[0.30]	(0.21)	
	[0.35]	[1.00]			
Phys. activity today	0.07	-0.02	0.10	0.45	640
	(0.05)	(0.05)	[0.35]	(0.50)	
	[0.51]	[1.00]			
Took medicine today	0.01	-0.02	0.36	0.10	640
	(0.03)	(0.03)	[0.80]	(0.30)	
	[0.78]	[0.96]			
Consumed miraa today	0.01	0.00	0.32	0.00	640
	(0.01)	(0.00)	[0.80]	(0.00)	
	[0.68]	[0.49]			
Chewed tobacco today	0.00	0.01*	0.08*	0.00	640
	(0.00)	(0.01)	[0.33]	(0.00)	
	[1.00]	[1.00]			
Joint test p-value	0.02**	0.78	0.02**		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.18: Treatment effects among participants with expired insurance – Perceived stress and cortisol

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Perceived stress	-0.25**	-0.02	0.06*	0.00	572
	(0.12)	(0.10)	[0.06]*	(1.00)	
	[0.03]**	[0.93]			
Log avg. cortisol level	-0.14**	-0.02	0.06*	2.48	516
	(0.06)	(0.07)	[0.06]*	(0.66)	
	[0.03]**	[0.93]			
Joint test p-value	0.01***	0.95	0.02**		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.19: Treatment effects – Willingness-to-pay for insurance

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Insurance WTP index	-0.09	-0.11	0.77	0.00	640
	(0.09)	(0.08)	[0.99]	(1.00)	
	[0.88]	[0.79]			
Total WTP for insurance (USD PPP)	-11.21	-12.16	0.93	90.19	640
	(11.24)	(10.02)	[0.99]	(123.65)	
	[0.86]	[0.89]			
WTP for crit. illness, inpatient, outpatient insurance (USD PPP)	-2.62	-3.74	0.73	26.38	640
	(3.74)	(3.27)	[0.99]	(40.34)	
	[0.95]	[0.86]			
WTP for crit. illness insurance (USD PPP)	-1.14	-1.57	0.86	14.74	640
	(2.52)	(2.29)	[1.00]	(25.11)	
	[0.98]	[0.93]			
WTP for fire insurance (USD PPP)	-1.22	-1.20	0.98	7.00	640
	(0.92)	(0.94)	[1.00]	(11.81)	
	[0.77]	[0.76]			
WTP for inpatient insurance (USD PPP)	0.18	-0.82	0.46	7.71	640
	(1.35)	(0.93)	[0.99]	(10.61)	
	[0.98]	[0.93]			
WTP for last expense insurance (USD PPP)	-1.87	-1.34	0.81	10.58	640
	(2.41)	(2.30)	[1.00]	(28.81)	
	[0.95]	[0.93]			
WTP for life insurance (USD PPP)	-0.92	-0.77	0.86	5.13	640
	(0.86)	(0.90)	[1.00]	(10.72)	
	[0.85]	[0.93]			
WTP for outpatient (copay) (USD PPP)	-1.73	-1.79	0.92	3.93	640
	(1.43)	(1.23)	[0.99]	(18.57)	
	[0.83]	[0.65]			
WTP for outpatient insurance (USD PPP)	-0.59	-1.16	0.74	6.92	640
	(2.01)	(1.48)	[0.99]	(20.12)	
	[0.98]	[0.93]			
WTP for welfare insurance (USD PPP)	-1.26	-1.79	0.60	7.80	640
	(1.20)	(1.12)	[0.99]	(14.46)	
	[0.86]	[0.54]			
Joint test p-value	0.77	0.52	0.49		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.20: Reasons for discontinuing insurance

	Reason for not buying ins.	
	Freq.	Percent
Too expensive	139	64.7
Not useful	16	7.4
Mistrust ins. companies	37	17.2
Already own	3	1.4
Never considered	5	2.3
Lack information	11	5.1
Hassle to use	4	1.9
Total	215	100.0

Notes: This table tabulates reasons for not continuing the health insurance policy for respondents in the insurance group.

Table D.21: Treatment effects – Insurance ownership

	Estimates			Sample	
	(1) Insurance	(2) UCT	(3) Difference p-value	(4) Control Mean (SD)	(5) Obs.
Insurance ownership index	-0.03	0.04	0.39	-0.00	640
	(0.08)	(0.09)	[0.70]	(1.00)	
	[0.92]	[0.95]			
Trust in insurance company	0.50***	-0.07	0.00***	3.00	640
	(0.09)	(0.10)	[0.00]***	(1.05)	
	[0.00]***	[0.94]			
Ownership of any insurance	-0.05*	-0.05*	0.95	0.13	640
	(0.03)	(0.03)	[0.99]	(0.34)	
	[0.25]	[0.50]			
Heard about insurance from others	0.01	0.00	0.90	0.95	640
	(0.02)	(0.02)	[0.99]	(0.21)	
	[0.92]	[0.98]			
Others' perception of insurance	-0.12**	0.01	0.02**	1.39	612
	(0.06)	(0.06)	[0.12]	(0.60)	
	[0.14]	[0.98]			
Others convinced to buy insurance	0.12***	0.07	0.25	0.56	612
	(0.05)	(0.05)	[0.70]	(0.50)	
	[0.05]*	[0.57]			
Will buy ins. next year	0.05	-0.07	0.01**	0.67	640
	(0.04)	(0.05)	[0.08]*	(0.47)	
	[0.66]	[0.54]			
Joint test p-value	0.00***	0.24	0.00***		

Notes: This table reports the estimated treatment effect of insurance and UCT among those whose policy expired before their endline survey date. Column 1 reports estimates of the treatment effect of insurance with respect to the control group and Column 2 reports the estimated effect of UCT. Columns 3 reports the p-values for tests of the equality of the UCT and insurance coefficients. The bottom row reports the p-value for a test of the treatment effect across models using SUR. Standard errors are in parentheses and FWER adjusted p-values are in brackets. * denotes significance at 10 pct., ** at 5 pct., and *** at 1 pct. level.

Table D.22: Summary statistics – Insurance usage among those enrolled

	Mean	SD	Median	Min	Max	Obs.
Days from baseline to CIC enrollment	291.70	82.15	284	55	792	230
Made a claim	0.37	0.48	0	0	1	230
Made at least one outpatient claim during study period	0.37	0.48	0	0	1	230
Made at least one inpatient claim during study period	0.04	0.19	0	0	1	230
Total no. of claims	5.04	10.21	0	0	74	231
No. of claims made for self	1.96	4.50	0	0	30	231
No. of claims made for others	2.90	6.39	0	0	33	231
No. of maternity claims	0.00	0.07	0	0	1	231
No. of outpatient claims	4.98	10.14	0	0	74	231
No. of inpatient claims	0.06	0.34	0	0	4	231
Total value of claims incurred by CIC (USD PPP)	156.51	469.65	0	0	4530	231
Total value of claims CIC paid (USD PPP)	156.09	469.21	0	0	4530	231