Alleviating time poverty among the working poor

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Abstract

Poverty entails more than a scarcity of material resources—it also involves a shortage of time. To examine the causal benefits of reducing time poverty, we will conduct a longitudinal field experiment in an urban slum in Kenya with a sample of working mothers, a population who is especially likely to experience severe time poverty. Participants will receive vouchers for services designed to reduce their burden of unpaid labor. The effect of these vouchers will be compared against equivalently valued unconditional cash transfers (UCTs) and a neutral control condition. Using a pre-post design, we will measure whether time-saving vouchers increase subjective well-being, lower perceived stress, and reduce relationship conflict as compared to UCTs and a control condition. In doing so, this research will test a model of economic aid that recognizes both financial and temporal constraints.

Poverty is associated with lower engagement in preventative health care (even when access is available),[1,2] lower medication adherence,[3] increased spending on 'temptation goods',[4] reduced productivity at work,[5] and lower adoption of useful new technologies (e.g., agricultural innovations).[6] These seemingly disparate behaviors may share a common feature: they may be driven, in part, by the fact that people living in material poverty also tend be 'time poor.' Indeed, poverty is not only a state of material constraints, it also involves temporal constraints. This study explores whether time poverty reinforces barriers toward economic mobility and contributes to poverty traps.

Consistent with previous research,[7,8,9] we refer to individuals as 'time poor' when they engage in long hours of unpaid work and have no choice but to do so. Time poverty severely affects low-income women living in developing countries. A lack of basic household amenities requires poor women to spend far more time on household production tasks like cooking and cleaning as compared to their richer counterparts.[10] For example, women in Sub-Saharan Africa spend an average of 4.2 hours on unpaid work each day.[11] These unpaid household activities can be conceptualized as a kind of tax that individuals, especially women, must pay before undertaking remunerated work. In this project, we propose that reducing time poverty, thereby lowering this personal 'tax,' will have direct benefits for subjective well-being, perceived stress, and relationship conflict, as well as indirect benefits for economic well-being.

Despite these potentially far-reaching consequences, there is little understanding of the psychological and economic consequences of the time poverty that often coincides with financial constraints. Traditional economic measurements of poverty often neglect the fact that households below the poverty line face substantive time deficits (Hirway provides a comprehensive review[12]). Furthermore, aid programs tend to focus on material constraints. Billions of dollars of

economic aid have been spent to provide monetary and non-monetary aid to people living in extreme poverty. The most common aid programs include food, livestock, and fertilizer, as well as services such as agricultural training, community health workers, and teachers.[13,14,15,16] We suggest that the effectiveness of these aid programs could be increased by considering recipients' time costs, either by adjusting how aid is delivered or by creating programs directly aimed at reducing recipients' temporal constraints (Khera provides related arguments[17,18]).

One reason that aid programs may neglect time poverty is the lack of data on time-use amongst the working poor in developing countries. While richer countries have benefited from extensive survey data on time-use, these data are critically absent from countries where time poverty is the most pervasive (Hirway provides a comprehensive review[12]). Despite these limitations, there is some evidence that time poverty may be an important factor in economic development efforts. A large scale correlational analysis of the Indian Human Development survey, which included 41,554 households in 1,503 villages and 971 urban neighborhoods, found that women who owned a cookstove and did not have to fetch wood were healthier and spent more time on income generating activities than women who did not own a cookstove.[19] Of course, this research cannot rule out selection effects, therefore women with higher wealth or status in their communities might also be more likely to own and benefit from appliances such as cookstoves.

One previous study experimentally tested the causal effects of reducing unpaid labor.[20] In this experiment, sixty working adults recruited in Vancouver, Canada were assigned to spend a small windfall of money ($40 CAD) during two consecutive weekends. During one weekend, participants were instructed to spend this windfall in any way that would save them time. During another weekend, participants were instructed to spend this windfall on a material purchase for

themselves. After making a time-saving (vs. material) purchase, participants reported greater positive mood, lower negative mood, and lower perceived stress. However, this experiment targeted affluent individuals living in North America, providing a small one-time payment, and assessing immediate mood. It is therefore unclear whether these findings would apply to poverty alleviation efforts.

Given the limited causal evidence in this area, we will utilize a randomized control trial to evaluate the benefits of reducing time poverty. We will recruit working women living in Kibera, an urban slum near Nairobi, Kenya. We selected this population because women living in this context face significant material and temporal constraints. In Kibera, working women earn an average of 100-200 KSH ($1-2 USD) per day and spend a median of 42 hours on paid labor and 36 hours on unpaid labor each week.[21] We will randomly assign women living in this community to receive time-saving vouchers designed to reduce their burden of unpaid labor for three consecutive weeks. Specifically, these vouchers will be redeemable for cooking or cleaning services (methodological details below). Based on our pilot data, we expect both of these time-saving vouchers to provide study participants with an additional 3-7 hours each week.

The effect of these time-saving vouchers will be compared against equivalently-valued unconditional cash transfers (UCTs). We will also compare time-saving vouchers and UCTs against a control condition in which participants do not receive aid of any kind.

UCTs have received a great deal of attention as a critical tool for poverty alleviation in developing countries [21,22,23] Recent research finds that UCT's produce significant welfare benefits.[21] For example, in a large scale field experiment in Kenya (*N*=1,372), households that received UCTs experienced significant improvements in self-reported happiness, life satisfaction, and perceived stress.[22] These well-being benefits persisted for up to three years.[24]

Cash transfers have also been shown to increase hours of employment, monthly net earnings, and subjective financial well-being when provided to the unemployed,[25,26] and to improve monthly cash earnings when provided to micro-entrepreneurs.[27] Cash transfers also improve empowerment among adolescent girls and young women, as proxied by increased agency and control over decision-making, greater access to financial resources, improved schooling outcomes, decreased teen pregnancy, and better health.[28] Furthermore, the administrative and overhead costs of providing unconditional cash transfers are extremely low. Given the well-documented benefits and low administrative costs, UCTs serve as a stringent standard by which to compare the effectiveness of aid programs designed to save time. Using equivalently-valued UCTs as a benchmark, we will measure the cost-effectiveness of time-saving services and isolate possible distinct benefits of reducing time versus financial poverty.[29,30]

Reducing time poverty directly addresses a critical market failure in urban slums. Time poverty is pervasive in this context due to limited infrastructure and a high cost for basic services (e.g. water, sewage, and electricity[31]). People in urban slums also cannot afford to purchase time-saving services. In Kibera, there are several small businesses that offer such services, but they are largely unaffordable. For example, a single load (8kg) of laundry costs 500 KSH, on average, which equates to over three times the average daily wage. In our pilot data, 76.5% of working women living in Kibera reported “never” paying for laundry services, and 82.4% reported “never” paying for prepared meals from local vendors. Providing cash transfers is unlikely to address this market failure because people do not readily spend money on time-saving services, even when they can afford to do so.[20]

Policymakers are not systematically addressing this market failure, partially because they also undervalue the possible benefits of time-saving services. In an initial pilot study, we asked

thirty current and aspiring policymakers from the Harvard Kennedy School of Public Policy how they would allocate 2100 KSH ($21 USD) of aid per recipient to improve the welfare of working women living in Kibera. Only 6% of respondents spontaneously reported that the 2100 KSH should be used to save time for these women. When we explicitly provided respondents with the choice to fund one of three aid programs (an unconditional cash transfer program, an in-kind goods program, or a time-saving program), only four respondents (13%) selected the time-saving program and twenty-six respondents (87%) chose cash. These findings suggest that both recipients and policymakers undervalue time-saving services.

In contrast, we expect that reducing temporal (vs. financial) poverty will have a positive impact on three critical outcomes: subjective well-being, perceived stress, and relationship conflict. We focus on subjective well-being and perceived stress because these outcomes are linked to economic decision-making.[32] For example, greater positive affect is associated with a range of downstream economic benefits including increased productivity, work performance, and higher earnings.[33,34] Furthermore, stress caused by poverty is linked to short-sighted economic decision-making and excessive risk aversion.[35] We focus on relationship conflict based on existing evidence that cash transfers can reduce intimate partner violence.[36] However, there is also some data showing that providing cash windfalls to women may lead to arguments with their partner about how to spend this income, possibly increasing domestic violence.[21] Because gains of time are harder to account for than gains of money[37] and because time is less fungible than money,[38] we predict that providing women with time-saving vouchers will be less likely to cause relationship conflict than cash transfers.

As discussed above, recent research finds that receiving cash transfers can have positive benefits for subjective well-being,[21,24,39] stress[21,40,41] and intimate partner violence.[42,43] Prior

research also finds that time-saving services can have positive benefits for subjective well-being, perceived stress, and relationship conflict.[20] Building on this research, we pre-register three hypotheses that will be tested using nine pre-registered comparisons. We predict that participants who are randomly assigned to receive UCTs or time-saving vouchers will experience positive benefits on each of our three key outcomes of interest at end line compared to participants who are randomly assigned to the control condition. We also predict that participants assigned to receive time-saving vouchers will experience greater positive benefits on these outcomes compared to participants receiving UCTs. To test these hypotheses, we will collect data until we have reached a Bayes Factor > 10 or < 0.10, or until we have reached a total sample size of *N*=2,000 participants across our three conditions.

H_1: Women who are randomly assigned to receive UCTs for three consecutive weeks will report higher subjective well-being, lower perceived stress, and lower relationship conflict at end line compared to women who are assigned to the control condition and receive no aid of any kind.

H_2: Women who are randomly assigned to receive time-saving services for three consecutive weeks will report higher subjective well-being, lower perceived stress, and lower relationship conflict at end line compared to women who are assigned to the control condition and receive no aid of any kind.

H_3: Women who are randomly assigned to receive time-saving services for three consecutive weeks will report higher subjective well-being, lower perceived stress, and lower relationship conflict at end line compared to women who are assigned to receive equivalently-valued UCTs.

Methods

This research has been approved by the ethics committee at the Harvard Business School (HBS-IRB18-0905) and the Kenya Medical Research Institute (Protocol No. Non-Kemri 629). All participants will provide informed consent.

We will recruit participants through the Busara Center for Behavioral Economics, a research organization based in Nairobi, Kenya. Busara has a dedicated participant pool of over 15,000 people living in nearby informal settlements, enabling efficient recruitment of working mothers living below the poverty line. The study will be implemented from the Kibera Town Center (KTC), a facility located in Kibera and operated by the Human Needs Project. Kibera is the largest informal settlement nearby Nairobi, Kenya, with an estimated 200,000 inhabitants. Based on similar research conducted with Busara,[21] we expect low attrition of around 10%.

Women who live no further than a 30-minute walk from Kibera Town Centre will be recruited via text message to participate in a five-minute eligibility phone call. This requirement ensures that accessing KTC does not impose a significant time cost. To participate, respondents must be 18 years of age or older (the legal age of consent in Kenya), provide informed consent, and work for pay at least twenty-five hours per week. To reduce attrition, we will only recruit working mothers with at least one child who is enrolled in school and living at home. These inclusion criteria will increase the likelihood that participants will remain in their current residence and complete the study in its entirety. Most women in Busara's subject pool send their children to school, therefore we do not expect this eligibility criteria to be a limiting factor.

Based on pilot research, we chose two time-saving vouchers for use in our experiment (prepared meal and laundry services; see below for more information). To ensure that these time-saving vouchers reduce participants' existing burdens of unpaid labor, we will exclude

participants who report that they "always" use laundry and/or prepared meal services. Similarly, we will exclude respondents who spend fewer than three hours per week on cooking and fewer than three hours per week completing laundry.

To facilitate data collection, respondents must have a working cell phone that is not shared with another household member. Over 90% of Kibera residents have their own phone,[21] thus we do not expect to exclude many respondents on this criterion. To ensure that the time-saving services meaningfully reduce the burden of unpaid labor, we will exclude participants with seven or more individuals living in their household. Lastly, we will exclude all participants who do not complete our primary end line measures.

As we are using validated scale measures that restrict the range of participants' responses, we will not define or identify outliers. We will conduct our proposed pre-registered analyses using all of the data that we collect from eligible participants. Based on recently published research conducted through Busara,[21] we expect our variables to be normally distributed.

Study Timeline

This study includes a baseline survey, weekly phone surveys and text messages throughout the experiment, an end line survey containing identical pre-registered measures to the baseline, and three follow-up phone surveys to track the persistence of any observed treatment effects. See Figure 1 for study flow.

Following from related research,[21] we will collect granular data on participants' affective experiences, stress, time-use, and household consumption throughout the experiment. All participants will receive compensation for completion of the baseline and end line surveys (500 KSH each), phone surveys (100 KSH each), and text message surveys (25 KSH each).

The baseline survey will be conducted in a lab setting (Week 1). Eligible participants will be invited to the Kibera Town Centre to provide consent and complete the baseline survey, including the primary pre-registered measures: subjective well-being, stress and relationship conflict. Participants will then complete exploratory and demographic measures (See Supplementary Information for a complete list of measures).

After completing the baseline survey, participants will be randomly assigned between-subjects to one of our two treatment conditions or a control condition (1=time-saving, 2=UCT, 3=control). Using the "sample" function in R, we will generate a random integer between the values of 1 and 3 by running the following code for each participant: treat<-sample(1:3,1).

Starting in Week 3, participants who are randomly assigned to one of the two treatment conditions will receive 1) time-saving services or 2) equivalently-valued unconditional cash transfers. Participants will receive one of these windfalls every week for three consecutive weeks (Week 3-5). The time-saving and UCT conditions will be matched in terms of cost-to-administer, thereby holding constant the total amount of aid that is disbursed.

In Week 6, all participants will be invited back to KTC to complete the end line survey, which includes identical measures of subjective well-being, stress, and relationship conflict.

For all data collections, trained field officers will guide participants through our measures in Swahili, ensuring that every participant—including participants with limited reading, writing, and numeracy skills—are able to comprehend and correctly complete instructions and measures. Field officers will be blind to condition for baseline and end line data collection. Phone surveys will not be performed blind to condition since we include a manipulation check asking about how time-saving vouchers or UCTs affected participants' burden of unpaid labor in a given week. None of the field officers will be told about the hypotheses of the study.

Details on Time-Saving Vouchers. To develop the time-saving vouchers, we selected services likely to have the greatest benefits for our target population. We conducted a pilot study to identify local services that meet the following criteria for working women in Kibera: the services 1) saved a significant amount of time, 2) replaced chores that are unpleasant, and 3) replaced chores that did not involve significant social interaction (i.e., women typically engaged in these chores alone). Based on these criteria, we selected prepared meals and laundry services (see Supplemental Information, *Supplemental Results* section for the results of our pilot). For all three treatment weeks, participants who are assigned to the time-saving condition will receive either prepared meals (two meal varieties alternated across weeks) or laundry services.

Condition 1: Time-Saving Vouchers. The cost to provide each of these time-saving services is 500 KSH per week. Based on our pilot data, 500 KSH worth of these services eliminates a significant amount of unpaid labor among our target population (3-7 hours per week on average; see Supplemental Information, *Supplemental Results* section). Building on prior research, we seek to amplify the possible benefits of the time-saving vouchers by reminding participants about the specific amount of time they will save[44] and by asking them to make detailed plans for this additional time.[45,46]

Condition 2: Unconditional Cash Transfers. The weekly cash transfer will be 500 KSH.[21]

Condition 3: Control. Participants will receive no windfalls of any kind. This condition provides a benchmark for evaluating the effectiveness of the treatment conditions on our key outcomes of interest.

Manipulation Check (T2)

To ensure that the time-saving services reduced burdens of unpaid labor compared to the UCT condition, we will ask all participants assigned to our experimental conditions to complete the following question each treatment week: "Over the PAST 7 DAYS, to what extent did receiving [prepared meals / laundry / cash transfers] affect your burden of unpaid labor?" Participants will indicate their response on a scale from -3 = *Decreased my burden of unpaid labor a lot*, 0 = *Did not change my burden of unpaid labor*; 3 = *Increased my burden of unpaid labor a lot*. We will combine and average participants' responses across the three treatment weeks.

Primary Measures (T1 and T2)

To measure subjective well-being at baseline and end line, participants will complete (a) the 12-item Schedule of Positive Affect and Negative Affect (SPANE[47]), and (b) the 5-item Satisfaction with Life Scale (SWLS[48]). Based on past research, we will define subjective well-being (SWB) as a combination of high positive affect (PA), low negative affect (NA) and high satisfaction with life (SWL).[49,50,51] We will create a composite measure at both time points by combining PA (averaged), SWL (averaged) and NA (averaged and reverse-coded).

To measure perceived stress, participants will complete the 10-item Perceived Stress Scale (PSS[52,53]) at baseline and end line. The PSS conceptualizes perceived stress as a lack of control over important life outcomes. Previous research suggests that both time-saving services and UCTs increase perceived control over daily events (Whillans, Pow, & Norton, *Working Paper*: https://www.hbs.edu/faculty/Publication%20Files/18-072_cb00f26d-7ca8-4d06-ae27-a501d1d9588d.pdf). [20] Our focus on this definition of stress addresses recent calls from researchers to focus on specific elements of stress, since stress as an overall concept has become

too broad to be useful.[54] We will create a composite measure of perceived stress at both time points by taking the average of all items of the PSS.

To measure relationship conflict at baseline and end line, participants will complete the 9-item negative interaction scale of the network of relationship inventory.[55] We will create a composite of relationship conflict at both time points by taking the average of all nine items, excluding participants who report that they are not married or in a marriage-like relationship.

Proposed Analysis Pipeline

Pre-Processing Checks. Before testing our primary hypotheses, we will conduct chi-square analyses to ensure that we do not have differential attrition across conditions. If this pre-processing check fails, we will conduct statistical analyses to understand the extent to which differential attrition influences our results. For each of the pre-registered outcomes, we will examine and report differences at baseline between participants who dropped out of the study and those who completed the full study. If there are systematic differences in attrition, we will include these differences as control variables in our pre-registered analyses. We will conduct a Bayesian ANCOVA to examine whether participants in the time-saving condition feel less burdened by unpaid labor during the intervention period as compared to participants in the UCT condition. Reaching BF>10 for this comparison will indicate a successful manipulation check.

Analytic Plan for Pre-registered Hypotheses

Overview. We will test each of our pre-registered hypotheses using Bayesian ANCOVA analyses. We will first test for differences between the UCT and control conditions at end line. We will then test for differences between the time-saving and control conditions at end line. Lastly, we will test for differences between the UCT and time-saving conditions at end line. We will conduct separate Bayesian ANCOVA analyses to test for differences in subjective well-

being, perceived stress, and relationship conflict at end line, controlling for the respective baseline measure in each analysis. We will run up to N=1,200 participants across our three conditions. If we do not reach a Bayes Factor < 0.10 or > 10.00 on our key outcomes of interest for each comparison, we will collect an additional 800 participants for a total sample of N=2,000 participants across our three conditions (i.e., UCTs, time-saving, and control).

UCT vs. Control. Following the approach advocated for by Rouder and colleagues,[56] we will calculate the Bayes factor B_{10} by comparing M_1, the model with the condition effect, and M_0, the null model. The null model M_0 will have a prior placed at point 0. To specify our Bayesian priors, we will place a half Cauchy prior with an r-scale value of .3 on the condition effect in M_1. This prior was selected based on research suggesting a small to medium effect size of cash transfers on well-being, stress, and relationship conflict.[21,24] The procedure will be performed using JASP.[57] If B_{10} exceeds 10.00 across our three dependent measures, we will conclude that the data presents strong evidence for differences in subjective well-being, stress, and relationship conflict between the UCT and control conditions. In the event that B_{10} drops below 0.10, we will conclude that the data presents strong evidence against differences between the UCT and control conditions. Based on a simulation under the assumption of d=0.30 for the difference between the UCT and control conditions, there is a 95% probability B_{10} will exceed 10.00 under this procedure with a per condition sample size of N=666.

Time-Saving Voucher vs. Control. To specify our Bayesian priors, we will place a half Cauchy prior with an r-scale value of .5 on the condition effect in M_1. This prior was selected based on research suggesting a medium effect of time-saving services on subjective well-being, perceived stress, and relationship conflict.[20] If B_{10} exceeds 10.00 for each of our three dependent measures, we will conclude that the data presents strong evidence for differences in well-being,

stress, and relationship conflict between the time-saving and control conditions. In the event that B_{10} drops below 0.10, we will conclude that the data presents strong evidence against differences between conditions. Based on a simulation under the assumption of d = 0.50 for the difference between the time-saving and control conditions, there is a 99% probability B_{10} will exceed 10.00 under this procedure with a per condition sample size of N=666.

UCT vs. Time-Saving Voucher. To specify our Bayesian priors, we will place a half Cauchy prior with an r-scale value of .4 on the condition effect in M_1. This prior was selected based on research suggesting a medium effect of receiving time-saving services compared to receiving material goods on subjective well-being and perceived stress.[20] If B_{10} exceeds 10.00 for each of our three dependent measures, we will conclude that the data presents strong evidence for differences in well-being, stress, and relationship conflict between UCT and time-saving conditions. In the event that B_{10} drops below 0.10, we will conclude that the data presents strong evidence against differences between the UCT and time-saving conditions. Based on a simulation under the assumption of d = 0.40 for the difference between the time-saving and UCT conditions, there is a 99% probability B_{10} will exceed 10 under this procedure with a per condition sample size of N=666.

Pre-registration guidelines from this journal require us to confirm that we will collect data until we have reached a Bayes Factor < 0.10 or > 10.00 on our key outcomes (subjective well-being, perceived stress, and relationship conflict) for each of our three comparisons of interest (UCT vs. control, time-saving vs. control, and UCT vs. time-saving). In the current design, we have proposed that we will collect data from an initial twelve-hundred participants (N=400 per condition). After collecting data from twelve-hundred participants, we will conduct each of the nine Bayesian ANCOVA analyses; three between-condition comparisons for each of

the three primary outcomes of interest. If we find inconclusive results, we will collect an additional 800 participants sampled evenly across our three conditions for a total of *N*=2,000 participants (or *N*=666 participants per condition). When all 2,000 participants have completed the study, we will re-run all of the pre-specified analyses described above.

After running two-thousand participants, in the unlikely event that our Bayesian results remain inconclusive, we will stop data collection and report the results. At this large sample size, inconclusive results would indicate that our treatment conditions are unlikely to provide a welfare improvement, or that our time-saving vouchers are unlikely to provide a large welfare improvement over UCTs, and that studies with even larger samples would be necessary to provide more definitive results.

Exploratory analyses

Exploratory Outcome Measures. To further examine the welfare effects of UCTs and time-saving vouchers, we will collect additional indicators of economic well-being. At baseline and end line, after completing the pre-registered measures, participants will respond to a self-reported measure of subjective financial well-being[58] as well as a series of items measuring objective financial well-being (adapted from the Federal Reserve Board Survey of Household Economics and Decision Making).[59]

Longitudinal Measures. Throughout the experiment, we will collect detailed measures of time-use, consumption, subjective well-being, perceived stress, and relationship conflict (see Supplementary Methods for exact questions used). These measures will be collected weekly via phone surveys and text messages before, during, and after the intervention period (Week 2 through Week 9).

Patterns of time-use will be measured once per week during phone surveys. Through a structured interview process, we will collect data for the past seven days on the amount of time spent on various activities, including unpaid labor. We will also collect consumption data, including a detailed list of all recalled expenditures over the past seven days. Lastly, we will collect abbreviated measures of well-being, stress, and relationship conflict. In addition to weekly phone calls, we will collect an additional measure of subjective well-being via a series of text messages during the experiment (see Figure 1 for a timeline of our longitudinal measures).

Negative Externalities. It is possible that time-saving vouchers could have negative externalities. The time that women save by receiving meals or laundry could be seen by other household members as a fungible resource, thereby increasing the amount of time that women in our sample spend completing unpaid labor for friends and extended family (versus for their own household). As a result, we cannot rule out the possibility that participants who receive time-saving vouchers might interact less with their friends and family, undermining subjective well-being. Time-saving services could also increase jealousy among extended family and friends and decrease the quality of respondents' social interactions during the study. To examine these possibilities, our baseline and end line surveys include exploratory questions about time spent with friends and family and satisfaction with these relationships over the course of the study.

We will also explore possible negative externalities of receiving the unconditional cash transfers, including increases in temptation spending (e.g. consumption of alcohol and tobacco), gambling behavior, and a reduction in the motivation to work.[60]

Mechanisms. There are three possible mechanisms for the proposed subjective well-being benefits of time-saving vouchers. Time-saving vouchers could increase well-being over the course of the study by 1) reducing the total number of hours spent engaging in unpaid labor, 2)

410 removing disliked tasks, or 3) enabling people to spend more of their time engaged in welfare-
411 producing activities (e.g. paid work or socializing[33,61]). In the current study, we will provide
412 preliminary correlational evidence for each of these possible mechanisms.

413 **Individual Differences.** The benefits of time-saving vouchers might be strongest for
414 respondents with work skills that allow them to take on additional paid labor. We will test for
415 this possibility by examining whether treatment effects vary by level of education and sector of
416 employment. The benefits of time-saving vouchers might also be strongest in contexts where
417 there is a lot of market work available or where this work primarily consists of short-term
418 contracts or micro-enterprises. We will test for this possibility by examining whether treatment
419 effects vary depending on the nature (i.e., flexibility) of participants' primary source of income.

420 Although the analyses reported in this section are exploratory in nature, we will report the
421 strength of the evidence for each of these analyses utilizing a Bayesian approach.

422 **Data Availability Statement**

423 The datasets generated and analyzed during the current research will be available through
424 the Open Science Framework: https://osf.io/pkyt9/

425 **Code Availability Statement**

426 Custom code that supports the findings of the study will be available through the Open
427 Science Framework: https://osf.io/pkyt9/

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Author Contributions

C.W. and A.W. contributed equally to all aspects of the project including but not limited to experimental design, project planning, implementation, manuscript writing, and data analysis.

Competing Interests

The authors declare no competing interests.

449 **Figure 1.** Overview of study design and timeline