Breadwinner's Burden: The Effect of Financial Concerns on Sleeplessness

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Abstract

Using a regression discontinuity design, we find that eligible household heads surveyed just after an unconditional cash transfer in Indonesia report a 0.4 standard deviation improvement in sleep quality compared to those surveyed just before, and they perform better on cognitive tasks sensitive to sleep deprivation. The cash transfer appears to alleviate financial concerns for household heads—typically the breadwinners—improving their sleep. Post-disbursement, eligible households increase savings, reduce debts, and household heads feel less worried, frustrated, and tired. These effects are not observed in ineligible household heads or other members of eligible households.

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1 Introduction

A growing body of literature highlights that concerns about finances have broad psychological consequences, affecting happiness and mental health, cognition and decision-making, test scores, and productivity (Haushofer and Fehr 2014; Schilbach, Schofield and Mullainathan 2016; Ridley et al. 2020; Haushofer and Shapiro 2016; Mullainathan and Shafir 2013; Mani et al. 2013; Shah, Shafir and Mullainathan 2015; Ong, Theseira and Ng 2019; Duquennois 2022; Kaur et al. 2022). However, we know very little about the impact on sleep—a crucial factor for health, education, and productivity (Banks and Dinges 2007; Carrell, Maghakian and West 2011; Jagnani 2022; Bessone et al. 2021; Gibson and Shrader 2018). This paper fills that gap by providing real-world evidence of how financial concerns impact sleeplessness.

On November 17, 2014, Indonesia announced that eligible households could use their social protection cards to receive a lump-sum transfer of IDR 400,000 (around USD 30) from the Bantuan Langsung Sementara Masyarakat (BLSM) program, representing about 25% of monthly expenses for the median recipient. The government had publicly discussed this forthcoming transfer program, which aimed to cushion poor households from a simultaneous reduction in fuel subsidies, but its mid-November announcement made both the subsidy cut and the transfer certain and effective immediately. Coincidentally, the transfer took place in the middle of the administration of a nationwide household survey, the Indonesian Family Life Survey (IFLS 5), which collected detailed sleep quality data for the past 7 days for all household members over 15 years of age.

Using a regression discontinuity research design, we find a sharp and statistically significant increase in BLSM transfer receipt immediately after the cash transfer announcement and start of disbursement, November 17, 2014, for likely eligible (cardholders) households.[1] Indeed, roughly 50% of these households claimed their cash within three weeks.[2] Correspondingly, we find cardholder household heads surveyed just after the start of the cash transfer disbursement reported significantly better sleep quality (0.4 sd), compared to cardholder household heads surveyed just before the start of the cash disbursement.

[1] Because ownership of social protection cards is necessary but not sufficient for BLSM transfer eligibility, we can only identify households *likely* eligible to receive the BLSM transfer.

[2] However, <1% non-cardholder households report receipt of BLSM transfers before or after November 17.

Consistent with findings from sleep medicine (Lim and Dinges 2008; Killgore 2010; Lim and Dinges 2010; Killgore and Weber 2014), improvements in sleep quality are also reflected in cognitive indicators sensitive to sleep deprivation (0.16 sd), such as memory and attention.[3]

These findings are not driven by differences in characteristics of households surveyed on either side of the transfer announcement: households surveyed before and after the start of the cash disbursement are statistically similar on numerous socioeconomic indicators. Our results are also not driven by aggregate shocks that may have coincided with the timing of the transfer: we find no difference in sleep quality after the cash disbursement for heads of households ineligible (non-cardholders) for the cash transfer program, not even for non-cardholder household heads who are observably similar to cardholder household heads.

The improvement in sleep quality spans all demographic subgroups of household heads, unaffected by age or gender, suggesting the improvement isn't tied to demographic-specific factors. In contrast, other members of cardholder households did not show similar improvements. Typically the breadwinner, the household head is identified by household members to the IFLS surveyor as the person *'responsible for satisfying the daily necessities of the household or regarded/assigned as the head of the household.'* At baseline, household heads' sleep quality is more sensitive to socioeconomic status than that of other members, even when age and gender are considered, suggesting that household heads face unique financial pressures that affect sleep. The BLSM transfer may have alleviated financial worries for the household head, resulting in improved sleep quality. This explanation aligns with evidence from psychology, public health, and sleep medicine showing that financial strain significantly impacts sleep onset and continuity (Hall et al. 2008, 2009; Perales and Plage 2017; Zheng et al. 2012; Warth et al. 2009; The American Academy of Sleep Medicine 2022).

Supporting this interpretation, we examine changes in cardholder households' expenditure patterns immediately following the BLSM cash transfer. Post-disbursement, cardholder households reported increased savings and contributions to informal microfinance groups, alongside reduced outstanding debts. However, we find no evidence of changes in expenditures on food, temptation

[3]However, the psychological impacts of economic conditions can have a direct effect on cognitive function without influencing sleep quality (Kaur et al. 2022). Therefore, we cannot claim that improvement in sleep quality is solely responsible for the improvement in cognitive function.

goods, non-food necessities, or consumer durables. This financial bolstering may have enhanced cardholder household heads' ability to manage emergencies, such as sudden illnesses, reducing vulnerability and anxiety (Dupas and Robinson 2013; Kaur et al. 2022; Pew Charitable Trusts 2016; Martínez-Marquina and Shi 2024). Indeed, we find that cardholder household heads, but not other household members, report feeling less worried (7 percentage points), frustrated (6 percentage points), and tired (9 percentage points) after the cash disbursement.[4] Overall, these results suggest that reduced financial concerns – likely through psychological channels – improved sleep quality.

Contributions to the literature. Evidence from public health, sleep medicine, and economics suggests that poorer individuals get less sleep than wealthier ones (Lauderdale et al. 2006; Grandner et al. 2010; Patel et al. 2010; Bessone et al. 2021; Rao et al. 2021). However, we know little about why poor individuals are unable to get more high-return sleep. Some possible explanations include long or irregular work schedules (Walch, Cochran and Forger 2016), underestimation of sleep's value or lack of information to overcome sleep barriers, as seen among U.S. college students (Avery, Giuntella and Jiao 2022), or lower returns to time spent in bed due to poorer sleep quality (Bessone et al. 2021).

Our results support the last explanation. Despite spending more time in bed, poor individuals struggle to improve sleep quality, at least partially due to the psychological impacts of financial concerns. By reducing financial worries through the cash transfer announcement and disbursement, we observe significant improvements in sleep quality and sleep sensitive cognition indicators.

Furthermore, these effects are concentrated among household heads—the typical breadwinners—with no intra-household spillovers. This pattern is evident not only in sleep quality but also in cognitive measures sensitive to sleep deprivation and indicators of affect. Collectively, these results advance the aforementioned literature on the psychological impacts of economic conditions, which have largely neglected sleep,[5] that has provided mixed empirical evidence on cognition in real-world contexts (Fehr, Fink and Jack 2022; Carvalho, Meier and Wang 2016), and has rarely

[4]However, due to data and design limitations, we cannot conclusively determine whether the improvement in sleep quality or decrease in worries are directly attributable to the changes in savings and loan balances.

[5]Our findings differ from Kaur et al. (2022), who observed that cash infusion improved workers' cognition and productivity but found no effects on sleep quality. This contrast may be due to differences in transfer size, participant roles within the household, sleep measurement methods, and the cognitive tasks studied.

pinpointed which household members are most affected by financial concerns.

Lastly, we contribute to the extensive literature on cash transfers (see Bastagli et al. 2016 and Evans and Popova 2017, for reviews). We show that immediately following the receipt of cash transfers, eligible households prioritize financial stability by paying off loans, increasing savings, and boosting contributions to informal microfinance groups. However, we do not observe an increase in spending on necessities, temptation goods, or the purchase of durable assets. Importantly, the literature rarely includes measurements of spending immediately following cash transfers. Our research setting allows for these assessments, within weeks of the transfer, providing a more precise understanding of how recipients use these funds.

2 Context and Data

2.1 Bantuan Langsung Sementara Masyarakat (BLSM)

Over the past decade, Indonesia has reduced existing fuel subsidies and compensated the poorest households for the subsequent rise in fuel, food, and transport prices through an unconditional cash transfer program, the Bantuan Langsung Sementara Masyarakat (BLSM). In this paper, we study the BLSM transfers that followed the reduction of fuel subsidies in 2014.

President Joko Widodo, who took office on October 20, 2014, campaigned on a promise to tackle Indonesia's soaring $23 billion fuel subsidy bill—the main factor behind the country's budget and current account deficits.[6] Despite his commitment, predicting when he would act was difficult because fuel subsidies were popular with both voters and lawmakers, and raising fuel prices had historically sparked protests and political unrest (Cochrane 2014). In fact, uncertainty persisted in the week prior to the announcement as a sharp drop in global oil prices eased immediate fiscal pressures. This was evident on November 13, 2014—just four days before the announcement—when Husain Abdullah, spokesman for Vice President Jusuf Kalla, stated, "If we follow the trend, it

[6]During the campaign, Mr. Joko suggested eliminating the subsidy completely by gradually raising the price of gasoline over four years. Presidential elections were held in Indonesia on 9 July 2014. On 22 July, the General Elections Commission (KPU) announced Joko Widodo's victory. He and his vice president, Jusuf Kalla, were sworn-in on 20 October 2014, for a five-year term.

should be this month. But we don't know for sure; there are other considerations to decide on a precise date" (Reuters 2014).

Adding to the anticipation was the government's preparation for compensatory measures. On September 29, 2014, more than a month prior to the actual announcement, the government allocated IDR 10 trillion for the BLSM program to cushion the impact of the expected fuel price increase. This allocation would allow the new administration to raise fuel prices without needing further approval from the Indonesian House of Representatives for BLSM funds (Praditya 2014). Despite these preparations, the exact timing of the fuel price increase and the corresponding BLSM disbursement remained uncertain until the official announcement.

On Monday, November 17, 2014, in an announcement, President Joko Widodo raised subsidized gasoline prices by around 30 percent and diesel prices by around 36 percent, effective immediately (Shaffer 2014). Concurrently, it was also announced that eligible households would soon receive a disbursement of IDR 400,000 (roughly USD 30), which is about 25 percent of the monthly expenditures for the median recipient household.

Simple calculations suggest that the subsequent increase in monthly expenditures due to the reduction in fuel subsidies were about IDR 46,000 or 11.5 percent of IDR 400,000 for the median cardholder household.[7] Therefore, IDR 400,000 represented a sizeable and unconditional transfer of liquidity to recipient households.

Eligible households could use their social protection cards (Kartu Keluarga Sejahtera, Kartu Simpanan Keluarga Sejahtera, or Kartu Perlindungan Sosial) to prove their eligibility, and retrieve IDR 400,000 at their nearest post office (The World Bank 2017; Stefanie 2014).[8] Note, however, that social protection card ownership is necessary but not sufficient for BLSM transfer eligibility; households must also be identified as poor or vulnerable by the national registry.

[7]Monthly fuel expenditure for the median cardholder household before November 17, 2014, was roughly IDR 30,000; the corresponding number for the median non-cardholder household was IDR 36,000. The fuel subsidy cut would thus represent an increase of IDR 10,000 in monthly fuel expenditure for the median cardholder household and IDR 12,000 for the median non-cardholder household. The subsequent price increases in food and other non-food items – as captured by the rise in inflation between November-January – represented an increase of IDR 36,000 in monthly expenditures for the median cardholder household and IDR 48,000 for the median non-cardholder household.

[8]Eligible households had already received their social protection cards via the national postal service prior to November 17, after their poverty status was verified by the national registry.

2.2 The Indonesian Family Life Survey (IFLS)

The November 2014 transfers aligned with the fifth wave of the Indonesian Family Life Survey (IFLS 5), a longitudinal dataset by the RAND Corporation. Spanning 1993 to 2015, the IFLS covers 13 of the 27 provinces existing in Indonesia in 1993, representing 83% of the population. The IFLS 5, conducted from late August 2014 to April 2015, surveyed 15,185 households with 55,935 individuals. Survey administration was in full swing by November 17, the start of the BLSM transfer disbursement. Figure A1 shows the distribution of surveys over this period.

Sleep quality and time-in-bed data. The IFLS 5 collected detailed sleep quality data over the past 7 days from all household members aged over 15, using a 10-item questionnaire from the Patient Reported Outcomes Measurement Information System (PROMIS)—comprising five items each from sleep disturbance and sleep-related impairment banks. These items are validated against well-known indices like the Pittsburgh Sleep Quality Index and the Epworth Sleepiness Scale, and objective actigraphy-based measures such as sleep latency and efficiency (Yu et al. 2012; Buysse et al. 2010; Cella et al. 2010; Giordano et al. 2022; Hanish, Lin-Dyken and Han 2017; Sletten et al. 2018). We use these items to construct an aggregate sleep quality index (SQI) and analyze its components. Additionally, the IFLS 5 recorded bedtime and wake-up times the day before the survey for each member, providing data on time in bed (but not sleep quantity).

Expenditure, affect, and cognition data. The IFLS 5 collected comprehensive data, including detailed household food consumption over the past 7 days, monthly expenditures on recurring non-food items, annual spending on sporadic non-food items, and current asset and liability values. For all household members over 15, the survey also recorded data on three positive affects (happiness, contentment, enthusiasm) and nine negative affects (worries, frustration, sadness, stress, pain, boredom, loneliness, anger, tiredness) from the previous day.

Additionally, the IFLS 5 assessed cognition through tests such as eight Raven's Matrices, mathematical problems, and memory tests involving the recall of a ten-word list immediately and after some time. Surveyors also evaluated respondents' attentiveness during the survey, assessed

after the first and second hour of the survey.

BLSM transfers data. The survey also collected detailed information on BLSM transfers, including the month of receipt and amount of transfers. Information on whether the household has any of the social protection (SP) cards required to claim BLSM transfers is also recorded. Unfortunately, because ownership of social protection cards is necessary but not sufficient for BLSM transfer eligibility, we can only identify households *likely* eligible to receive BLSM transfers. Nonetheless, together these data allow us to (i) identify the precise month households report receipt of BLSM transfers, (ii) verify that households that do not have social protection cards (ineligible households) did not receive BLSM transfers, and critically, (iii) identify households who have social protection cards and are thus likely eligible for the BLSM transfer even though they were interviewed prior to the transfer announcement date.

3 Research Design: Regression Discontinuity

To examine the causal effects of financial concerns on sleep quality, we use a regression discontinuity design that leverages the BLSM transfer announcement and the start of the disbursement, November 17, 2014:

$$Y_{ihekd} = \beta_0 + \beta_1 \mathbf{1}(Date_{ihek} \geq T) + \beta_2 (Date_{ihek} - T) + \\ + \beta_3 (Date_{ihek} - T) * \mathbf{1}(Date_{ihek} \geq T) + \boldsymbol{\theta} \mathbf{X_{ihek}} + \rho_k + \nu_{ihekd}. \tag{1}$$

Y_{ihekd} is the outcome of interest (sleep quality, cognitive measures, affect) for individual i in household h in enumeration area e in kabupaten (district) k on survey date d. Our outcomes of interest also include household-level expenditures, assets, and liabilities (Y_{hekd}). $Date_{ihek}$ indicates the date on which individual- and household-level outcomes were recorded, while T is the treatment threshold. Figure A2 shows the density of the survey week distribution is continuous across the treatment threshold. We include a vector of individual or household characteristics, $\mathbf{X_{ihek}}$, as controls. Specifically, we control for age and gender for individual-level outcomes, with an additional control for years of schooling for individual-level cognitive measures. We control for

household size and composition for household-level outcomes. ρ_k are kabupaten (district) fixed effects. Standard errors are clustered at the enumeration area level.

Analysis sample. To construct our analysis sample we restrict the sample to households where (i) the household head answered the 10-item questionnaire on sleep quality and (ii) the household survey, interview with the household head, and interviews with other household members, all occurred within 3 months (90 days) before or after November 17, 2014. Our analysis sample includes 18,348 individuals from 7,739 households. Of these, 1,788 households have a social protection card (likely eligible households), while 5,951 do not have a social protection card (ineligible households). Therefore, at the individual level, our sample includes 1,788 cardholder and 5,951 non-cardholder household heads. The corresponding numbers for other members of the household are 2,741 and 7,868, respectively.

Balance tests. The underlying assumption of our research design is that households surveyed on or just after November 17 are, on average, similar to households surveyed just before November 17. To test this assumption, we show that survey attrition and non-response, ownership of social protection cards, and observable socioeconomic indicators for households and household members on either side of the cutoff are similar (Table A1).

Sleep quality and time in bed at baseline. In Indonesia, higher socioeconomic status individuals, as indicated by pre-disbursement household assets, spend less time in bed but have better sleep quality (Figure A3), aligning with US and India data from wearable sleep trackers (Lauderdale et al. 2006; Bessone et al. 2021). Importantly, we find that household heads' sleep quality is much more positively correlated with socioeconomic status than that of other members, with a pronounced positive correlation for heads, even when adjusted for age and gender (Figure A4). This suggests that household heads face unique financial strains that affect their sleep quality.

4 Results: Impacts of Financial Concerns on Sleeplessness

4.1 First Stage: Transfer Receipt and Amount

We observe a sharp and statistically significant increase in BLSM transfer receipt on November 17, 2014, for cardholder households (Figure 1a). Eligible cardholder households retrieved the cash transfer at a rapid pace such that 50% of cardholder households report BLSM transfer receipt by December 7, a rate that is stable thereafter. Most recipient households (81%) reported transfers of IDR 400,000 (about USD 30).[9] Cardholder households surveyed on or just after November 17 are 22 percentage points more likely to report a BLSM transfer receipt (Table A2). Furthermore, cardholder households surveyed on or just after November 17 report BLSM transfers of IDR 84,000 on average. However, we find no first stage – neither visually nor statistically – for non-cardholder households: $<$1% non-cardholder households report receipt of BLSM transfers before or after November 17 (Figure 1b).

4.2 Impacts on Household Heads' Sleep Quality

We observe a sharp increase in cardholder household heads' sleep quality following the cash transfer announcement, November 17, with no corresponding change in sleep quality for non-cardholder household heads (Figure 1c and 1d).

Table 1, Panel (a) presents the corresponding reduced form point estimate of 0.4 sd for cardholder household heads.[10] Because these effects are not observed for non-cardholder household heads, it is unlikely that our results are driven by aggregate shocks that may have coincided with the timing of the cash transfer.[11] Indeed, we reject that the point estimates for cardholder and

[9] We cannot differentiate between when the cash transfer was ready for collection by households at the nearest post office and when it was actually collected. Although the announcement and initial disbursement began on November 17, 2014, and all post offices likely received the funds by December 7, the specific dates of disbursement to *individual* post offices remain unknown.

[10] Our estimates remain robust across different bandwidth choices, including the optimal bandwidth of 36 using a triangular kernel that assigns higher weights to observations near the threshold (Calonico, Cattaneo and Titiunik 2014) (Figure A5).

[11] Moreover, these effects are not observed among non-cardholder household heads who are observably similar to cardholder household heads (Table A3). Specifically, we examine the sleep quality of non-cardholder household heads who (i) are eligible for other social protection programs and (ii) are as needy as cardholder household heads. We find no evidence of an improvement in sleep quality for these two subsets of non-cardholder household heads.

non-cardholder household heads are statistically the same (p-value < 0.005).

Furthermore, we find that improvements in sleep quality for cardholder household heads, and the corresponding absence of effects for non-cardholder household heads, are evident in both the sleep disturbance and sleep-related impairment indices. Improvements for cardholder household heads are noted for almost all items of these indices (Table A4). For instance, immediately post-disbursement, cardholder household heads were significantly less likely to report difficulties in falling asleep and staying asleep, consistent with actigraphy data from the US and India indicating such challenges among poor populations (Lauderdale et al. 2006; Bessone et al. 2021). Similarly, these household heads were less likely to report issues with irritability, daytime functioning, fatigue, and concentration due to poor sleep, self-reported impairments that are corroborated by objective and surveyor-assessed measures of cognition.

No improvement in sleep quality for other members of cardholder households. We find the improvement in sleep quality amongst cardholder household heads is observed across demographic subgroups, irrespective of age or gender, which suggests that the effects for household heads are not driven by gender- or age-specific physiological, societal, or cultural factors (Table 2).

Moreover, we fail to find evidence of improved sleep quality for other members of cardholder households (Table 1 and 2); the point estimate is smaller, positive, and statistically insignificant. We can also reject equality of the point estimates between cardholder household heads and other members of cardholder households (p-value < 0.005).

The household head, typically the breadwinner, is identified by household members to the IFLS surveyor as the person *'responsible for satisfying daily necessities of the household or regarded/assigned as the head of the household'*. Therefore, these results suggest that household heads face unique money-related pressures that impede the quality of their sleep (Figure A4), and that the cash infusion relieved financial concerns amongst cardholder household heads, improving their sleep quality.

Indeed, our findings suggest that improvements in sleep quality are concentrated among household heads due to their breadwinning responsibilities. In Indonesian households, household heads shoulder a significant portion of earnings responsibility, contributing on average 52% of

household earnings, while their spouses contribute considerably less (0% at the median, 12% on average) (Table A5). The vast majority of household heads contribute to household earnings, whereas less than half of spouses do. Conversely, their spouses manage the household budget, often bearing 50% or more of this responsibility.

Importantly, spouses only experience sleep quality improvements if they contribute to household earnings, whereas household heads consistently report better sleep after the transfer regardless of their involvement in budget management or even when their spouses earn more (Table A6 and A7). This suggests that the perceived role of the breadwinner—deeply embedded in cultural norms and predominantly associated with gender, as nearly all (99.7%) of these household heads are male[12]—plays a crucial role in influencing sleep quality's sensitivity to financial circumstances.

Lastly, in Indonesian culture, discussing household finances is often considered taboo, especially among family members, affecting financial transparency and communication within the household (Ratnawati et al. 2023). This cultural backdrop helps explain why there are no spillover decreases in financial worries amongst other members of cardholder households that improves their sleep quality post-disbursement.

Differential pre-trends and fuel subsidy cuts. As discussed in Section 2.1, there was significant uncertainty and anticipation during the pre-transfer period regarding the timing of fuel subsidy cuts and the compensatory BLSM cash transfers. This appears to have affected cardholder household heads who experience a decline in sleep quality over this period. Non-cardholder household heads did not experience this decline, possibly because their relative financial security reduced their vulnerability to the anticipated policy announcements (Figures 1c and 1d).

This complicates the interpretation of the sharp improvement in sleep quality among cardholder heads immediately following the BLSM transfer announcement. The treatment effect combines at least four factors: (a) resolving uncertainty about when the fuel subsidy cuts would occur, thereby relieving anticipation anxiety; (b) resolving uncertainty about the timing of the compensatory cash transfers, also alleviating anxiety; (c) increasing the expected likelihood of receiving the transfer from an unknown probability to 100%; and (d) increasing the expected likelihood of

[12]For instance, the 1974 Indonesian Marriage Law explicitly assigns the role of household provider to husbands.

fuel subsidy cut from an unknown probability to 100%.[13]

To investigate this, we examine heterogeneity in sleep quality impacts by baseline (IFLS 4) fuel consumption.[14] We find that the negative pre-trend in sleep quality is exclusively observed among high fuel-consuming SP cardholders (Table A8 and Figure A6). However, on November 17, 2014, both high and low fuel-consuming cardholders exhibited a statistically similar improvement in sleep quality. This suggests that while there was a negative anticipation effect, it was related to the timing of the fuel subsidy cut rather than the cash transfer. Furthermore, since the jump is observed for both subgroups, it appears to be due to the announcement of the cash transfer rather than the resolution of uncertainty about the fuel subsidy cut.[15]

It is also important to note that the announcement of the fuel subsidy reduction could introduce downward bias in our regression discontinuity estimates for cardholder household heads.[16] However, given the modest size of the announced subsidy cut, it's unlikely to have directly affected either cardholder or non-cardholder households for two reasons. First, the additional monthly expenses from reduced subsidies amounted to IDR 46,000 for the median cardholder household—less than a 3% increase in monthly expenditures and just 11.5% of the IDR 400,000 transfer. Therefore, the cash transfer was a substantial liquidity boost.[17] Second, as noted above, we show that both high and low fuel-consuming cardholders exhibited a statistically similar improvement in sleep quality.

[13]Furthermore, households may have held expectations about the magnitude of both the fuel subsidy cut and the compensatory BLSM transfers. Therefore, the treatment effect would also include the impact of resolving uncertainty regarding these expectations, depending on whether their anticipated cuts and transfers were larger or smaller than what actually occurred.

[14]The fourth wave of the Indonesia Family Life Survey (IFLS 4) was administered in 2007/2008.

[15]However, we cannot accurately estimate the true treatment-on-the-treated (TOT) effect size. If the transfer had been entirely unexpected, our estimated effect size would be 0.9 sd. Since cardholder household heads had expectations of receiving the transfer, the actual effect is larger than our estimate. Unfortunately, because we do not know their priors, we cannot determine the precise TOT effect. For context, a 0.9 sd TOT effect would surpass the impact of regular exercise on sleep quality measured by the Pittsburgh Sleep Quality Questionnaire (0.74 sd) (Kredlow et al. 2015).

[16]Conversely, our estimates might be upwardly biased if expectations about the magnitude of the fuel subsidy cut were much higher than the announced subsidy cut. However, this would likely have had a greater impact on high fuel-consuming cardholder households. Since both high and low fuel-consuming cardholders exhibited statistically similar improvements in sleep quality, it's unlikely that this is driving our results.

[17]In net present value terms, the combined effect of the subsidy cut and cash transfer was likely negative.

4.3 Impacts on Household Heads' Cognitive Performance

Cardholder household heads tested just after the cash transfer announcement performed better on cognitive indicators sensitive to sleep (0.16 sd) (Table 1, Panel (b)) (Lim and Dinges 2008; Killgore 2010; Lim and Dinges 2010; Killgore and Weber 2014). Specifically, they performed better on memory tests, as measured by rapid and delayed word recall (0.18 and 0.19 sd, respectively); moreover, they were 5 percentage points (16%) more likely to be assessed by surveyors as having excellent attention during the survey.[18]

This effect is only observed for the second attentiveness assessment (about two hours into the survey), and not the first assessment (about an hour into the survey). The point estimate for the first attentiveness assessment is smaller and statistically insignificant. We can also reject that the point estimate on the first assessment is statistically equal to the point estimate on the second assessment (p-value = 0.05).[19] This pattern is consistent with evidence from lab experiments that show that the effect of sleep deprivation on attention increases across the duration of the task (Lim and Dinges 2008; Hudson, Van Dongen and Honn 2020).[20]

We fail to find evidence for improvement in cognitive indicators sensitive to sleep for non-cardholder household heads. We can statistically reject that these point estimates are the same for cardholder household heads and non-cardholder household heads (p-values = 0.03). We also fail to find evidence for improvement in sleep sensitive cognitive indicators for other members of cardholder households. The point estimates are much smaller and statistically insignificant. However, we are unable to reject statistical equality between point estimates for cardholder household heads and other members of cardholder households (p-values = 0.21).

[18] In Figure A7, we show the positive correlation between components of the sleep-sensitive cognitive index and sleep quality index.

[19] It is important to note that the 10-item sleep questions are asked between the first and second attention assessments. Therefore, it may be that attentiveness ratings on the second assessment are biased upwards because the same surveyor who rates a respondent's attentiveness was just told by the respondent how impaired due to poor sleep they felt. However, such an explanation is unlikely to be responsible for our attentiveness results. The 12-item affect questions which inquire about frustration, worries, and tiredness, impacts on which we discuss in Section 4.5, were administered before the first attention assessment. It seems implausible that surveyors' assessments were biased by respondent's answers to the sleep questions, but not by the responses to the affect questions.

[20] While the improvement in attention for cardholder household heads tested just after the cash transfer disbursement may make response to the sleep quality or affect questionnaires more accurate, it is extremely unlikely that it introduces *systematic* bias in their responses.

We also fail to find evidence for an improvement in problem solving, as captured by math questions, or reasoning performance, as elicited by Raven's Matrices (Table A9).[21] The point estimates are small, negative, and statistically insignificant. These results are consistent with evidence from sleep medicine that emphasizes the impacts of sleep loss on attention and memory rather than reasoning and problem solving, which are relatively unaffected by sleep deprivation.[22]

4.4 Impacts on Household Expenditures

In this section, we examine changes in cardholder households' expenditure patterns immediately following the cash transfer announcement. We find that post-disbursement, these households reported increased savings and contributions to informal microfinance groups, alongside reduced outstanding debts (Table 3). Cardholder households surveyed just after the cash transfer disbursement report a statistically significant 70% increase in savings contributions to informal microfinance groups (arisans) in the last month as well as a statistically significant 229% increase in total savings just after the cash transfer disbursement. Cardholder households also report a statistically significant 89% decrease in outstanding loans just after the cash transfer disbursement.[23]

Furthermore, we find that largest borrowers are particularly impacted by the financial concerns addressed by the transfer (Table A11). We divide the cardholder households into four groups—non-borrowers, small borrowers (<33rd percentile), medium borrowers (33–66th percentile), and large borrowers (>66th percentile)—and, as expected, the largest effects on sleep quality appear among large borrowers.

[21] We do not show impacts on cognitive tests that were given only to respondents aged 50+ (counting backwards from 20, naming animals, and drawing overlapping pentagons), significantly limiting sample size.

[22] One must not over-interpret the null results for math questions as (i), different types of math problems emphasize different cognitive domains, including attention, memory, and reasoning (ii), the complexity of the problem determines the intensity with which each domain is engaged and (iii), close to 70% of cardholder household heads have six or fewer years of formal schooling.

[23] It is important to exercise caution in quantitatively interpreting the effects on savings and borrowings. Because a significant number of households do not have any savings or borrowings, 82% and 61%, respectively, and because of the presence of outliers, the absolute value of the percentage effects on savings and outstanding loans are extremely sensitive to whether the outcome variable is defined in logs or levels, as well as to the level of winsorization (Table A10). However, the qualitative interpretation of these estimates is statistically robust to our sensitivity tests. Furthermore, although the point estimates are statistically insignificant, we also document a large extensive margin effect on total savings and outstanding loans: cardholder households surveyed just after the cash transfer disbursement are 4 percentage points (22%) more likely to have any savings (p-value = 0.33), and 8 percentage points (19%) less likely to have any outstanding loans (p-value = 0.12).

The increase in total savings is not observed for non-cardholder households: although we are unable to reject statistical equality between point estimates for cardholder and non-cardholder households (p-value = 0.15), the point estimate for non-cardholder households is zero and statistically insignificant. Interestingly, however, we observe comparable effects on arisan contributions and outstanding loans for non-cardholder households, perhaps due to peer effects of loan repayments and savings contributions by cardholder households (Breza 2013).

We find no evidence of changes in expenditures on food, temptation goods, non-food necessities, or consumer durables for cardholder or non-cardholder households, discussed in the online appendix.

4.5 Impacts on Household Heads' Affect Indicators

Lastly, we examine the effects of the cash transfer announcement on affect indicators (Table 4). We find that cardholder household heads surveyed just after the cash transfer disbursement were 7, 6, and 9 percentage points less likely to report feeling more than a little worried, frustrated, and tired, respectively, compared to cardholder household heads surveyed just before the cash transfer. Furthermore, we find null effects for worries, frustration, and tiredness for non-cardholder household heads as well for as other members of cardholder households after the cash transfer disbursement. We reject statistical equality between the point estimates for these groups (worries: p-values $\in$ [0.02, 0.11]; frustration: p-values $\in$ [0.02, 0.03]; tiredness: p-values $\in$ [0.01, 0.07]).

We fail to find statistically significant impacts for stress, anger, happiness, sadness, enthusiasm, contentment, boredom, loneliness or pain amongst cardholder household heads (Table A12). The point estimates for sadness, enthusiasm, boredom, happiness, anger, and stress are close to zero.[24]

[24]Worry involves persistent negative thinking about potential adverse events or uncertainties – e.g., thinking about an uncertain situation like being unable to pay for emergency medical expenses. Stress, in contrast, is the body's physical reaction to an external event. When such stress is ongoing, as with persistent financial problems, the body remains in a constant state of alert (Pattee 2020). Therefore, one interpretation of our results is that while the BLSM transfer eases financial uncertainty temporarily, alleviating short-term financial worries, it does not appear to mitigate long-term financial stress.

5 Conclusion

Why are poor individuals unable to get more high-return sleep? Our results suggest that despite spending more time in bed, poor individuals struggle to improve their sleep quality, at least partially, due to the psychological impacts of financial concerns on sleep quality.

Our research opens up new paths for exploration. First, while we demonstrate that alleviating financial worries enhances sleep quality and related cognitive functions, data constraints prevent us from examining broader economic impacts. Future studies should utilize field experiments to investigate how improved sleep mediates the relationship between financial health and economic outcomes. Second, while our findings indicate no intra-household spillovers on sleep quality among other household members, future studies could explore whether changes in the breadwinner's financial worries have other spillover effects on the household, such as intimate partner violence. Third, this paper offers a real-world causal analysis of how financial concerns affect sleep quality in the short term. However, the long-term psychological impacts of economic conditions on sleep across various dimensions remain under-explored and merit further investigation.

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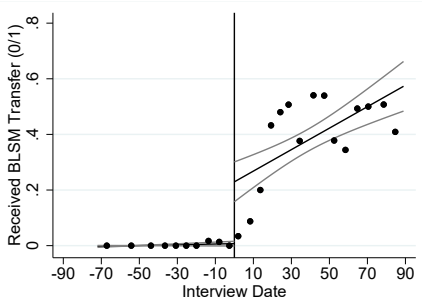
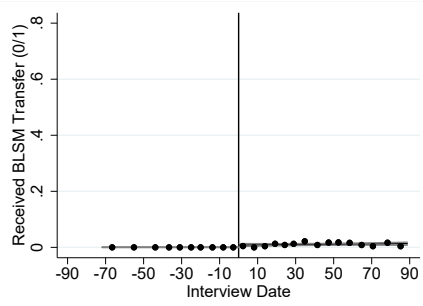
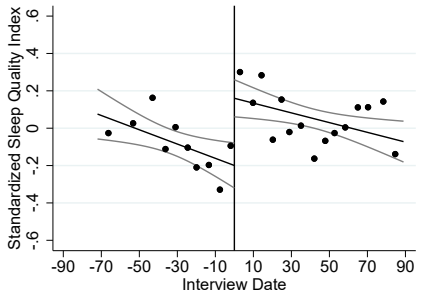
Tables and Figures



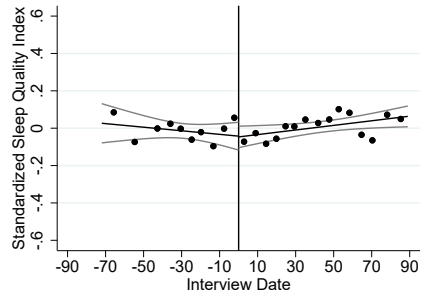
(a) Likelihood cardholders report BLSM transfer receipt ($\hat{\beta}_1$=0.22*)**



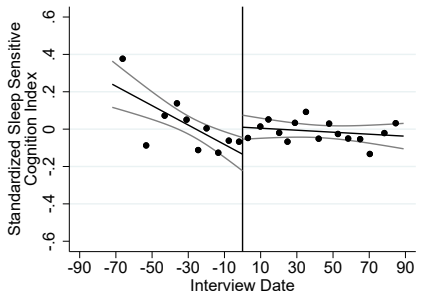
(b) Likelihood non-cardholders report BLSM transfer receipt ($\hat{\beta}_1$=0.01)



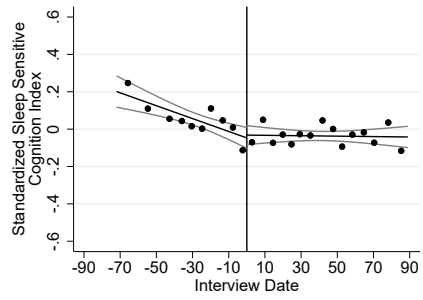
(c) Sleep quality index (SQI) of cardholder household heads ($\hat{\beta}_1$=0.40*)**



(d) Sleep quality index (SQI) of non-cardholder household heads ($\hat{\beta}_1$=−0.03)



(e) Sleep sensitive cognition index of cardholder household heads ($\hat{\beta}_1$=0.16)**



(f) Sleep sensitive cognition index of non-cardholder household heads ($\hat{\beta}_1$=0.004)

Figure 1. Increase in likelihood of BLSM transfer receipt, household heads' sleep quality and sleep sensitive cognition in cardholder households on November 17 2014.

Notes: Panel (a) plots the probability a cardholder household with a household head in our main sample reports receipt of a BLSM transfer before and after the treatment threshold, November 17 2014, the BLSM transfer announcement and start of cash disbursement. Panel (c) plots the standardized SQI index of cardholder household heads before and after the treatment threshold (adjusted for kabupaten fixed effects). Panel (e) plots the standardized sleep sensitive cognition index before and after the treatment threshold (adjusted for kabupaten fixed effects). These same figures are plotted for non-cardholder households in panels (b), (d) and (f). Discontinuity estimates are reported in the figure captions. 90% confidence intervals are plotted with standard errors clustered at the enumeration area level.

Table 1: Increase in household heads' sleep quality and sleep sensitive cognition in cardholder households on November 17 2014

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	SP cardholder heads			Non-cardholder heads			SP cardholders non-heads		
Outcome variables	$\hat{\beta}_1$	$\hat{\beta}_1$	Obs.	$\hat{\beta}_1$	Obs.	p-value of difference	$\hat{\beta}_1$	Obs.	p-value of difference
Panel a: Sleep quality									
Standardized SQI index	0.40***	0.41***	1,786	-0.03	5,951	⟨0.00⟩***	-0.07	2,739	⟨0.00⟩***
	(0.10)	(0.10)		(0.06)			(0.08)		
... Sleep disturbance index (reversed)	0.33***	0.34***	1,786	-0.06	5,951	⟨0.00⟩***	-0.13	2,739	⟨0.00⟩***
	(0.10)	(0.10)		(0.05)			(0.08)		
... Sleep-related impairment index (reversed)	0.36***	0.37***	1,786	-0.01	5,951	⟨0.00⟩***	-0.01	2,739	⟨0.00⟩***
	(0.10)	(0.10)		(0.06)			(0.08)		
Panel b: Sleep sensitive cognition indicators									
Index of standardized sleep sensitive cognition indicators	0.16**	0.15***	1,772	0.01	5,886	⟨0.03⟩**	0.06	2,719	⟨0.21⟩
	(0.07)	(0.06)		(0.04)			(0.07)		
Memory tests									
... Rapid word recall (standardized)	0.18*	0.17*	1,772	0.03	5,888	⟨0.16⟩	0.09	2,721	⟨0.48⟩
	(0.10)	(0.09)		(0.06)			(0.08)		
... Delayed word recall (standardized)	0.19**	0.19**	1,772	0.02	5,888	⟨0.04⟩**	0.06	2,721	⟨0.25⟩
	(0.08)	(0.07)		(0.06)			(0.09)		
Interviewer's assessment of respondent's attention is excellent									
... Attention on first questionnaire	0.02	0.02	1,781	0.01	5,921	⟨0.59⟩	0.00	2,726	⟨0.58⟩
	(0.03)	(0.03)		(0.01)			(0.02)		
... Attention on second questionnaire	0.05**	0.05*	1,781	-0.01	5,921	⟨0.04⟩**	0.02	2,726	⟨0.34⟩
	(0.03)	(0.03)		(0.02)			(0.02)		
FE: Kabupaten	Yes	Yes		Yes			Yes		
FE: Gender	No	Yes		Yes			Yes		
FE: Age (decade)	No	Yes		Yes			Yes		
For cognition indicators in panel b									
FE: Years of school	No	Yes		Yes			Yes		

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets, or fixed effects, as indicated. The standardized measure of sleep quality is calculated as the standardized sum of responses to the items on the sleep PROMIS questionnaire. The standardized sum of (reversed) responses on the 5 component questions on sleep disturbances, and sleep-related impairments, are also reported separately. Memory measures are the standardized number of words recalled on the immediate and delayed word memory tests, with a control for the assigned word list residualized out. Attention measures are indicators set to 1 if the interviewer considers the respondent's attention during the survey to be excellent, with interviewer fixed effects residualized out. The sleep sensitive cognition indicator is calculated as the mean across the two standardized memory indicators and the standardized attention measures. Reported $\hat{\beta}_1$ coefficients are for a specification that includes kabupaten fixed effects in column 1. Gender and age decade fixed effect, as well as years of schooling fixed effects for cognition indicators are added in columns 2, 4 and 7. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Column 6 reports the p-value on the F-test for equality of coefficients between columns 2 and 4. Column 9 reports the p-value on the F-test for equality of coefficients between columns 2 and 7. The analysis sample includes 1,788 cardholder household heads, 5,951 non-cardholder household heads and 2,741 cardholder non-heads. Missing data and dropped singletons account for small deviations in these values. Reported observations are for the regression run in the preceding column.

Table 2: Sleep quality improves for cardholder household heads, but not other household members of cardholder households, irrespective of gender and age

	(1)	(2)	(3)	(4)
Population subset	SQI index (Std.) $\hat{\beta}_1$	Obs.	Female share	
Panel a: Household heads				
All	0.41***	1,786	0.19	
	(0.10)			
Male	0.42***	1,442	0.00	
	(0.12)			
Female	0.39	342	1.00	
	(0.27)			
Ages 40 and under	0.45**	558	0.13	
	(0.19)			
Ages 41-64	0.49***	993	0.19	
	(0.14)			
Ages 65 and over	0.24	228	0.34	
	(0.28)			
Males ages 41-64	0.46***	802	0.00	
	(0.17)			
Females ages 41-64	0.74**	188	1.00	
	(0.32)			
Panel b: Non-household heads				p-value of diff. w/ heads
All	-0.07	2,739	0.73	$\langle 0.00 \rangle$***
	(0.08)			
Male	0.04	745	0.00	$\langle 0.03 \rangle$**
	(0.15)			
Female	-0.10	1,993	1.00	$\langle 0.07 \rangle$*
	(0.09)			
Ages 40 and under	-0.11	1,963	0.64	$\langle 0.01 \rangle$***
	(0.09)			
Ages 41-64	0.04	675	0.96	$\langle 0.02 \rangle$**
	(0.16)			
Ages 65 and over	-0.17	92	0.87	$\langle 0.30 \rangle$
	(0.38)			
Head's spouse	-0.09	1,310	1.00	$\langle 0.00 \rangle$***
	(0.10)			

Notes: Each row reports the estimate on the sleep quality index (SQI) for the indicated population subset. Column 1 reports the estimated impact on the standardized SQI index, $\hat{\beta}_1$, from a linear specification that includes kabupaten, age decade, and gender fixed effects on the specified sub-group of individuals. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * $p<0.1$, ** $p<0.05$ and ***$p<0.01$. The share of the sub-group that is female is reported in column 3. Panel (a) restricts the sample to cardholder household heads, and Panel (b) to other members of cardholder households. Column 4 reports the p-value on the F-test for equality of coefficients between the same demographic subgroups in Panels (a) and (b), except for the last row which tests the difference between heads and heads' spouses.

Table 3: Cardholder households interviewed after November 17 2014 report increased savings and arisan contributions and decreased outstanding loans

	(1)	(2)	(3)	(4)	(5)	(6)
	$\hat{\beta}_1$	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	p-value of difference
Outcome variable (IDR 1,000)	SP cardholding households			Non-cardholding households		
Arisan (ROSCA) contributions last month	40**	40**	57	27	130	⟨0.57⟩
	(17)	(17)	[151]	(23)	[269]	
	{ 1,785 }	{ 1,780 }		{ 5,933 }		
Outstanding loans	-2,202**	-2,362**	2,471	-2,185	7,544	⟨0.93⟩
	(1,082)	(1,087)	[12,379]	(1,716)	[27,177]	
	{ 1,764 }	{ 1,759 }		{ 5,893 }		
Savings	902**	1,005***	394	-1,041	3,826	⟨0.02⟩**
	(357)	(381)	[2,004]	(788)	[13,707]	
	{ 1,783 }	{ 1,778 }		{ 5,923 }		
Food consumption	-9	-16	307	-7	404	⟨0.72⟩
	(26)	(21)	[221]	(19)	[316]	
	{ 1,786 }	{ 1,781 }		{ 5,933 }		
Temptation goods	-3.03	-3.55	43	-0.34	49	⟨0.60⟩
	(5.98)	(5.27)	[56]	(3.84)	[76]	
	{ 1,786 }	{ 1,781 }		{ 5,933 }		
Non-food monthly expenditures	142*	116	525	19	992	⟨0.39⟩
	(80)	(74)	[986]	(100)	[1,599]	
	{ 1,785 }	{ 1,780 }		{ 5,933 }		
Non-food annual expenditures	777	786	3,539	-385	8,119	⟨0.27⟩
	(728)	(717)	[5,838]	(853)	[16,580]	
	{ 1,785 }	{ 1,780 }		{ 5,933 }		
Value of belongings	-32	316	10,199	-3,612	30,302	⟨0.24⟩
	(1,520)	(1,507)	[11,719]	(3,257)	[52,471]	
	{ 1,787 }	{ 1,782 }		{ 5,946 }		
FE: Kabupaten	Yes	Yes		Yes		
FE: Household characteristics	No	Yes		Yes		

Notes: Each row reports estimates for a different outcome variable measured at the household level. Columns report estimates using different subsets of households, or fixed effects, as indicated. Dependent variables are values measured in IDR 1,000 and winsorized at the 99th percentile. Reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes the indicated fixed effects. Household characteristics fixed effects include fixed effects for the number of household members, the number under 16 years of age, the number over 65 years of age, the number of female household members, if the household head is female and the household's kabupaten. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 3 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 6 reports the p-value on the F-test for equality of coefficients between columns 2 and 4. The analysis sample includes 1,788 cardholding households and 5,951 non-cardholding households. Observations, in curly brackets, vary slightly due to dropped singletons and missing dependent variables.

Table 4: Cardholder household heads interviewed after November 17 2014 report reduced worrying, frustration, and tiredness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	$\hat{\beta}_1$	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	p-value of difference	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	p-value of difference
Outcome variable	Cardholding heads			Non-cardholding heads			Cardholding non-heads		
Affect indicator for being...									
...Frustrated	-0.06**	-0.06**	0.13	0.02	0.11	⟨0.02⟩**	0.02	0.11	⟨0.03⟩**
	(0.03)	(0.03)	[0.33]	(0.02)	[0.32]		(0.02)	[0.31]	
...Worried	-0.07**	-0.06*	0.21	0.03	0.18	⟨0.02⟩**	0.01	0.21	⟨0.11⟩
	(0.03)	(0.03)	[0.41]	(0.03)	[0.38]		(0.03)	[0.41]	
...Tired	-0.09**	-0.09**	0.46	0.00	0.45	⟨0.07⟩*	0.06	0.46	⟨0.01⟩***
	(0.04)	(0.04)	[0.50]	(0.03)	[0.50]		(0.04)	[0.50]	
N	{ 1,787 }	{ 1,786 }		{ 5,951 }			{ 2,739 }		
FE: Kabupaten	Yes	Yes		Yes			Yes		
FE: Gender	No	Yes		Yes			Yes		
FE: Age (decade)	No	Yes		Yes			Yes		
FE: Affect list ordering	Yes	Yes		Yes			Yes		

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets, or fixed effects, as indicated. Outcome variables are indicators set to 1 if the individual reports that yesterday they felt more than a little of the affect listed (response options were not at all, a little, somewhat, quite a bit and very). Reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes the indicated fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 3, 5 and 8, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 6 reports the p-value on the F-test for equality of coefficients between columns 2 and 4. Column 9 reports the p-value on the F-test for equality of coefficients between columns 2 and 7. Regression observations are reported in curly brackets. The analysis sample includes 1,788 cardholder household heads, 5,951 non-cardholder household heads and 2,741 cardholder non-heads. Missing data and dropped singletons account for small deviations in these values.

Online Appendix

Alternative Explanations

The concentration of our estimates amongst cardholder household heads, with no effects for non-cardholder household heads as well as for other members of cardholder households, rules out alternative explanations that would influence both non-cardholder and cardholder households (e.g. temperature) and channels that would likely impact multiple members of cardholder households (e.g. sleeping aids like electric fans). Here, we examine changes in physical circumstances that are specific to the cardholder household heads, including nutrition, sleeping aids, and time use. We show these mechanisms are unlikely to explain our findings. We also discuss why halo reporting effects are not consistent with our results, and show that positive affects, which would be responsive to halo reporting effects, are unaffected.

Sleeping aids. It is unlikely that changes in material possessions like communal sleeping aids (e.g., mosquito repellents, electric fans) are responsible for our results, unless, perhaps implausibly, these or similar personal sleeping devices (e.g. personal beds or bed sheets) were purchased solely for the consumption of household heads. We also fail to find direct evidence for purchase of any sleeping aids: we do not find evidence that cardholder households report increased values in asset categories that include sleeping aids such as mosquito repellents, beds, bed sheets, or electrical appliances after the cash transfer disbursement (Table A13);[1] nor do we find evidence that cardholder households increased expenditure on electricity or fuel in the last month, which could have potentially powered sleeping aids like electric fans and air conditioners.[2] Such an explanation is also inconsistent with Bessone et al. (2021) who conducted a randomized controlled trial with poor adults in India and showed that sleeping devices (e.g., pillow, bed, blanket, ear plugs) increased time in bed but had no effect on sleep efficiency.

[1]The fact that the improvement in sleep quality for cardholder household heads was short-lived, as discussed earlier, also indicates that purchase of sleeping aids is unlikely to explain our results.

[2]We also fail to find evidence for an increase in other monthly non-food expenditures, other annual expenditures, or other household assets amongst cardholder households after the cash transfer. (Table A14).

Nutrition. Our results are also unlikely to be driven by changes in food consumption amongst cardholder households unless, again, only the household head experienced these changes, which seems improbable. Nevertheless, we can test for changes in a number of both household and individual nutrition indicators. There is no evidence of an increase or decrease in the value of food consumed in the past week by cardholder households after the cash transfer disbursement (Table A15). We also fail to find any evidence of changes in the frequency of meals consumed in the past week by cardholder household heads after the cash transfer. Importantly, household heads were not more or less likely to report having 'adequate food consumption' after the cash transfer disbursement.[3] Lastly, we examined changes in the composition of food consumption for the household head and found no evidence of changes in rice (the main carbohydrate consumed in Indonesia) or protein intake post-disbursement. However, we observed an increase in the consumption of fruits, vegetables, and processed foods for both cardholder and non-cardholder household heads. This pattern suggests that these changes are due to seasonal consumption trends (e.g., mango season) common to all households, making them unlikely to explain our findings.

Time use. We also rule out changes in time use as an explanation for our results (Table A16). We fail to find evidence for changes in bedtimes or wake-up times for cardholder household heads which suggests that improvement in sleep quality is not due to (i) increase or decrease in time in bed or (ii) changes in sleeping schedule. In fact, because cardholder household heads were less likely to report 'difficulty falling asleep' or 'trouble sleeping' after the cash transfer disbursement, the null effects for time in bed suggests that time asleep and sleep efficiency improved as well. This result also suggests that there were no dramatic shifts in work schedule for cardholder household heads (e.g., working nights). We also fail to find evidence for changes in total work hours for cardholder households heads in the past week which suggests longer or shorter work hours are not responsible for our results.

[3]These findings also suggest that the decrease in fuel subsidies did not reduce food consumption among non-cardholder households, who, unlike cardholder households, did not receive BLSM cash disbursements as compensation.

Halo or demand effects. It is extremely unlikely that our results are driven by demand characteristics or hawthorne effects, or reflect halo reporting effects of cash transfer receipt. First, the IFLS is a longitudinal survey conducted since 1993 by the RAND Corporation, a US-based non-profit, and not the Indonesian government. Second, there was no mention of BLSM transfers before the survey was administered. Third, we find no effects on affect that would likely be impacted by halo or demand effects (e.g., happiness or enthusiasm). Finally, we detect improvement for objective as well as surveyor-measured cognitive indicators that are sensitive to sleep deprivation, but not for cognitive measures that are relatively unaffected by sleep deprivation.

Sampling Strategy and Balance: IFLS 5

The target households for IFLS 5 were the original IFLS 1 households, minus those all of whose members had died by 2008, plus all of the splitoff households from 1997, 1998, 2000, and 2008 (minus those whose members had died).

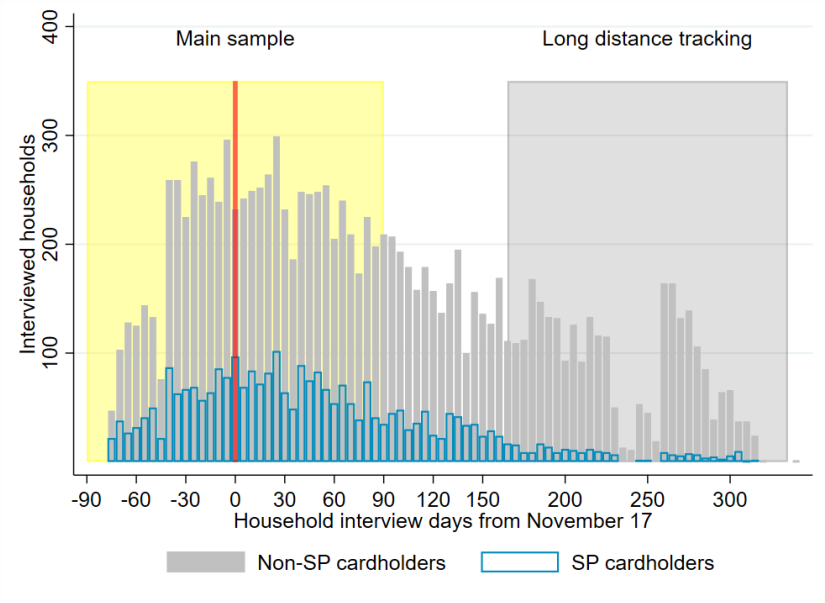
IFLS collects data at the community, household and individual levels. The household survey includes household and individual level information. One or two household members are asked to provide information at the household level. The interviewers then attempt to conduct an interview with every individual age 11 and over. For children less than 11, interviewers attempt to interview a parent or caretaker.

The recontact rate (including deaths) in IFLS 5 among IFLS 1 individuals was 76%. Of IFLS 1 main respondents, the recontact rate is higher, 82%. Among age groups, the lowest recontact rates of IFLS1 household members are for persons who were teenagers (15-19) in 1993, while the highest recontact rates are for persons who were mid aged and older in 1993.

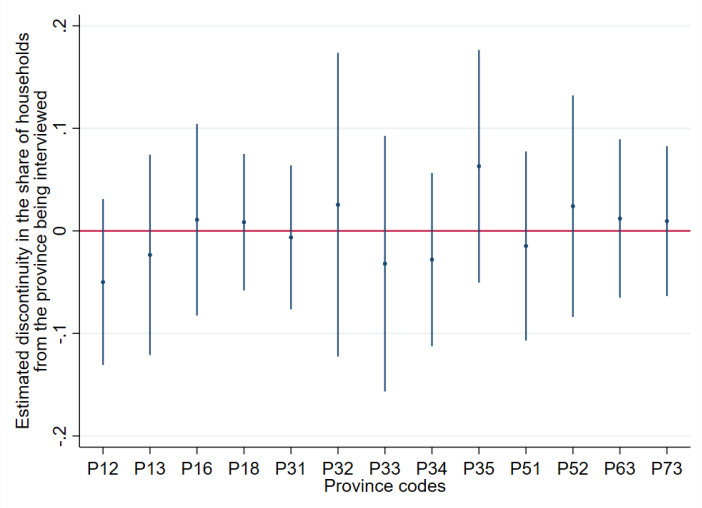
Household fieldwork for IFLS 5 took place between September 2014 and March 2015. Figure A1 shows the distribution of surveys over this period, with no noticeable changes in frequency at the disbursement start. Moreover, there were no discontinuities in frequency of surveys within each province at the disbursement start. This is not surprising because, during the main fieldwork, each pair of teams was assigned a route covering 8 to 12 enumeration areas, ordered to enable geographical progression and conserve costs. In Table A17, we also show that our main result (sharp improvement in sleep quality among cardholder household heads) is observed even within enumeration areas where cardholder household heads from the same enumeration area were interviewed before and after November 17.

Furthermore, we fail to find evidence that survey participation was differential for those surveyed just before versus just after the cutoff (Table A1). We also fail to find evidence for non-response to the sleep questionnaire based on the interview date. We show that household heads surveyed just after the cutoff are no more or less likely to have responded to the 10-item sleep quality questionnaire than households surveyed just before the cutoff. Similarly, other members of the household surveyed just after the cutoff are no more or less likely to have responded to the 10-item

sleep quality questionnaire than other members surveyed just before the cutoff. We also show that households surveyed just after the cutoff are no more or less likely to have a social protection card than households surveyed just before the cutoff. Both cardholder and non-cardholder households surveyed just after the cutoff are no more or less likely to have access to other social protection programs. Lastly, cardholder and non-cardholder households, household heads, and other members of the household, surveyed on either side of the cutoff have similar socioeconomic characteristics. We observe imbalance in household composition and access to health insurance for non-cardholder households. However, the p-value of the joint F-test is 0.20 between non-cardholder households surveyed on either side of the cutoff.



(a) Temporal distribution of all the IFLS 5 household surveys



(b) No discontinuities on November 17 in the share of interviews held in each province

Figure A1. IFLS 5 survey timing and geographic distribution

Notes: The histogram in panel (a) shows the number of social protection (SP) cardholder (in blue) and non-SP cardholder households (in grey) interviewed in 5 day bins during the survey period. The main survey was administered between August 2014 and April 2015, followed by long distance tracking of households that had moved more than a 45 minute trip from their original enumeration area. Days are numbered relative to November 17 2014. The red line marks November 17 2014, the beginning of BLSM cash transfer disbursement. Our analysis sample, highlighted in yellow, runs from 3 months (90 days) before to 90 days after November 17, 2014. Panel (b) plots estimates of $\hat{\beta}_1$ with no controls or fixed effects on province indicators using our main household sample. One province with only two interviewed households was dropped.

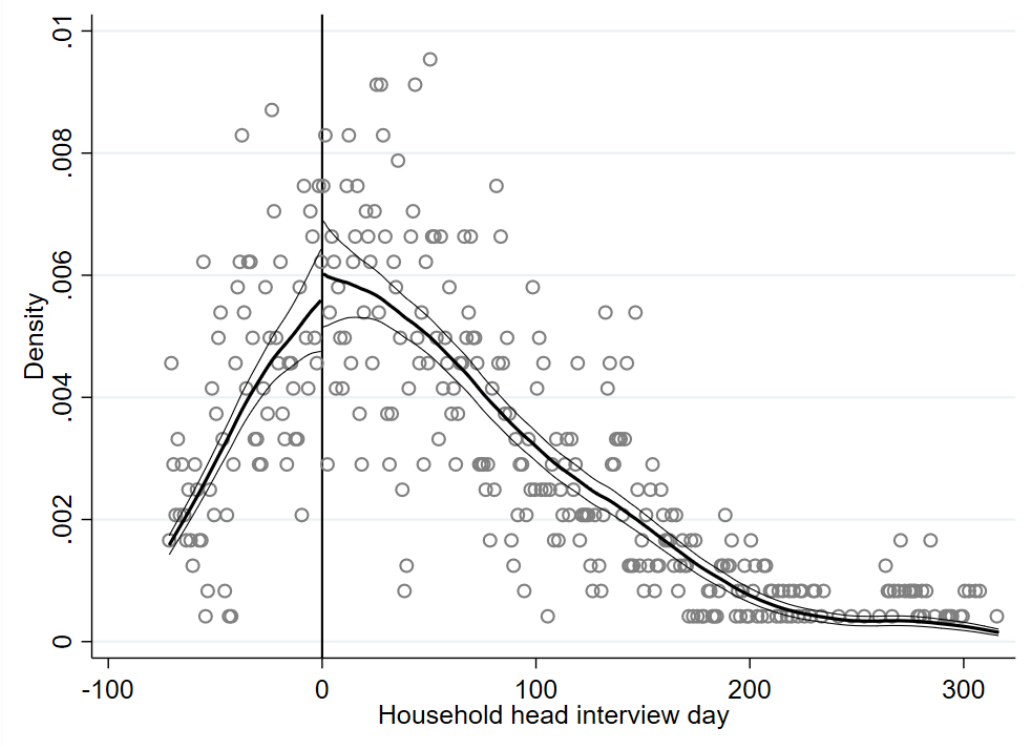
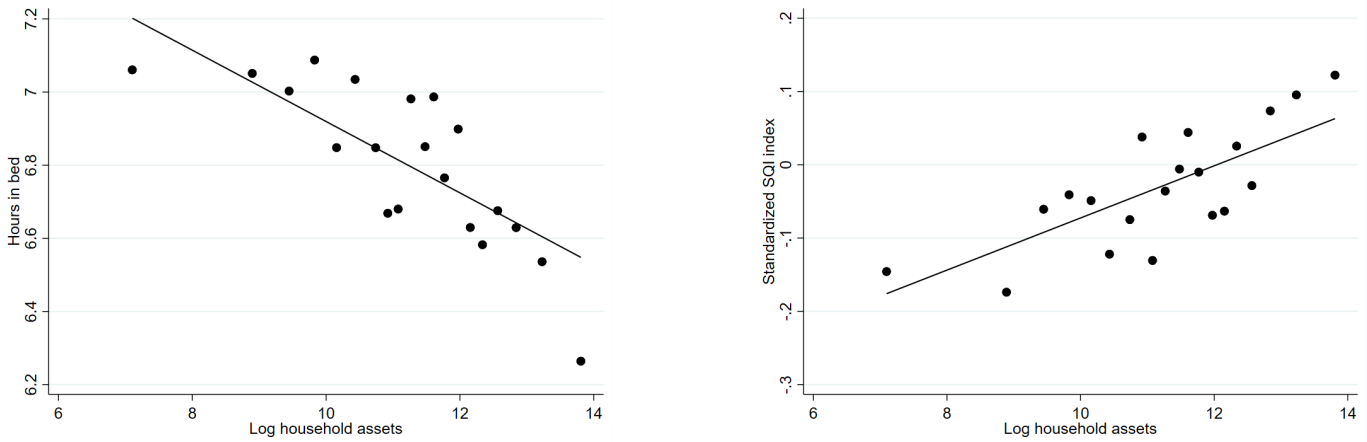


Figure A2. Density of the survey week distribution is continuous across the treatment threshold for cardholder household heads

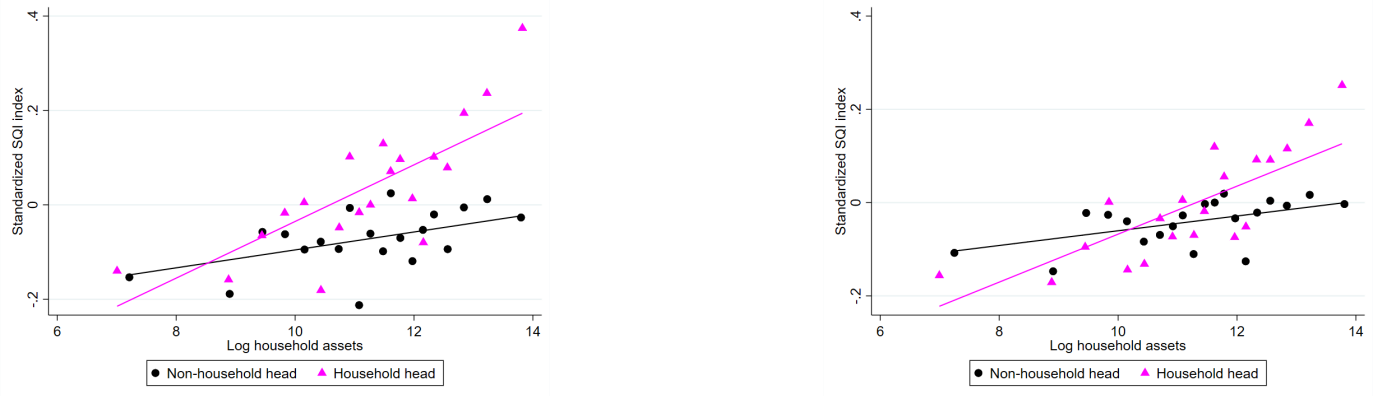
Notes: The McCrary test statistic for cardholder household heads is 0.07 with a standard error of 0.11 .



(a) Time in bed **(b) Sleep quality (Standardized SQI index)**

Figure A3. Time in bed and sleep quality by log household assets

Notes: Data covers individuals in our analysis sample who were interviewed prior to the cash transfer disbursement. Time in bed is calculated as the difference between reported wake-up time and bedtime yesterday. Time in bed and the standardized sleep quality (SQI) index are plotted against log household assets, calculated as $log(Y + 1)$ where Y is the sum of all assets reported in the household asset questionnaire (IDR 1,000) winsorized at the 99th percentile.



(a) No controls **(b) Controls for age and gender**

Figure A4. The correlation between sleep quality and household assets is stronger for household heads than for other household members

Notes: Data is for individuals in our main analysis sample who were interviewed prior to the cash transfer disbursement. The standardized aggregate sleep quality (SQI) index is plotted against log household assets, calculated as $log(Y + 1)$ with Y as the sum of all assets reported in the household asset questionnaire (IDR 1,000) winsorized at the 99th percentile. Panel (a) includes no controls, while Panel (b) includes controls for age and gender. Slope coefficients in panel (a) are of 0.019 for non-household heads and 0.060 for household heads, a difference that is statistically significant (p-value=0.005). Estimates in panel (b), are similar at 0.016 for non-household heads and 0.054 for household heads, a difference that is also statistically significant (p-value=0.010).

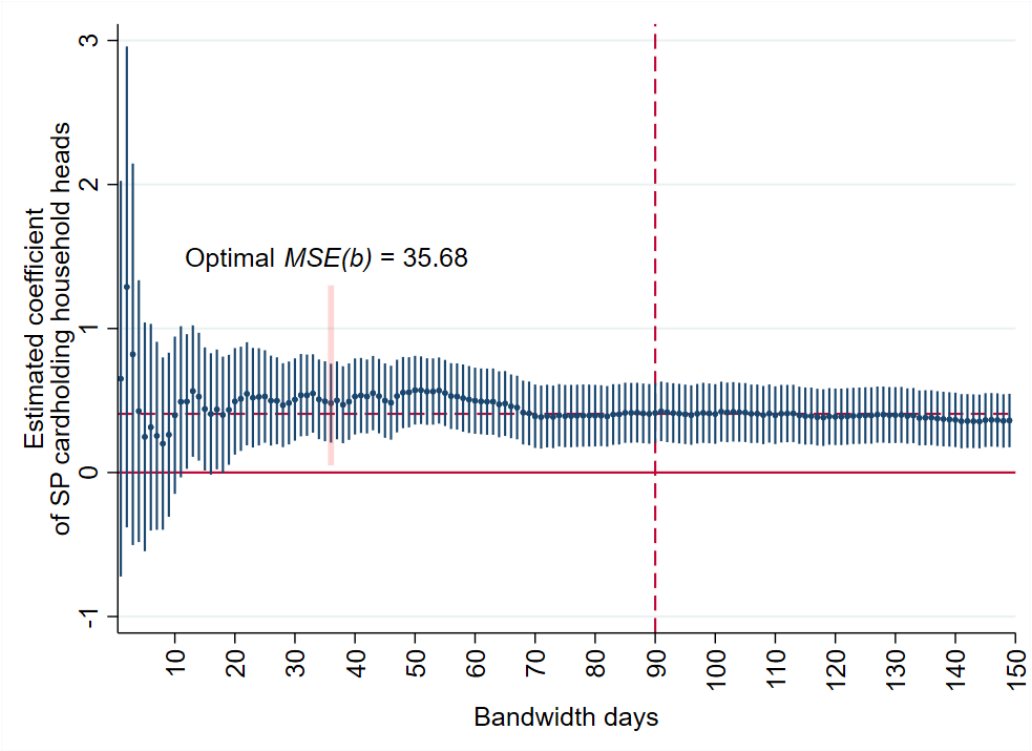
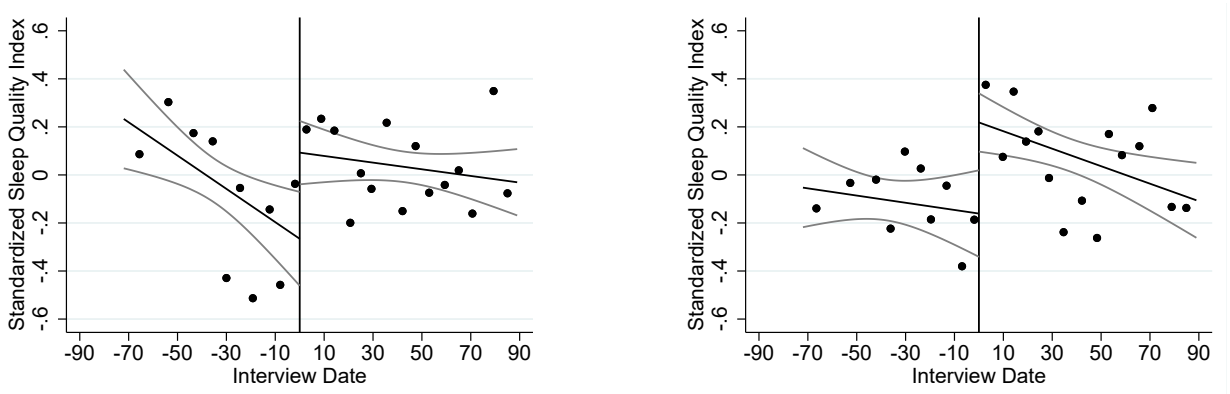


Figure A5. Sleep quality improvement of cardholder household heads is robust to bandwidth choice

Notes: Plotted estimates show the estimate of $\hat{\beta}_1$ with kabupaten, age decade, and gender fixed effects using different bandwidths around the transfer disbursement week. Note that the first interviews occurred 72 days prior to November 17 so widening the bandwidth beyond 72 days only extends the post period. The dashed line highlights the 90 day bandwidth used throughout the paper. The figure display 95% confidence intervals with standard errors clustered at the enumeration area level. The *MSE(b)* optimal bandwidth of 36 yields comparable results.

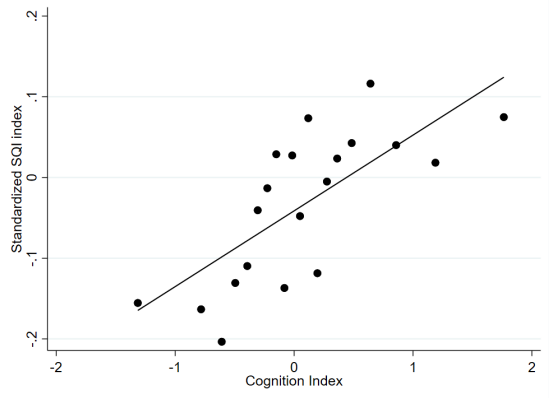


(a) SQI for high fuel SP cardholding household heads

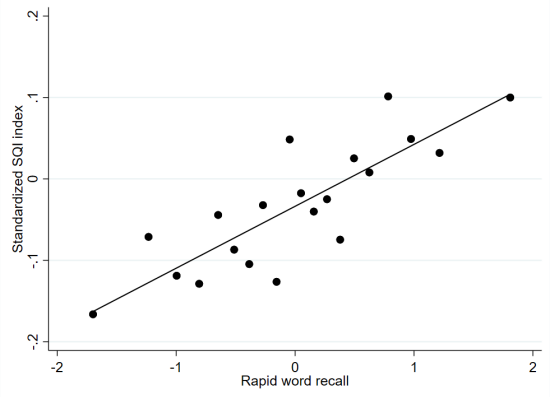
(b) SQI for low fuel SP cardholding household heads

Figure A6. Pre-transfer trends are stronger for SP cardholding household heads with high fuel consumption

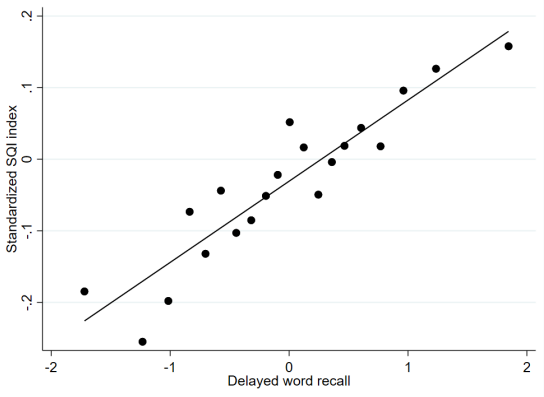
Notes: All figures are adjusted for kabupaten fixed effects. Panel (a) plots the standardized SQI index of cardholder household heads with above median fuel consumption for the SP cardholding population before and after the treatment threshold. Panel (b) plots the same figure for cardholder household heads with below median fuel consumption for the SP cardholding population. 90% confidence intervals are plotted with standard errors clustered at the enumeration area level.



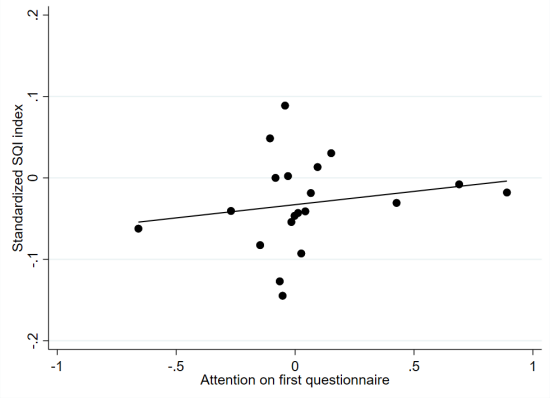
(a) Sleep sensitive cognition index



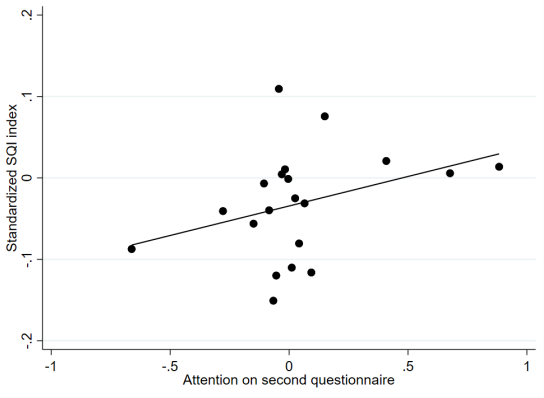
(b) Rapid word recall



(c) Delayed word recall



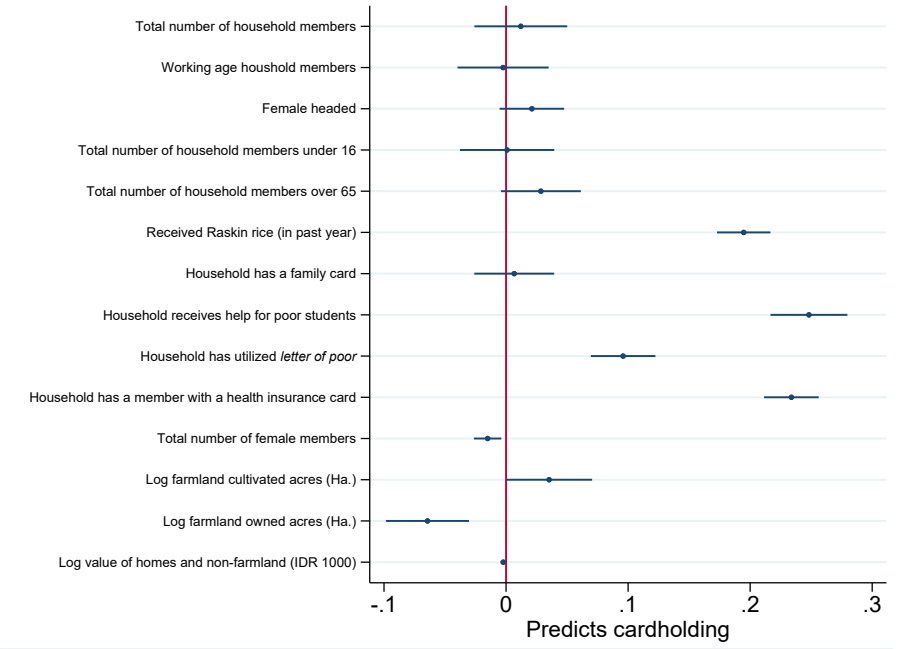
(d) Attention on first questionnaire



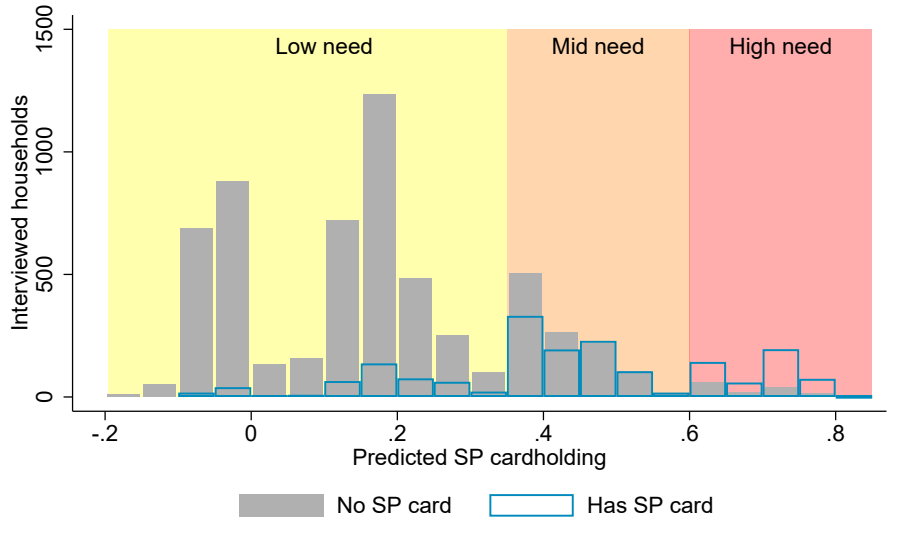
(e) Attention on second questionnaire

Figure A7. Correlations between sleep quality and cognition

Notes: Data is for individuals in our main analysis sample who were interviewed prior to the cash transfer disbursement. The sleep quality (SQI) index is plotted against the sleep sensitive cognition index in panel (a), and its component parts in panels (b) through (e). All figures control for age, gender, and years of education. Assigned word list fixed effects are residualized out of word recall scores which are then standardized. Interviewer fixed effects are residualized out of the attention assessment indicator for excellent attention, which is then standardized.



(a) Predictors for a household having an SP card



(b) Predicted SP cardholding by actual cardholding

Figure A8. Categorizing households by need based on predictors of SP cardholding

Notes: Predicted values of household cardholding are generated by regressing the indicator for having an SP card on the household characteristics included in Table A1, Panel (b). Estimates of these variables' predictive coefficients are presented in Panel (a). The generated predicted values for SP card ownership are plotted in Panel (b) for both SP cardholder households in blue and non-cardholder households in grey. Households are categorized as low-, mid- and high need households using the following thresholds: Low need if $E[\textit{has SP card}] < 0.35$; mid need if $0.35 \leq E[\textit{has SP card}] \leq 0.6$; and high need if $E[\textit{has SP card}] > 0.6$.

Table A1: Households and individuals surveyed on or just before November 17 are similar on observables to those surveyed just after

Outcome variable	(1) $\hat{\beta}_1$	(2) Pre-transfer Mean [Sd.]	(3) Obs.	(4) $\hat{\beta}_1$	(5) Pre-transfer Mean [Sd.]	(6) Obs.
Panel a: Across all households						
	All households					
Household survey participation	0.01 (0.01)	0.98 [0.12]	8,568			
Household head has SQI measure	0.01 (0.01)	0.91 [0.29]	8,479			
Reports having an SP card	0.04 (0.03)	0.22 [0.41]	7,739			
Panel b: Households						
	SP cardholders			Non-cardholders		
Received *'Raskin'* subsidized rice (in past year)	0.04 (0.04)	0.82 [0.38]	1,785	0.01 (0.06)	0.47 [0.50]	5,937
Household has a member with a health insurance card	0.01 (0.04)	0.79 [0.41]	1,787	-0.10*** (0.03)	0.38 [0.48]	5,951
Household has a family card	-0.02 (0.02)	0.96 [0.21]	1,787	-0.01 (0.02)	0.94 [0.25]	5,951
Household receives help for poor students	-0.00 (0.05)	0.30 [0.46]	1,787	0.01 (0.02)	0.07 [0.26]	5,951
Household utilized *letter of poor*	-0.05 (0.05)	0.39 [0.49]	1,787	-0.02 (0.03)	0.16 [0.37]	5,951
Total number of household members	-0.12 (0.19)	4.13 [1.89]	1,787	-0.15 (0.11)	3.73 [1.72]	5,951
Working age household members	-0.06 (0.14)	2.57 [1.39]	1,787	-0.06 (0.08)	2.41 [1.17]	5,951
Total number of household members under 16	0.04 (0.12)	1.32 [1.09]	1,787	-0.04 (0.07)	1.12 [1.02]	5,951
Total number of household members over 65	-0.09 (0.07)	0.33 [0.60]	1,787	-0.04 (0.03)	0.29 [0.58]	5,951
Female headed	-0.02 (0.04)	0.19 [0.40]	1,787	0.00 (0.03)	0.18 [0.38]	5,951
Total number of female members	-0.06 (0.12)	2.08 [1.13]	1,787	-0.13** (0.06)	1.91 [1.10]	5,951
Log value of homes and non-farmland (IDR 1,000)	-0.35 (0.45)	8.71 [4.25]	1,787	0.09 (0.29)	9.27 [4.60]	5,950
Log farmland owned (Ha.)	0.00 (0.03)	0.03 [0.15]	1,787	-0.03 (0.05)	0.11 [0.35]	5,951
Log farmland cultivated (Ha.)	-0.01 (0.02)	0.05 [0.20]	1,787	-0.01 (0.04)	0.10 [0.32]	5,951
... p-value on test of joint significance		⟨0.77⟩			⟨0.20⟩	
Panel c: Household heads						
	SP cardholders			Non-cardholders		
No SQI measure	-0.04 (0.03)	0.08 [0.27]	1,941	-0.01 (0.02)	0.09 [0.29]	6,537
Age	-0.52 (1.44)	49.26 [13.71]	1,787	-0.25 (1.01)	47.04 [14.58]	5,951
Female	-0.04 (0.04)	0.20 [0.40]	1,787	0.00 (0.02)	0.18 [0.39]	5,951
Over 65	-0.01 (0.04)	0.15 [0.36]	1,787	-0.00 (0.02)	0.13 [0.34]	5,951
Married and/or cohabitating	0.04 (0.04)	0.80 [0.40]	1,787	-0.00 (0.03)	0.81 [0.39]	5,951
Years of schooling	-0.10 (0.42)	5.57 [3.75]	1,782	-0.45 (0.36)	8.27 [4.57]	5,926
Individual survey start time	-0.09 (0.35)	15.82 [3.76]	1,787	0.21 (0.20)	16.04 [3.85]	5,951
... p-value on test of joint significance		⟨0.36⟩			⟨0.83⟩	
Panel d: Non-household heads						
	SP cardholders			Non-cardholders		
No SQI measure	-0.02 (0.03)	0.11 [0.31]	3,048	-0.00 (0.02)	0.11 [0.32]	8,782
Age	-1.88 (1.32)	34.47 [15.12]	2,740	-0.06 (0.76)	34.95 [14.90]	7,867
Female	-0.02 (0.03)	0.74 [0.44]	2,740	-0.01 (0.02)	0.77 [0.42]	7,867
Over 65	-0.02 (0.02)	0.04 [0.19]	2,740	-0.01 (0.01)	0.04 [0.20]	7,867
Married and/or cohabitating	0.01 (0.04)	0.61 [0.49]	2,740	-0.01 (0.02)	0.68 [0.47]	7,867
Years of schooling	-0.03 (0.39)	7.35 [3.76]	2,729	-0.42 (0.36)	9.11 [4.17]	7,840
Individual survey start time	0.09 (0.31)	15.55 [3.78]	2,740	-0.21 (0.19)	15.75 [3.80]	7,867
... p-value on test of joint significance		⟨0.73⟩			⟨0.69⟩	

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets as indicated. Units of observation are households in panels (a) and (b) and individuals in panels (c) and (d). All reported $\hat{\beta}_1$ coefficients in columns 1 and 4 are for a linear regression discontinuity specification that includes kabupaten fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17 2014. The value of homes and non-farmland is winsorized at the 99th percentile. Columns 3 and 6 report the number of observations used in the estimation. The main analysis sample includes 1,788 cardholder and 5,951 non-cardholder households. The 1,788 cardholder households include 1,788 household heads and 2,741 other members of households for whom sleep quality is observed. The 5,951 non-cardholder households include 5,951 household heads and 7,868 other members of households. Missing data and dropped singletons account for small deviations in these values. The last row of each panel reports the p-value of the χ^2 test for joint significance.

Table A2: BLSM transfer receipt and amount increase sharply for SP cardholding households on November 17th 2014

	(1)	(2)	(3)	(4)
	$\hat{\beta}_1$		$\hat{\beta}_1$	
Outcome variable	SP card	No card	SP card	No card
Received BLSM cash transfer	0.22***	0.01	0.17***	0.01
	(0.04)	nd.	(0.04)	(0.00)
BLSM transfer amount (IDR 1,000)	84***	2.10	68***	1.11
	(17)	nd.	(16)	(1.03)
N	1,788	5,951	1,787	5,951
FE: Kabupaten	No	No	Yes	Yes

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different sub-samples and fixed effects as indicated. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Standard errors in column 2 are not defined due to insufficient variation in BLSM receipt in non-cardholding households. The analysis sample includes 1,788 cardholder households and 5,951 non-cardholder households with observable SQI measures for their household heads. Missing data and dropped singletons account for small deviations in these values.

Table A3: No improvement in sleep quality for economically disadvantaged non-cardholder household heads

	(1)	(2)	(3)
Outcome variable	Non-cardholders All	Non-cardholders Receiving other aid	Non-cardholders Mid and high need
Standardized SQI index	-0.03	-0.09	-0.12
	(0.06)	(0.08)	(0.10)
N	5,951	3,250	1,111

Notes: The outcome variable in all regressions is the standardized sleep quality index. Columns report estimates using different population subsets. Estimates are presented for household heads in all non-cardholder households in column 1. In column 2 the sample is restricted to household heads in non-cardholder households that report receiving other forms of government aid. In column 3 the sample is restricted to household heads in non-cardholder households that are categorized as mid or high need ($E[\textit{has SP card}] > 0.35$). To generate neediness, we predict ownership of a social protection card – which is necessary to retrieve BLSM transfers – we regress the indicator variable that captures social protection card ownership on household characteristics included in Table A1. We find that eligibility for other social protection programs, and the size and value of farm and non-farm landholdings are significant predictors of social protection card ownership (Figure A7). Moreover, most cardholder households have predicted values for social protection card ownership ≥ 0.35. Therefore, we categorize non-cardholder households with $\mathbb{E}[\textit{has SP card}] \geq 0.35$ as those that have *high* predicted values for social protection card ownership (medium or high need households). Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. All reported $\hat{\beta}_1$ coefficients are for a linear specification that includes kabupaten, age decade, and gender fixed effects.

Table A4: All components of the SQI index improve for cardholder household heads

	(1)	(2)	(3)
Outcome variable	$\hat{\beta}_1$		
	SP cardholders	Non-cardholders	p-value of difference
Panel a: Standardized aggregated indices			
Full sleep quality (SQI) index	0.41***	-0.03	⟨0.00⟩***
	(0.10)	(0.06)	
... Sleep disturbance index (reversed)	0.34***	-0.06	⟨0.00⟩***
	(0.10)	(0.05)	
... Sleep-related impairment index (reversed)	0.37***	-0.01	⟨0.00⟩***
	(0.10)	(0.06)	
Panel b: Standardized responses to the specific question: In the past 7 days ...			
... I had trouble sleeping (reversed)[1]	0.33***	-0.04	⟨0.00⟩***
	(0.10)	(0.06)	
... My quality of sleep was[2]	0.18*	0.02	⟨0.16⟩
	(0.10)	(0.06)	
... My quality of sleep was refreshing	0.10	-0.04	⟨0.21⟩
	(0.10)	(0.05)	
... I was satisfied with my sleep	0.17*	-0.02	⟨0.05⟩*
	(0.09)	(0.05)	
... I had difficulty falling asleep (reversed)	0.30***	-0.09*	⟨0.00⟩***
	(0.10)	(0.05)	
... I had a hard time concentrating because of poor sleep (reversed)	0.38***	-0.01	⟨0.00⟩***
	(0.10)	(0.06)	
... I had problems during the day because of poor sleep (reversed)	0.32***	-0.02	⟨0.00⟩***
	(0.10)	(0.06)	
... I had a hard time getting things done because I was sleepy (reversed)	0.16	0.03	⟨0.18⟩
	(0.10)	(0.06)	
... I felt tired (reversed)	0.23**	-0.01	⟨0.01⟩**
	(0.10)	(0.06)	
... I felt irritable because of poor sleep (reversed)	0.31***	-0.01	⟨0.00⟩***
	(0.10)	(0.06)	
N	1,786	5,951	
FE: Kabupaten	Yes	Yes	
FE: Gender	Yes	Yes	
FE: Age (decade)	Yes	Yes	

Notes: Question response options are 1: Not at all; 2: A little bit; 3: Somewhat; 4: Quite a bit; 5: Very much; except for question 1 (1: Never; 2: Rarely; 3: Sometimes; 4: Often; 5: Always) and question 2 (1: Very poor; 2: Poor; 3: Fair; 4: Good; 5:Very good). Question responses are coded so that larger values indicate better sleep quality. All reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes kabupaten, age decade and gender fixed effects. Estimates in column 1 are for cardholder household heads and in column 2 are for non-cardholder household heads. Column 3 reports the p-value on the F-test for equality of coefficients between columns 1 and 2. Panel (a) presents impacts on the standardized aggregate score on all questions (our main outcome variable); on the italicized sleep disturbance questions; and on the sleep-related impairment questions. In Panel (b) the dependent variable is the standardized response to the specific question. The analysis sample includes 1,788 cardholder household heads and 5,951 non-cardholder household heads. Missing data and dropped singletons account for small deviations in these values. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01.

Table A5: Responsibility over household earnings and budget management decisions for the household head and their spouse

	Household head			Heads' spouse		
	Median	Mean	Obs.	Median	Mean	Obs.
Earnings responsibility						
Annual earnings (IDR 1,000)	8,000	10,863	1,307	0.00	3,167	1,310
Share of household earnings	0.49	0.52	1,306	0.00	0.12	1,308
Budget management decision share						
All categories	0.30	0.33	1,313	0.69	0.65	1,313
... Routine expenses	0.29	0.30	1,313	0.71	0.68	1,313
... Large expenses	0.50	0.49	1,313	0.50	0.44	1,313
... Savings	0.50	0.37	974	0.75	0.66	928

Notes: Data is limited to 1,313 household head couples in SP cardholding households where sleep quality is observed for both the head and their spouse. Missing reported earnings accounts for small deviations from this number. The financial decision making questionnaire asks each respondent to report all household members responsible for decisions about several routine expenses (food eaten at home, routine household purchases, own clothing, spouse's clothing, children's clothing, children's education, children's health). Respondents also report decision making on large purchases and over savings (*arisan* ROSCA contributions and traditional savings). For each question, the decision share of the respondent is calculated and then averaged over the category of questions. If the respondent reports no decisions being made on a question, the question is omitted from calculations. If no decisions are reported for entire categories of goods (as is common for households without savings) the observation is missing.

Table A6: Spouses with high earning shares also experience sleep quality improvements

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Household head's SQI			Head's spouse's SQI			
Population subset	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Household head has earnings and a spouse in the household	0.44*** (0.13)	-0.05 [1.09]	1,250	-0.01 (0.10)	-0.09 [1.02]	1,250	$\langle 0.00 \rangle$***
... Household head has earnings, spouse does not	0.39** (0.15)	-0.05 [1.08]	650	-0.19 (0.14)	-0.03 [1.02]	650	$\langle 0.00 \rangle$***
... Household head and spouse both have earnings	0.50*** (0.18)	-0.05 [1.10]	594	0.29* (0.16)	-0.14 [1.03]	594	$\langle 0.34 \rangle$
..... Both have earnings, head earns more	0.51** (0.23)	-0.09 [1.10]	414	0.28 (0.22)	-0.17 [1.03]	414	$\langle 0.42 \rangle$
..... Both have earnings, spouse earns same or more	0.55 (0.37)	0.06 [1.12]	171	0.53* (0.30)	-0.09 [1.05]	170	$\langle 0.96 \rangle$

Notes: The standardized sleep quality index is the outcome variable in all estimations. Rows report the subset of households examined. Estimates for household heads are reported in column 1 and estimates for their spouse are reported in column 4. All reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes kabupaten, age decade and gender fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Observations are restricted to SP cardholding households where the household head and their spouse have SQI measures. The mean and standard deviations of the sub-sample's SQI, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17 2014. Column 7 reports the p-value on the F-test for equality of coefficients between columns 1 and 4.

Table A7: The sleep quality of household heads improves, but not that of their spouses, regardless of responsibility for household budget management decisions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Responsibility above median			Responsibility at or below median			
Heterogeneity in sleep quality impacts **examined by responsibility for decisions on...**	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Panel a: Household head							
All categories	0.37** (0.18)	-0.03 [1.01]	644	0.52*** (0.17)	-0.10 [1.17]	661	⟨0.55⟩
... Routine expenses	0.36* (0.19)	-0.05 [1.01]	530	0.48*** (0.15)	-0.07 [1.15]	776	⟨0.64⟩
... Large expenses	0.29 (0.26)	-0.16 [1.08]	299	0.46*** (0.14)	-0.03 [1.10]	1,008	⟨0.54⟩
... Savings	0.56 (0.35)	-0.13 [1.06]	169	0.22 (0.15)	-0.01 [1.07]	797	⟨0.32⟩
Panel b: Household head's spouse							
All categories	-0.10 (0.16)	-0.01 [1.02]	622	-0.08 (0.14)	-0.12 [1.02]	685	⟨0.89⟩
... Routine expenses	-0.20 (0.15)	0.06 [0.98]	564	-0.04 (0.14)	-0.16 [1.04]	744	⟨0.46⟩
... Large expenses	-0.08 (0.33)	-0.27 [1.05]	234	-0.12 (0.12)	-0.03 [1.01]	1,071	⟨0.91⟩
... Savings	0.04 (0.20)	-0.08 [1.05]	366	-0.10 (0.15)	-0.14 [0.95]	555	⟨0.59⟩

Notes: The standardized sleep quality index is the outcome variable in all estimations. All reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes kabupaten, age decade and gender fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The financial decision making questionnaire asks each respondent to report all household members responsible for decisions about several routine expenses (food eaten at home, routine household purchases, own clothing, spouse's clothing, children's clothing, children's education, children's health). Respondents also report decision making on large purchases and over savings (*arisan* ROSCA contributions and traditional savings). For each question, the decision share of the respondent is calculated and then averaged over the category of questions. If the respondent reports no decisions being made on a question, the question is omitted from calculations. If no decisions are reported for entire categories of goods (as is common for households without savings) the observation is missing. Estimates using household heads are reported in panel a. Estimates for household heads' spouses are reported in panel b. Column 1 reports estimates of $\hat{\beta}_1$ estimated on respondents with responsibility measures above the median while column 4 does so for those at or below the median. The mean and standard deviations of the sub-sample's SQI, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17 2014. Column 7 reports the p-value on the F-test for equality of coefficients between columns 1 and 4.

Table A8: Pre-transfer trends are concentrated in SP cardholding household heads with high fuel consumption

	(1)	(2)	(3)	(4)
	Sleep quality index			
Coefficient	All	High Fuel	Low Fuel	p-value of difference
Post-transfer	0.407***	0.380**	0.464***	⟨0.71⟩
	(0.105)	(0.171)	(0.139)	
Date	-0.003*	-0.007**	-0.001	⟨0.22⟩
	(0.002)	(0.003)	(0.003)	
Date × Post-transfer	0.000	0.005	-0.004	⟨0.09⟩*
	(0.002)	(0.004)	(0.003)	
N	1786	861	922	
FE: Kabupaten	Yes	Yes	Yes	
FE: Gender	Yes	Yes	Yes	
FE: Age (decade)	Yes	Yes	Yes	

Notes: Row 1 reports $\hat{\beta}_1$, row 2 $\hat{\beta}_2$, and row 3 $\hat{\beta}_3$ as specified in equation 1. The sample is limited to all SP cardholding household heads in column 1, to SP cardholding heads with fuel consumption above in column 2 and below this sample's median in column 3. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Reported coefficients are for a linear regression discontinuity specifications that includes the listed fixed effects. Column 4 reports the p-value on the F-test for equality of coefficients between the high and low fuel consumption sub-samples, reported in the preceding two columns.

Table A9: No impacts on other cognition measures

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	SP cardholder heads			Non-cardholder heads			SP cardholders non-heads		
Outcome variables	$\hat{\beta}_1$	$\hat{\beta}_1$	Obs.	$\hat{\beta}_1$	Obs.	p-value of difference	$\hat{\beta}_1$	Obs.	p-value of difference
Index of sleep non-sensitive cognition indicators	-0.04	-0.01	1,399	0.03	4,790	⟨0.58⟩	0.02	2,532	⟨0.72⟩
	(0.07)	(0.07)		(0.04)			(0.05)		
... Ravens matrices (standardized)	-0.00	0.00	1,740	0.03	5,843	⟨0.78⟩	0.03	2,701	⟨0.69⟩
	(0.10)	(0.09)		(0.05)			(0.07)		
Math skill dependent cognition tests									
... Math questions (standardized)	-0.02	0.03	1,399	0.09	4,794	⟨0.57⟩	0.02	2,534	⟨1.00⟩
	(0.10)	(0.09)		(0.07)			(0.07)		
... Number series (standardized)	-0.08	-0.10	1,780	-0.02	5,914	⟨0.37⟩	-0.06	2,726	⟨0.77⟩
	(0.11)	(0.09)		(0.05)			(0.07)		
... Repeated subtractions of 7 (standardized)	-0.01	-0.03	1,781	0.06	5,923	⟨0.37⟩	0.08	2,728	⟨0.35⟩
	(0.11)	(0.10)		(0.05)			(0.08)		
FE: Kabupaten	Yes	Yes		Yes			Yes		
FE: Gender	No	Yes		Yes			Yes		
FE: Age (decade)	No	Yes		Yes			Yes		
FE: Years of school	No	Yes		Yes			Yes		

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets, or fixed effects, as indicated. Cognition indicators include the standardized score on 8 ravens matrices, the standardized score on responses to 5 math questions, the standardized score on an adaptive number series test of fluid intelligence, and the standardized score on 5 repeated subtractions of 7 from 100. The index of these cognition tests is calculate as the mean performance on these standardized measures. Reported $\hat{\beta}_1$ coefficients are for a specification that includes kabupaten fixed effects in column 1. Gender, age decade fixed effects, and years of schooling fixed effects are added in columns 2, 4 and 7. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Column 6 reports the p-value on the F-test for equality of coefficients between columns 2 and 4. Column 9 reports the p-value on the F-test for equality of coefficients between columns 2 and 7. The analysis sample includes 1,788 cardholder household heads, 5,951 non-cardholder household heads, and 2,741 cardholder non-heads. Missing data and dropped singletons account for small deviations in these values. Reported observations are for the regression run in the preceding column. Math questions were not administered to respondents 60 and older.

Table A10: Impacts on savings, arisan contributions, and outstanding loans are qualitatively robust to variable value definition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	SP cardholder households				Non-cardholder households			
Outcome variable	$\hat{\beta}_1$	$\hat{\beta}_1$	Pre-transfer mean [sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer mean [sd.]	Obs.	p-value of difference
Panel a: Arisan (ROSCA) contributions last month (IDR 1,000)								
Values winsorized at the 99th percentile	40**	40**	57	1,780	27	130	5,933	⟨0.57⟩
	(17)	(17)	[151]		(23)	[269]		
Values	40**	40**	61	1,780	33	146	5,933	⟨0.83⟩
	(17)	(18)	[219]		(32)	[437]		
Values winsorized at the 98th percentile	37**	37**	56	1,780	19	122	5,933	⟨0.32⟩
	(16)	(16)	[144]		(18)	[229]		
Values winsorized at the 95th percentile	34**	33**	52	1,780	13	105	5,933	⟨0.17⟩
	(14)	(14)	[118]		(13)	[172]		
Made an arisan contribution last month (extensive margin)	0.01	0.00	0.41	1,780	0.01	0.52	5,933	⟨0.84⟩
	(0.06)	(0.06)	[0.49]		(0.05)	[0.50]		
Values winsorized at the 99th percentile for contributors (intensive margin)	79**	83**	140	788	21	252	3,061	⟨0.13⟩
	(33)	(34)	[210]		(37)	[330]		
Log of values winsorized at the 99th percentile	0.32	0.29	1.70	1,780	0.16	2.48	5,933	⟨0.61⟩
	(0.27)	(0.28)	[2.20]		(0.22)	[2.57]		
Log of values	0.32	0.29	1.70	1,780	0.17	2.49	5,933	⟨0.62⟩
	(0.27)	(0.28)	[2.20]		(0.22)	[2.58]		
Log of values winsorized at the 98th percentile	0.32	0.29	1.70	1,780	0.15	2.48	5,933	⟨0.60⟩
	(0.27)	(0.27)	[2.20]		(0.22)	[2.56]		
Log of values winsorized at the 95th percentile	0.31	0.28	1.69	1,780	0.15	2.46	5,933	⟨0.59⟩
	(0.27)	(0.27)	[2.18]		(0.22)	[2.52]		
Panel b: Household's outstanding loans (IDR 1,000)								
Values winsorized at the 99th percentile	-2,202**	-2,362**	2,471	1,759	-2,185	7,544	5,893	⟨0.93⟩
	(1,082)	(1,087)	[12,379]		(1,716)	[27,177]		
Values	-7,413*	-7,940*	4,838	1,759	-5,274	10,529	5,893	⟨0.46⟩
	(4,488)	(4,553)	[54,593]		(3,214)	[60,049]		
Values winsorized at the 98th percentile	-1,676**	-1,797**	2,234	1,759	-1,479	6,441	5,893	⟨0.83⟩
	(816)	(815)	[8,860]		(1,327)	[20,200]		
Values winsorized at the 95th percentile	-936*	-1,018*	1,928	1,759	-752	4,387	5,893	⟨0.75⟩
	(561)	(548)	[5,569]		(693)	[10,838]		
Has outstanding loans (extensive margin)	-0.06	-0.08	0.40	1,759	-0.05*	0.36	5,893	⟨0.61⟩
	(0.05)	(0.05)	[0.49]		(0.03)	[0.48]		
Values winsorized at the 99th percentile for loan holders (intensive margin)	-4,923*	-5,093*	6,256	712	-2,130	20,689	2,243	⟨0.52⟩
	(2,622)	(2,802)	[19,107]		(4,027)	[41,891]		
Log of values winsorized at the 99th percentile	-0.52	-0.65*	2.95	1,759	-0.40	3.05	5,893	⟨0.54⟩
	(0.38)	(0.37)	[3.78]		(0.26)	[4.20]		
Log of values	-0.53	-0.66*	2.95	1,759	-0.41	3.06	5,893	⟨0.53⟩
	(0.38)	(0.37)	[3.79]		(0.26)	[4.22]		
Log of values winsorized at the 98th percentile	-0.52	-0.65*	2.95	1,759	-0.39	3.04	5,893	⟨0.54⟩
	(0.38)	(0.37)	[3.78]		(0.26)	[4.19]		
Log of values winsorized at the 95th percentile	-0.51	-0.64*	2.94	1,759	-0.38	3.02	5,893	⟨0.53⟩
	(0.38)	(0.37)	[3.77]		(0.25)	[4.13]		
Panel c: Household's savings (IDR 1,000)								
Values winsorized at the 99th percentile	902**	1,005***	394	1,778	-1,041	3,826	5,923	⟨0.02⟩**
	(357)	(381)	[2,004]		(788)	[13,707]		
Values	1,130**	1,293**	394	1,778	-2,944	5,854	5,923	⟨0.03⟩**
	(512)	(584)	[2,004]		(1,897)	[41,490]		
Values winsorized at the 98th percentile	771**	841***	394	1,778	-550	3,110	5,923	⟨0.03⟩**
	(304)	(310)	[2,004]		(591)	[9,435]		
Values winsorized at the 95th percentile	594**	642***	379	1,778	-151	2,101	5,923	⟨0.05⟩*
	(242)	(241)	[1,837]		(335)	[5,194]		
Has savings (extensive margin)	0.03	0.04	0.18	1,778	0.05	0.31	5,923	⟨0.78⟩
	(0.04)	(0.04)	[0.39]		(0.03)	[0.46]		
Values winsorized at the 99th percentile for savers (intensive margin)	5,726***	3,068*	2,186	329	-4,799**	12,264	1,850	⟨0.00⟩***
	(2,183)	(1,591)	[4,300]		(2,055)	[22,343]		
Log of values winsorized at the 99th percentile	0.33	0.41	1.18	1,778	0.32	2.49	5,923	⟨0.79⟩
	(0.30)	(0.30)	[2.60]		(0.27)	[3.84]		
Log of values	0.33	0.41	1.18	1,778	0.31	2.50	5,923	⟨0.77⟩
	(0.30)	(0.30)	[2.60]		(0.27)	[3.86]		
Log of values winsorized at the 98th percentile	0.33	0.41	1.18	1,778	0.32	2.48	5,923	⟨0.81⟩
	(0.30)	(0.30)	[2.60]		(0.27)	[3.82]		
Log of values winsorized at the 95th percentile	0.32	0.40	1.18	1,778	0.34	2.44	5,923	⟨0.85⟩
	(0.30)	(0.30)	[2.60]		(0.26)	[3.75]		
FE: Kabupaten	Yes	Yes			Yes			
FE: Household characteristics	No	Yes			Yes			

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different household subsets, or fixed effects, as indicated. Outcome variables are calculated as described measured in IDR 1,000. The reported $\hat{\beta}_1$ coefficient in column 1 only includes kabupaten fixed effects. Reported $\hat{\beta}_1$ coefficients in columns 2 and 5 are for a specification that includes fixed effects for the number of household members, the number under 16 years of age, the number over 65 years of age, the number of female household members, if the household head is female and the household's kabupaten. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 3 and 6, are calculated using the subset of pre-transfer observations interviewed prior to November 17 2014. Column 8 reports the p-value on the F-test for equality of coefficients between columns 2 and 5. The analysis sample includes 1,788 cardholder households and 5,951 non-cardholder households. Missing data and dropped singletons account for small deviations in these values. Reported observations are for the regression run in the preceding column.

Table A11: Impacts on the sleep quality of SP cardholding household heads is largest for large borrowers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Large borrowers	Non-borrowers		Small borrowers		Medium borrowers	
Outcome variable	$\hat{\beta}_1$	$\hat{\beta}_1$	p-value of difference	$\hat{\beta}_1$	p-value of difference	$\hat{\beta}_1$	p-value of difference
Standardized SQI index	0.91***	0.36**	⟨0.09⟩*	0.24	⟨0.13⟩	0.30	⟨0.12⟩
	(0.28)	(0.16)		(0.30)		(0.29)	
N	257	923		249		316	
FE: Kabupaten	Yes	Yes		Yes		Yes	
FE: Gender	Yes	Yes		Yes		Yes	
FE: Age (decade)	Yes	Yes		Yes		Yes	

Notes: The outcome variable for all estimations is the standardized SQI index. We omit 33 observations with missing loan data. Columns report estimates for different subsets of SP cardholding household heads. Non-borrowers are defined as those who report no outstanding loans or loan payments in the past 12 months. To categorize borrowers, we sum the value of outstanding loans and loan payments reported in the past 12 months and divide this into terciles. Small borrowers report less than IDR 1,200,000, medium borrowers report between IDR 1,200,000 and IDR 5,000,000, and large borrowers report over IDR 5,000,000 in outstanding and paid loans. Columns 1, 2, 4 and 6 report the estimated $\hat{\beta}_1$ for our main specification as specified in equation 1. All specifications include kabupaten, gender, and age decade fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. Columns 3, 5 and 7 report the p-values on the F-test for equality between the coefficient in the preceding column and the coefficient for large borrowers in column 1.

Table A12: No statistically significant change in other reported affects amongst cardholder household heads

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Outcome variable	Heads SP cardholders			Heads non-cardholders			Non-head SP cardholders		
Affect indicator for being...	$\hat{\beta}_1$	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	p-value of difference	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	p-value of difference
Sad	-0.01	0.00	0.15	0.01	0.12	⟨0.83⟩	0.03	0.13	⟨0.40⟩
	(0.03)	(0.03)	[0.36]	(0.02)	[0.32]		(0.03)	[0.33]	
Lonely	0.03	0.03	0.17	0.04**	0.15	⟨0.67⟩	-0.03	0.17	⟨0.18⟩
	(0.03)	(0.03)	[0.37]	(0.02)	[0.35]		(0.03)	[0.37]	
Bored	-0.01	-0.01	0.11	-0.01	0.12	⟨0.90⟩	-0.00	0.17	⟨0.88⟩
	(0.03)	(0.03)	[0.31]	(0.02)	[0.33]		(0.03)	[0.38]	
Angry	-0.01	-0.01	0.08	-0.02	0.10	⟨0.64⟩	0.08***	0.15	⟨0.03⟩**
	(0.03)	(0.03)	[0.27]	(0.02)	[0.30]		(0.03)	[0.36]	
Stressed	-0.00	0.00	0.09	0.01	0.09	⟨0.91⟩	0.01	0.10	⟨0.93⟩
	(0.03)	(0.03)	[0.29]	(0.02)	[0.29]		(0.02)	[0.30]	
Pain	-0.06	-0.05	0.25	0.03	0.21	⟨0.05⟩*	-0.01	0.22	⟨0.35⟩
	(0.04)	(0.04)	[0.43]	(0.02)	[0.41]		(0.03)	[0.42]	
Content (reversed)	0.06	0.06	0.41	0.01	0.32	⟨0.30⟩	0.07	0.34	⟨0.88⟩
	(0.05)	(0.05)	[0.49]	(0.03)	[0.47]		(0.05)	[0.47]	
Enthusiastic (reversed)	0.01	0.01	0.43	0.02	0.38	⟨0.85⟩	-0.01	0.44	⟨0.74⟩
	(0.05)	(0.05)	[0.49]	(0.03)	[0.49]		(0.04)	[0.50]	
Happy (reversed)	-0.01	-0.01	0.35	-0.02	0.24	⟨0.76⟩	0.02	0.27	⟨0.62⟩
	(0.04)	(0.04)	[0.48]	(0.03)	[0.43]		(0.04)	[0.45]	
Observations	1,787	1,786		5,951			2,739		
FE: Kabupaten	Yes	Yes		Yes			Yes		
FE: Gender	No	Yes		Yes			Yes		
FE: Age (decade)	No	Yes		Yes			Yes		
FE: Affect list ordering	Yes	Yes		Yes			Yes		

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets, or fixed effects, as indicated. Outcome variables are indicators set to 1 if the individual reports that yesterday they felt more than a little of the affect listed (response options were not at all, a little, somewhat, quite a bit and very), with the binary indicator reverse coded for positive affects. Reported $\hat{\beta}_1$ coefficients in columns 2, 4 and 7 are for a linear regression discontinuity specification that includes the indicated fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 3, 5 and 8, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 6 reports the p-value on the F-test for equality of coefficients between columns 2 and 4. Column 9 reports the p-value on the F-test for equality of coefficients between columns 2 and 7. The analysis sample includes 1,788 cardholder household heads, 5,951 non-cardholder household heads and 2,741 cardholder non-heads. Missing data and dropped singletons account for small deviations in these values. Reported observations are for the regression run in the preceding column.

Table A13: No statistically significant change in asset values that include sleeping aids for cardholder households

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	SP cardholder households			Non-cardholder households			
Outcome variable	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Panel a: Household expenditures last month (IDR 1,000)							
Electricity	5.73	51	1,780	10	83	5,933	⟨0.53⟩
	(5.50)	[64]		(7)	[103]		
Fuel	-1.93	38	1,780	-5.31*	45	5,933	⟨0.46⟩
	(4.13)	[42]		(2.92)	[46]		
Personal toiletries	3.33	46	1,780	3.72	72	5,933	⟨0.95⟩
	(5.54)	[64]		(5.34)	[92]		
Household items	-2.24	36	1,780	0.93	43	5,933	⟨0.37⟩
	(3.65)	[36]		(2.43)	[43]		
Panel b: Household expenditures last year (IDR 1,000)							
Household supplies and furniture	-84	155	1,780	-38	289	5,933	⟨0.52⟩
	(55)	[570]		(42)	[825]		
Misc. annual expenditures	639	656	1,780	-534	2,684	5,933	⟨0.07⟩*
	(391)	[2,568]		(512)	[10,662]		
Panel c: Value of household's reported assets (IDR 1,000)							
Appliances	134	1,809	1,780	-91	4,013	5,935	⟨0.54⟩
	(237)	[2,716]		(336)	[5,239]		
Furniture and utensils	109	2,029	1,777	-12	4,395	5,929	⟨0.77⟩
	(241)	[2,493]		(386)	[5,670]		

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different household subsets as indicated. Outcome variables are value measured in IDR 1,000 winsorized at the 99th percentile. Reported $\hat{\beta}_1$ coefficients in columns 1 and 4 are for a linear regression discontinuity specification that includes fixed effects for the number of household members, the number under 16 years of age, the number over 65 years of age, the number of female household members, if the household head is female and the household's kabupaten. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variable, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 7 reports the p-value on the F-test for equality of coefficients between columns 1 and 4. The questionnaire lists examples of items for broad expenditure categories. Particularly relevant examples listed in the questionnaire include anti-mosquito items in the monthly household items category; bed sheets in the annual household supplies and furniture category; and beds in the miscellaneous annual expenditures category.

Table A14: No statistically significant change in other assets and expenditures for cardholder households

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	SP cardholder households			Non-cardholder households			
Outcome variable	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Panel a: Household expenditures (IDR 1,000)							
Other monthly non-food expenditures	88 (67)	348 [902]	1,780	5 (89)	730 [1,437]	5,933	⟨0.42⟩
Other annual expenditures	84 (451)	2,701 [4,445]	1,780	139 (369)	4,597 [6,659]	5,933	⟨0.92⟩
Panel b: Value of other household assets (IDR 1,000)							
Other belongings	398 (1,272)	6,355 [9,278]	1,782	-3,534 (2,681)	21,438 [44,431]	5,946	⟨0.15⟩
Panel c: Household earnings (IDR 1,000)							
Household earnings	-2,485 (3,173)	34,214 [42,478]	1,782	-3,607 (3,312)	50,107 [62,531]	5,947	⟨0.79⟩

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different household subsets as indicated. Dependent variables are values measured in IDR 1,000 winsorized at the 99th percentile. The reported $\hat{\beta}_1$ coefficient in column 1 are for a specification that includes fixed effects for the number of household members, the number under 16 years of age, the number over 65 years of age, the number of female household members, if the household head is female and the household's kabupaten. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * $p<0.1$, ** $p<0.05$ and *** $p<0.01$. The mean and standard deviations of the dependent variable, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 7 reports the p-value on the F-test for equality of coefficients between columns 1 and 4. Other monthly non-food expenditures include expenditures on recreation, sweepstakes, transportation, water, phones, servants and regular monthly transfers. Other annual expenditures include expenditures on clothing, medical care, ceremonies, taxes and irregular transfers. Other belongings include the value of jewelry, receivables, vehicles, hard-stem plants, livestock, poultry, and the unlisted category.

Table A15: No statistically significant change in nutrition indicators for cardholder households or household heads

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	SP cardholder households			Non-cardholder households			
Outcome variable	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Panel a: Household food consumption value last week (IDR 1,000)							
Food consumption	-16 (21)	307 [221]	1,781	-7 (19)	404 [316]	5,933	⟨0.72⟩
Alcohol consumption	-1.09 (0.91)	0.30 [4.54]	1,781	0.41 (0.66)	0.78 [15.08]	5,927	⟨0.15⟩
Cigarette consumption	-2.20 (5.38)	42 [55]	1,765	-0.98 (3.76)	47 [74]	5,898	⟨0.84⟩
Betel nut consumption	-0.79 (0.54)	1.34 [8.60]	1,781	0.30 (0.30)	1.19 [5.93]	5,931	⟨0.06⟩*
Panel b: Individual food consumption of the household head							
Meals per day	0.00 (0.05)	2.60 [0.53]	1,773	-0.05 (0.04)	2.67 [0.51]	5,890	⟨0.35⟩
Reports adequate food consumption	0.00 (0.04)	0.73 [0.44]	1,786	-0.03 (0.02)	0.87 [0.33]	5,950	⟨0.42⟩
Sum of days in the past week ate							
Rice	-0.07 (0.05)	6.96 [0.41]	1,784	-0.01 (0.03)	6.95 [0.52]	5,950	⟨0.25⟩
4 types of proteins	0.11 (0.49)	6.99 [4.68]	1,784	0.12 (0.38)	8.13 [5.13]	5,950	⟨0.98⟩
6 types of fruits and vegetables	1.50*** (0.54)	7.47 [5.22]	1,784	1.91*** (0.48)	8.26 [5.56]	5,950	⟨0.47⟩
... Mangoes	0.66** (0.28)	0.80 [1.53]	1,784	1.04*** (0.21)	0.83 [1.53]	5,950	⟨0.10⟩
5 types of processed foods	0.36 (0.49)	5.90 [4.72]	1,784	0.83** (0.38)	6.19 [4.79]	5,950	⟨0.33⟩

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different household subsets as indicated. Dependent variables in panel (a) are values measured in IDR 1,000 winsorized at the 99th percentile. Meals per day is a continuous variable and reporting adequate food consumption is an indicator set to 1 if the respondent reports that their food consumption is adequate or more than adequate for their needs. Consumption frequency in the past week is measured as the sum of days in the past week the respondent reports consuming each type of product in the food category. Protein types include eggs, fish, meat, and dairy. Fruit and vegetable types include sweet potatoes, greens, bananas, mangoes, carrots and papaya. Processed food types include instant noodles, fast food, soft drinks, fried snacks, and sweet snacks. Reported $\hat{\beta}_1$ coefficients in columns 1 and 4 are for a linear regression discontinuity specification. Fixed effects for panel (a) include the number of household members, the number under 16 years of age, the number over 65 years of age, the number of female household members, if the household head is female and the household's kabupaten. Fixed effects for panel (b) include gender, age decade and kabupaten fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variable, reported in columns 2 and 5, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Column 7 reports the p-value on the F-test for equality of coefficients between columns 1 and 4.

Table A16: No statistically significant change in rise time, bed time, and hours worked for cardholder household heads

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Heads SP cardholders			Heads non-cardholders				Non-head SP cardholders			
Outcome variable	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference	$\hat{\beta}_1$	Pre-transfer Mean [Sd.]	Obs.	p-value of difference
Rise time yesterday (hrs.)	0.02 (0.18)	5.06 [2.21]	1,774	0.04 (0.14)	5.01 [2.31]	5,926	⟨0.95⟩	0.12 (0.17)	5.23 [2.20]	2,730	⟨0.64⟩
Bed time yesterday (hrs.)	0.20 (0.16)	22.30 [2.05]	1,771	-0.07 (0.10)	22.42 [2.08]	5,923	⟨0.14⟩	0.20 (0.15)	22.02 [2.12]	2,724	⟨0.99⟩
Work hours last week	0.89 (2.35)	34.34 [27.00]	1,786	3.27** (1.53)	34.63 [28.05]	5,951	⟨0.37⟩	-1.42 (2.27)	22.42 [27.11]	2,739	⟨0.47⟩

Notes: Each row reports estimates for a different outcome variable. Columns report estimates using different population subsets as indicated. Work hours last week is winsorized at the 1 percent level. Reported $\hat{\beta}_1$ coefficients in columns 1, 4, and 8 are for a linear regression discontinuity specification that includes gender, age decade, and kabupaten fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01. The mean and standard deviations of the dependent variables, reported in columns 2, 5 and 9, are calculated using the subset of pre-transfer observations interviewed prior to November 17. Columns 7 and 11 reports the p-value on the F-test for equality of coefficients with cardholder household heads; that is, between columns 1 and 4, and 1 and 8, respectively. The analysis sample includes 1,788 cardholder household heads, 5,951 non-cardholder household heads and 2,741 cardholder non-heads. Missing data and dropped singletons account for small deviations in these values.

Table A17: Discontinuity in the sleep quality of cardholding household heads is observed within enumeration areas

	(1)	(2)
Outcome variable	In an EA with interviews before and after Nov 17	In an EA where at least 10% of interviews were held before and after Nov 17
Standardized SQI index	0.48** (0.21)	0.49* (0.24)
N	153	140
FE: Kabupaten	Yes	Yes

Notes: The outcome variable for all regressions is the standardized sleep quality indicator. In column 1, the sample is limited to observations in enumeration areas where SP cardholding household heads are observed both before and after November 17. In column 2, the sample is limited to observations in enumeration areas at least 10% of SP cardholding household heads are observed on either side of the November 17 threshold. Reported $\hat{\beta}_1$ coefficients are for a linear regression discontinuity specification that includes kabupaten fixed effects. Standard errors are reported in parentheses, clustered at the enumeration area level, with the following significance indicators: * p<0.1, ** p<0.05 and ***p<0.01.