Nepal Anticipatory Action Impact Evaluation
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IE Team Credits:

WFP Impact Evaluation Unit: Nidhi Adusumalli, Kriti Malhotra, Felipe Dunsch, and Jonas Heirman.

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University of Chicago: Erin Kelley and Greg Lane.

Impact evaluation in WFP:

WHAT IS IT?

- **Impact evaluations** measure **changes** that can be **attributed** to a specific programme through a **credible counterfactual.**

- They estimate **what would happen if there was no intervention**.

- A **Randomized Controlled Trial** is one method that gives a high level of confidence in measuring the causal effect of the programme.

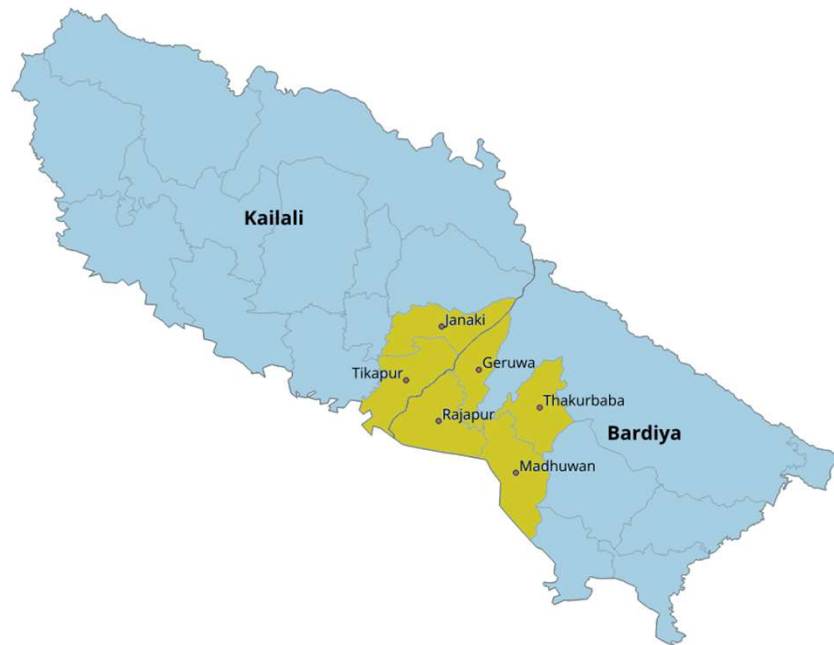**WINDOWS:**

Cash-based Transfers and Gender

Climate Change and Resilience

School-based Programmes

Hybrid delivery model: In-house academic specialists form impact evaluation teams with external academic partners, including at the World Bank.

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Anticipatory Action in Nepal

- **2022 prepared for 2 river basins**- Koshi and Karnali,

- WFP was prepared to respond to approximately **26,000 households** (based on a vulnerability assessment)

- **Two level flood trigger process**: readiness (pre-activation) with 7 days lead time; and activation trigger with 3 days lead time.

- Transfer modality: **cash in hand, 117$**

- Early-warning message delivered to **everyone.**

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Nepal AA Activation 2022

Activation Triggers were met in early **October 2022** in the **Karnali River Basin** in Western Nepal

WFP responded to approximately **12,500** households with cash, **117 $**

Transfers initiated immediately & received shortly **after** the flood peak for approx. **10,500 households** in the anticipatory action group (of which 2000 were in the IE villages)

2000 households received the later transfers after using the first survey round to verify damage

97% of targeted households in the AA group received the transfers quickly after initiation, however some days after the flood peak.

Impact Evaluation Design (A/B testing)

Main Question: Do early cash transfers help households cope with the impacts of the weather shock (when compared to later transfers)?

Focus on measuring the impact of variation in timing of the response. IE done in close collaboration with World Bank DIME.
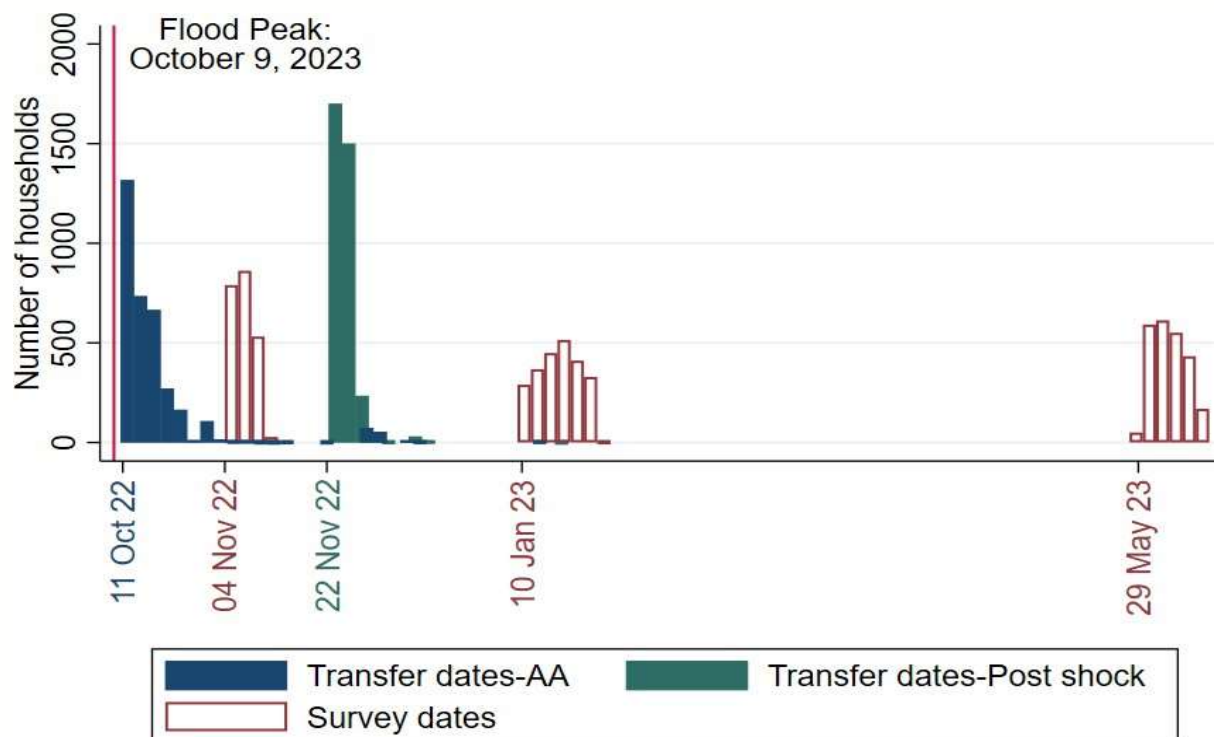
Status Quo:
Post Shock
Response

Preparing to respond to affected people after a climate shock has occurred

Innovation:
Anticipatory
Action

Initiating actions ahead of a climate shock peak based on forecasts.

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CBT Transfers and Survey Timeline

NOTE: Each bar represents the number of households surveyed or receiving transfers within a three day bin.

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Flood Exposure Analysis

- AIMS analysis is based on Sentinel 1,2 imagery, historic flood and land cover maps.

- Map shows flood extent for Kailali and Bardiya districts based on Sentinel-1 on 11 Oct 2022.

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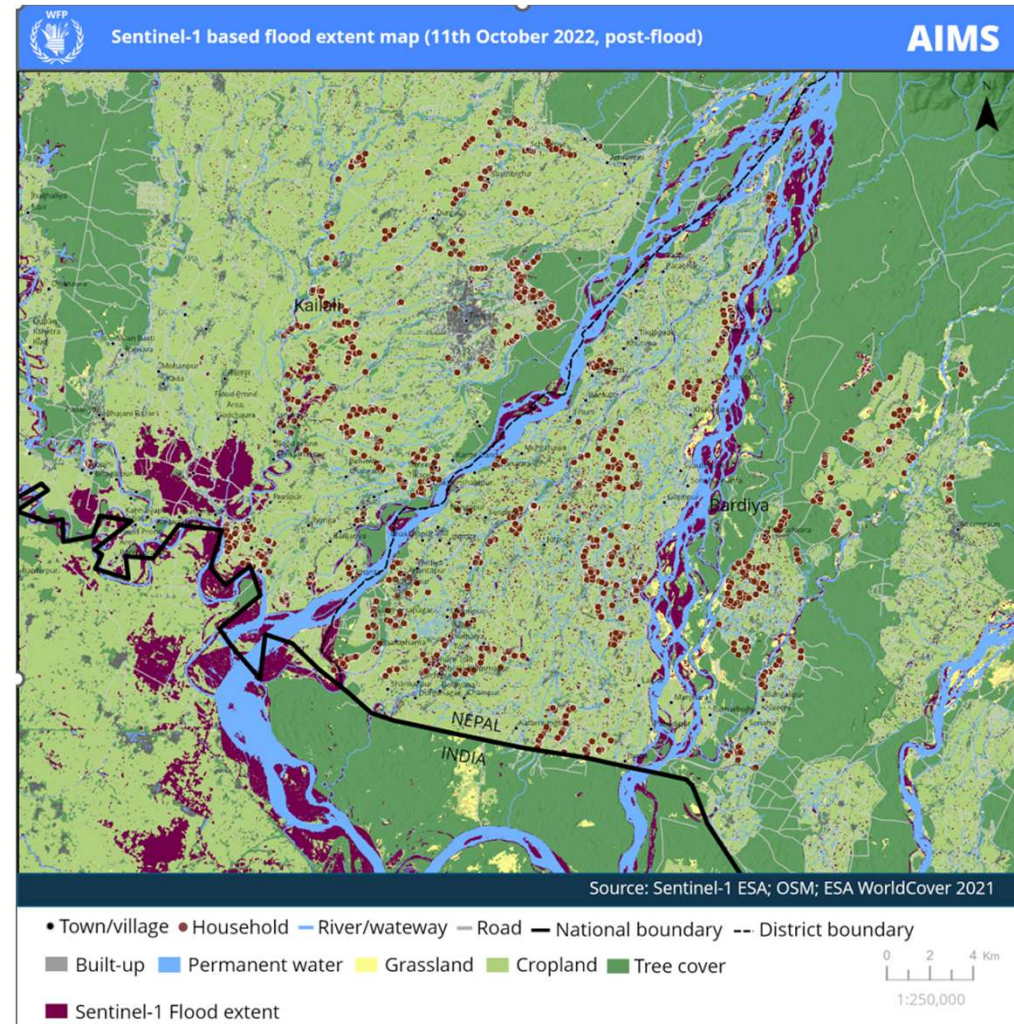
Self-reported flood damage?

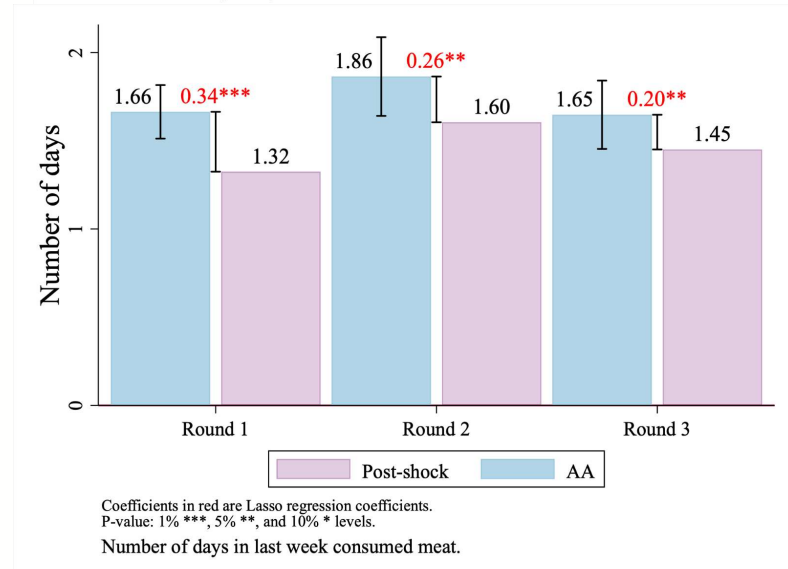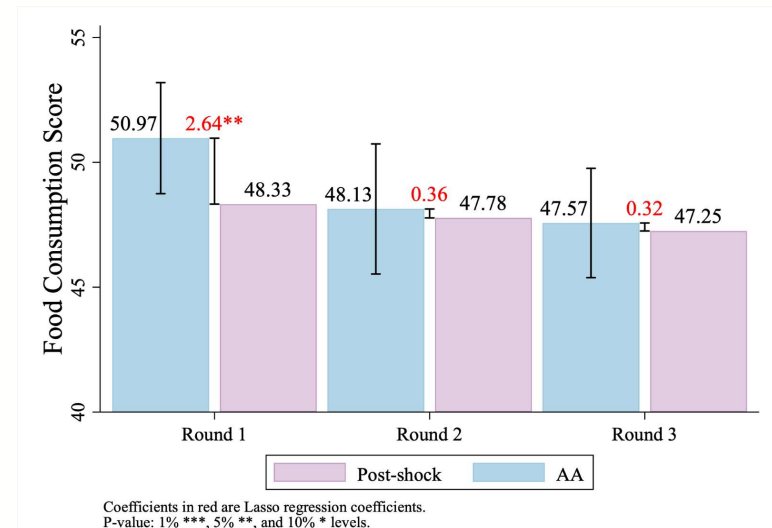| Share of households reporting Damage			
	AA	Post-shock	Combined
Flood entered house in October	49%	54%	52%
Impacted by floods in Oct 2022	88%	90%	89%
Flood damage - house	61%	60%	61%
Flood damage - business	12%	12%	12%
Flood damage - farm	66%	71%	68%
Severe flood damage - house	16%	17%	16%
Severe flood damage - business	3%	3%	3%
Severe flood damage - farm	32%	38%	35%
AIMS-score (0-4)	2.27	2.15	2.21
House flood height in CM	23.52	26.09	24.84
House flood height in CM (conditional on flooding)	47.55	48.72	48.18
Observations	973	1010	1983

Source: Round 2 survey Jan 2023

Food Security Impact

We measure improved food security in the period when only the AA group has received transfers.

AA group has **higher meat consumption.** AA transfers increased the number of days meat is consumed by .34 days per week.

Effect of AA on Food Consumption Score (FCS) dissipates in the medium term, while effect on protein consumption remains persistent across 3 rounds.

Finding consistent with other emerging evidence on AA.

Coefficients in red are Lasso regression coefficients.
P-value: 1% ***, 5% **, and 10% * levels.

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P-value: 1% ***, 5% **, and 10% * levels.

Number of days in last week consumed meat.

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Mental Health Impact

Significant improvement in depression and anxiety (PHQ4) measures & similar findings for depression or overall life satisfaction (Cantril's Ladder).

Effect dissipates in the medium term.
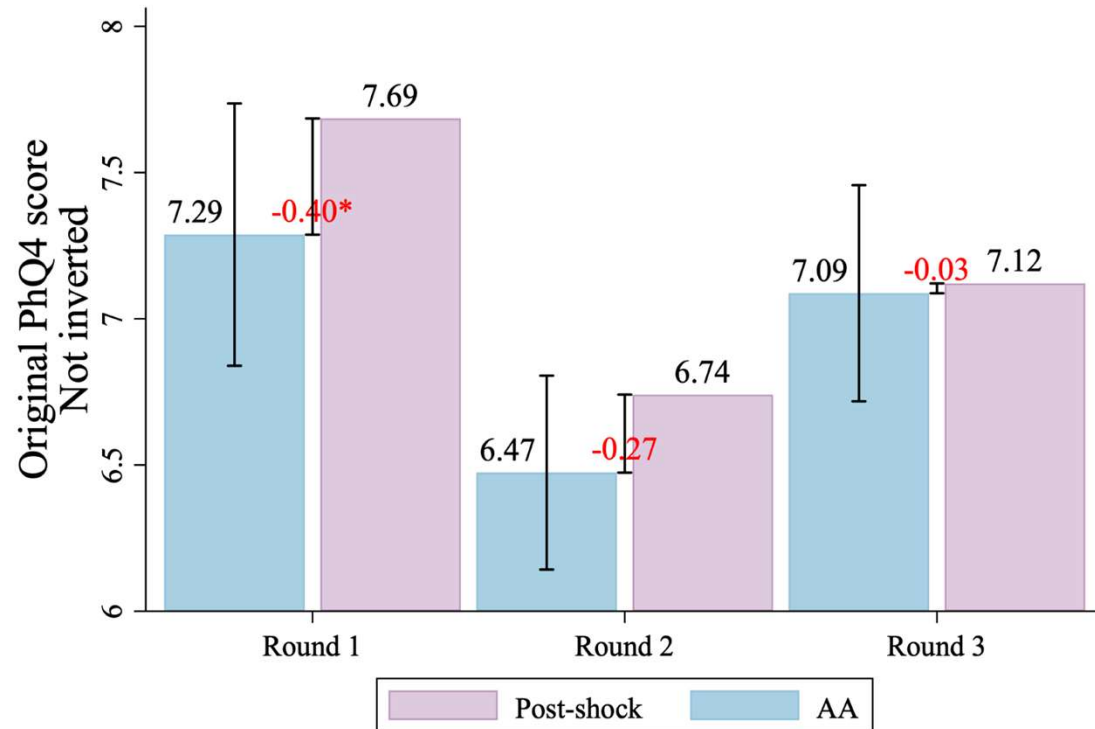
Coefficients in red are Lasso regression coefficients.
P-value: 1% ***, 5% **, and 10% * levels.

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Coefficients in red are Lasso regression coefficients.
P-value: 1% ***, 5% **, and 10% * levels.
Reduced Coping Strategy Index.

Impact on Negative Coping Strategies
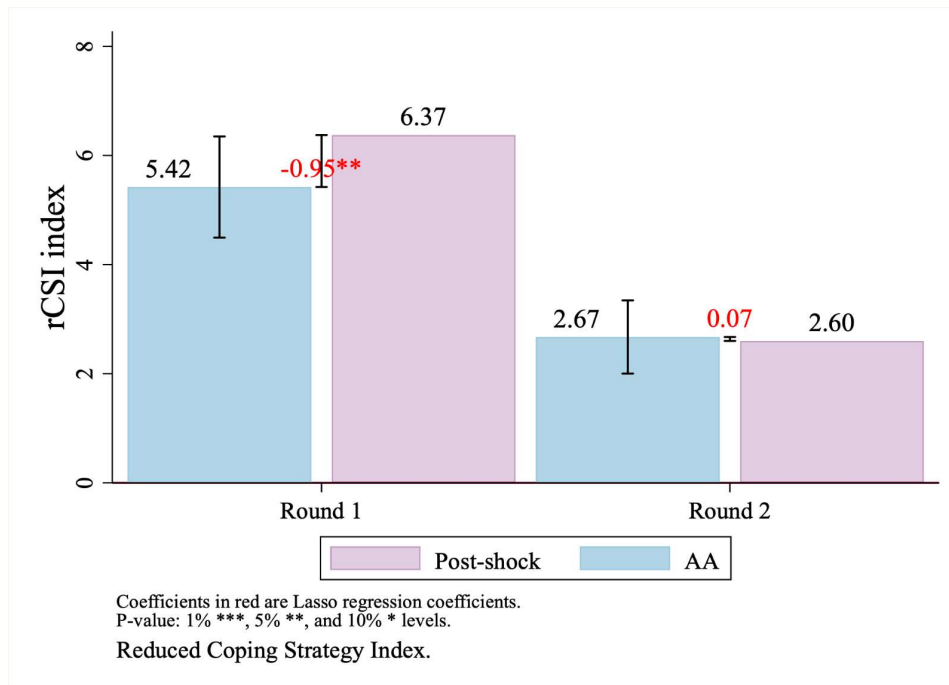
- Despite both AA and regular Post-Shock households reported resorting to adverse coping methods after the flood,

- AA households showed fewer instances than Post Shock group of negative coping strategies,
  i.   13% fewer households rely on less preferred food
  ii.   14% fewer households borrowed food from others
  iii.   15% fewer households reduced portion of meals

- Leading to a **reduction in the overall rCSI by 0.95 points** immediately after the floods but is no longer a statistically significantly different between the two groups in the medium term.

- The **effect was only observed for AA transfer households** in Round 1, and not for post-shock transfer households in Round 2.

Summary of Nepal Results

- Positive humanitarian impacts in the short run
  - Improved food security
  - Reduced usage of negative coping strategies
  - Improved measures of mental health
- Difference dissipate in the medium run, but do not reverse = net benefit of AA
- No differences in the longer run on agricultural, livelihood, asset holdings, labour market outcomes, or business profit outcomes

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Areas for Future AA Learning

- **Early Warnings:** Can we develop [more reliable predictions](#) of extreme weather events at the localized level, days and weeks ahead of time? Does this increase trust in AA systems?

- **Timing of Support:** What is the optimal timing of a transfer (e.g. greatest potential to act)? Do we see bigger improvements when cash is delivered even earlier?

- **Targeting:** Two complementary areas for potential improvement:
  1. *Life-saving*: Are AA impacts bigger if targeting focuses on the households most vulnerable to the shock?
  2. *Life-changing*: Can post-shock re-targeting have a greater impact on reconstruction and livelihoods?

- **Complementary Actions:** Are there complementary actions that could further facilitate recovery (e.g. Cash+)?
  - Social protection: Do impacts differ when "topping up" an existing assistance program with AA vs completely one-off transfers?
  - Resilience: Does AA help protect assets and livelihood recovery?

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Thank you!

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ANNEX

Food security

	(1) FCS raw	(2) FCS poor	(3) FCS borderline	(4) FCS acceptable
Treatment x Round 1	2.78**	-0.02***	-0.06***	0.08***
	(1.12)	(0.01)	(0.02)	(0.02)
Treatment x Round 2	0.48	0.00	-0.02	0.02
	(1.33)	(0.00)	(0.03)	(0.03)
Treatment x Round 3	0.45	0.00	-0.02	0.02
	(1.11)	(0.00)	(0.02)	(0.03)
Delayed group mean	48.32	0.02	0.23	0.74
Controls	Yes	Yes	Yes	Yes
Observations	5949	5949	5949	5949

Note: * p <0.10, ** p <0.05, *** p <0.01.
Delayed group mean calculated in round 1 or earliest available round.
83 villages were paid before Round 1, other 83 were paid before Round 2.
Included the following covariates: Has skilled job, Has mental disability, Has physical disability, House brick wall, Woman has citizen card, Has pregnant woman , Low caste household.

Mental health

	(1) PHQ4 score std.	(2) Respondent is anxious	(3) Respondent is depressed	(4) Cantril's ladder
Treatment × Round 1	0.13*	-0.09***	-0.07**	0.28*
	(0.07)	(0.03)	(0.03)	(0.16)
Treatment × Round 2	0.09*	-0.04	-0.04	0.17
	(0.05)	(0.03)	(0.03)	(0.19)
Treatment × Round 3	0.02	-0.01	-0.02	0.03
	(0.06)	(0.03)	(0.03)	(0.11)
Delayed group mean	-.19	0.70	0.63	4.04
Controls	Yes	Yes	Yes	Yes
Observations	5949	5949	5949	5949

Note: * p <0.10, ** p <0.05, *** p <0.01.
Delayed group mean calculated in round 1 or earliest available round.
83 villages were paid before Round 1, other 83 were paid before Round 2.
Included the following covariates: Has skilled job, Has mental disability, Has physical disability,
House brick wall, Woman has citizen card, Has pregnant woman , Low caste household.
Higher PHQ4 scores mean better mental health
PHQ4 scores standardized using pooled mean and standard deviation.

Coping strategies

	(1) Q1	(2) Q2	(3) Q3	(4) Q4	(5) Q5	(6) rCSI*
Treatment x Round 1	-0.13**	-0.14**	-0.15*	-0.09	-0.16	-1.14**
	(0.06)	(0.06)	(0.08)	(0.07)	(0.12)	(0.54)
Treatment x Round 2	-0.04	0.02	-0.01	0.02	-0.05	-0.13
	(0.06)	(0.03)	(0.06)	(0.05)	(0.10)	(0.44)
Treatment x Round 3						
Delayed group mean	0.74	0.58	0.76	0.72	1.51	7.94
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3966	3966	3966	3966	3966	3966

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Delayed group mean calculated in round 1 or earliest available round.

83 villages were paid before Round 1, other 83 were paid before Round 2.

Included the following covariates: Has skilled job, Has mental disability, Has physical disability, House brick wall, Woman has citizen card, Has pregnant woman , Low caste household.

Q1: Rely on less preferred and less expensive food.

Q2: Borrow food or rely on help from relative(s) or friend(s).

Q3: Reduce portion size of meals?

Q4. Reduce quantities consumed by adults so children can eat.

Q5: Reduce number of meals eaten in a day. Responses are days out of last 7 days.

Spending categories: 1 month USD

	(1) Spending 1mo	(2) Electricity	(3) Education	(4) Fuel	(5) House repair	(6) Medical	(7) House rent
Treatment x Round 1							
Treatment x Round 2	-4.44	0.24	-0.45	0.32	-2.98***	-0.81	-0.10
	(3.39)	(0.17)	(1.13)	(0.42)	(1.02)	(1.84)	(0.10)
Treatment x Round 3	-4.47	0.08	-3.39**	0.42	-1.57	0.59	-0.21*
	(4.30)	(0.19)	(1.61)	(0.45)	(1.75)	(1.97)	(0.12)
Delayed group mean	40.38	1.37	9.88	3.82	5.80	16.01	0.33
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3966	3966	3966	3966	3966	3966	3966

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Delayed group mean calculated in round 1 or earliest available round.
83 villages were paid before Round 1, other 83 were paid before Round 2.
Included the following covariates: Has skilled job, Has mental disability, Has physical disability,
House brick wall, Woman has citizen card, Has pregnant woman , Low caste household.
Zero values imputed if household doesn't have spending in this category. Winsorized at 98%.
Spending data not collected in Round 1.
Spending in last month is reported in USD, conversion 130 NPR = 1 USD.

Winter crop cultivation

	(1) Planted winter crop	(2) Area cultivated	(3) Planting costs	(4) Crop value	(5) Crop sale revenue
Treatment x Round 1					
Treatment x Round 2					
Treatment x Round 3	-0.05	0.02	0.02	37.93	27.26
	(0.03)	(0.04)	(0.04)	(29.73)	(20.44)
Delayed group mean	0.76	0.35	0.34	177.97	58.64
Controls	Yes	Yes	Yes	Yes	Yes
Observations	1983	1983	1983	1983	1983

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Delayed group mean calculated in round 1 or earliest available round.
83 villages were paid before Round 1, other 83 were paid before Round 2.
Included the following covariates: Has skilled job, Has mental disability, Has physical disability,
House brick wall, Woman has citizen card, Has pregnant woman , Low caste household.
Winter crop cultivation related questions were only asked in Round 3.
Costs, value of crops, sales were reported in USD, conversion 130 NPR = 1 USD.
0 values imputed for costs, area and revenue if no crop was cultivated.