**Web Appendix**

*Food Expenditure Calculations*

As food prices were not available in the Young Lives data, household food expenditures were calculated from NSSO food price data in combination with Young Lives data on household consumption. First, using the NSSO data on consumer expenditure, prices (price*kd*) of nine food items *k* (rice, sugar, pulses, meat, fish, milk, eggs, fruit and vegetables) were estimated a district *d* mean of the total household expenditure for food item (exp*kd*) divided by the total uptake of food item (uptake*k*). See equation A1a.

$price\_{kd}=mean\_{dk}\left(\frac{exp\_{k}}{uptake\_{k}}\right)$ (A1a)

Prices of food items that in part were obtained through the PDS and in part on the open market, namely rice and sugar, were weighted for households that reported accessing the particular food item through the PDS (see equation A1b). Given that the entitlement to rice through the PDS differed in quantity by household wealth, the rice prices were estimated separately by wealth tertile *w* of the household (see equation A1c).

$ price\_{kd}=mean\_{dk}\left(\frac{exp\_{knonPDS} +exp\_{kPDS}}{uptake\_{knonPDS} + uptake\_{kPDS}}\right)$ (A1b)

$price\_{kdw}=mean\_{dw}\left(\frac{exp\_{knonPDSw} +exp\_{kPDSw}}{uptake\_{knonPDSw} + uptake\_{kPDSw}}\right)$ if *k*=rice (A1c)

Using the estimated prices of the respective food items, the quantity consumed by the household *h* was calculated for the nine food groups. Total household consumption was divided by the number of days of the reporting period (14 and 15 for wave 2 and 3 respectively) and by the household size, weighting young children under 5 years of age by the factor 0.9 and older children by a factor of 1.1 (Berti 2012), giving an estimation of the quantity of each food item k consumed by the survey child *i* in household *h* (see equation A2). These quantities were converted into energy intake measured in kcal using the international conversion measures of the FAO (2003a) (see equation A3).

$quant\_{ikd}=\frac{1}{14\*1\_{wave2}+15\*1\_{wave3}}\*\left(\frac{exp\_{kh} +price\_{kd}}{ household size\_{h}}\right)$ (A2)

$kcal\_{ik}=quant\_{ik} + conversion\_{k}$ (A3)

*Web Tables*

Web Table 2a. Linear probability of malnutrition, sugar consumption, and access to sugar through the PDS, **young cohort only**, Young Lives Waves 2-3, 3,492 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Sugar (in g) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to sugar through PDS | 6.91\*\*\* ± 0.55 |  |  |  |  |  |  |
| Sugar consumption in g/day |  |  | 0.00 ± 0.00 | 0.01 ± 0.01 | -0.00 ± 0.00 | 0.00 ± 0.01 | -0.00 ± 0.00 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | -4.61\*\*\* ± 0.91 |  | -0.10\*\* ± 0.03 | -0.18\* ± 0.07 | 0.05 ± 0.03 | 0.01 ± 0.07 | -0.02 ± 0.03 |
| Middle wealth tertile  | -3.31\*\*\* ± 0.91 |  | -0.04 ± 0.03 | -0.11 ± 0.06 | 0.05 ± 0.03 | -0.03 ± 0.06 | -0.01 ± 0.02 |
| total daily energy intake (in 1,000 kcal) | 2.24\*\*\* ± 0.30 |  | 0.01 ± 0.01 | -0.01 ± 0.02 | 0.02 ± 0.01 | 0.01 ± 0.02 | -0.00 ± 0.01 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.03 ± 0.02 |  | -0.00 ± 0.00 | 0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 |
| food expenditure (ln) | 5.44\*\*\* ± 0.73 |  | 0.11\*\*\* ± 0.03 | 0.01 ± 0.06 | -0.02 ± 0.03 | -0.01 ± 0.06 | 0.02 ± 0.02 |
| % of food expenditure in total household expenditure | -8.42\*\*\* ± 2.15 |  | -0.17\*\* ± 0.06 | -0.12 ± 0.15 | 0.04 ± 0.06 | 0.18 ± 0.16 | -0.12 ± 0.06 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | -3.95\*\*\* ± 0.58 |  | -0.01 ± 0.02 | -0.08 ± 0.05 | 0.03 ± 0.02 | -0.08 ± 0.05 | 0.00 ± 0.02 |
| household living in rural area | 2.81\*\* ± 0.84 |  | -0.02 ± 0.03 | -0.26\*\*\* ± 0.06 | 0.10\*\*\* ± 0.03 | -0.21\*\* ± 0.06 | 0.05\* ± 0.02 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | -2.05\*\*\* ± 0.31 |  | 0.01 ± 0.01 | -0.04 ± 0.03 | 0.01 ± 0.01 | -0.02 ± 0.03 | -0.01 ± 0.01 |
| dependency ratio | 2.57 ± 2.70 |  | -0.03 ± 0.08 | -0.21 ± 0.19 | 0.03 ± 0.08 | -0.17 ± 0.19 | 0.00 ± 0.07 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | -0.28 ± 0.49 |  | -0.05\*\* ± 0.02 | 0.13\*\* ± 0.04 | -0.04\* ± 0.02 | 0.01 ± 0.04 | -0.00 ± 0.01 |
| age (in months) | 0.00 ± 0.07 |  | 0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.01\*\* ± 0.00 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | -2.38 ± 2.31 |  | -0.03 ± 0.07 | 0.40\* ±0.16 | -0.12 ± 0.07 | 0.16 ± 0.16 | -0.00 ± 0.06 |
| Constant | -14.69 ± 6.20 |  | -0.22 ± 0.19 | -1.01\* ± 0.42 | 0.21 ± 0.19 | 0.04 ± 0.42 | -0.08 ± 0.17 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Sugar (in g) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to sugar through PDS | 7.31\*\*\* ± 1.02 |  |  |  |  |  |  |
| Sugar consumption in g/day |  |  | 0.01 ± 0.00 | -0.01 ± 0.01 | -0.00 ± 0.00 | 0.01 ± 0.01 | -0.00 ± 0.00 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | -5.76\*\*\* ± 1.38 |  | -0.05 ± 0.04 | -0.30\*\* ± 0.09 | 0.10\* ± 0.04 | -0.09 ± 0.11 | -0.03 ± 0.04 |
| Middle wealth tertile  | -2.32 ± 1.35 |  | -0.06 ± 0.04 | -0.21\*\* ± 0.08 | 0.06 ± 0.03 | -0.17 ± 0.09 | 0.02 ± 0.03 |
| total daily energy intake (in 1,000 kcal) | 2.75\*\* ± 0.88 |  | -0.02 ± 0.01 | 0.09\*\* ± 0.03 | -0.02 ± 0.01 | 0.02 ± 0.04 | 0.00 ± 0.02 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.16\*\*\* ± 0.04 |  | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 |
| food expenditure (ln) | 6.42\*\* ± 2.33 |  | 0.03 ± 0.04 | 0.01 ± 0.09 | 0.05 ± 0.04 | -0.21\* ± 0.10 | 0.06 ± 0.04 |
| % of food expenditure in total household expenditure | -5.10 ± 3.96 |  | -0.09 ± 0.08 | 0.03 ± 0.17 | 0.03 ± 0.08 | 0.16 ± 0.21 | -0.05 ± 0.08 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | -6.44\*\*\* ± 1.00 |  | 0.01 ± 0.03 | -0.18\* ± 0.08 | 0.02 ± 0.03 | -0.01 ± 0.09 | -0.01 ± 0.03 |
| household living in rural area | 1.95 ± 1.41 |  | -0.12\*\* ± 0.04 | -0.13 ± 0.08 | 0.03 ± 0.03 | -0.38\*\*\* ± 0.09 | 0.10\*\* ± 0.03 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | -3.24\*\*\* ± 0.46 |  | 0.00 ± 0.02 | -0.03 ± 0.04 | -0.02 ± 0.02 | 0.05 ± 0.04 | -0.02 ± 0.02 |
| dependency ratio | 10.52\*\* ± 3.13 |  | 0.07 ± 0.10 | -0.06 ± 0.22 | 0.22 ± 0.10 | -0.50 ± 0.25 | 0.17 ± 0.10 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | -0.61 ± 0.90 |  | -0.00 ± 0.02 | -0.10\* ± 0.05 | -0.01 ± 0.02 | 0.24\*\*\* ± 0.06 | -0.10\*\*\* ± 0.02 |
| age (in months) | -0.17 ± 0.10 |  | 0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.00 ± 0.01 | -0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 2.66 ± 2.92 |  | 0.06 ± 0.09 | 0.11 ± 0.20 | -0.10 ± 0.09 | 0.15 ± 0.23 | -0.05 ± 0.09 |
| Constant | 15.02 ± 18.39 |  | 0.34 ± 0.47 | -21 ± 1.01 | -0.50 ± 0.45 | -0.55 ± 1.15 | 0.09 ± 0.44 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Web Table 2b. Linear probability of malnutrition, sugar consumption, and access to sugar through the PDS, **old cohort only**, Young Lives Waves 2-3, 1,787 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Sugar (in g) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to sugar through PDS | 6.28\*\*\* ± 0.96 |  |  |  |  |  |  |
| Sugar consumption in g/day |  |  | -0.00 ± 0.00 | -0.02 ± 0.01 | 0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | -5.96\*\*\* ± 1.11 |  | -0.20\*\* ± 0.06 | -0.53\*\*\* ± 0.14 | 0.21\*\* ± 0.06 | -0.18 ± 0.15 | 0.03 ± 0.05 |
| Middle wealth tertile  | -3.09\*\* ± 1.12 |  | -0.15\*\* ± 0.05 | -0.41\*\* ± 0.13 | 0.14\*\* ± 0.05 | -0.19 ± 0.12 | 0.03 ± 0.05 |
| PDS sugar \* richest wealth (ref) |  |  |  |  |  |  |  |
| PDS sugar \* poorest wealth | 1.88 ± 1.20 |  | 0.08 ± 0.05 | 0.30\*\* ± 0.12 | 0.14\*\* ± 0.05 | 0.17 ± 0.12 | -0.05 ± 0.04 |
| PDS sugar \* middle wealth | -0.22 ± 1.26 |  | 0.11\* ± 0.05 | 0.27\* ± 0.11 | -0.08 ± 0.04 | 0.15 ± 0.10 | -0.03 ± 0.04 |
| total daily energy intake (in 1,000 kcal) | 2.23\*\*\* ± 0.30 |  | 0.03 ± 0.01 | 0.05 ± 0.03 | -0.01 ± 0.01 | 0.04 ± 0.03 | -0.01 ± 0.01 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.03 ± 0.02 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 |
| food expenditure (ln) | 5.44\*\*\* ± 0.73 |  | 0.15\*\*\* ± 0.04 | 0.16\* ± 0.08 | -0.08\* ± 0.03 | 0.07 ± 0.08 | 0.00 ± 0.03 |
| % of food expenditure in total household expenditure | -8.34\*\*\* ± 2.15 |  | -0.24\*\* ± 0.07 | -0.34 ± 0.18 | 0.12 ± 0.07 | 0.07 ± 0.18 | -0.09 ± 0.06 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | -3.91\*\*\* ± 0.58 |  | -0.05 ± 0.03 | -0.17\*\* ± 0.07 | 0.07\*\* ± 0.02 | -0.14\* ± 0.07 | 0.02 ± 0.02 |
| household living in rural area | 2.84\*\* ± 0.84 |  | 0.01 ± 0.03 | -0.18\*\* ± 0.07 | 0.07\* ± 0.03 | -0.17\* ± 0.07 | 0.05 ± 0.03 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | -2.05\*\*\* ± 0.31 |  | -0.01 ± 0.01 | -0.09\*\* ± 0.03 | 0.03\* ± 0.01 | -0.01 ± 0.03 | -0.00 ± 0.01 |
| dependency ratio | 2.66 ± 2.70 |  | 0.00 ± 0.08 | -0.11 ± 0.20 | -0.01 ± 0.08 | -0.12 ± 0.20 | -0.00 ± 0.07 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | -0.28 ± 0.49 |  | -0.06\*\* ± 0.02 | 0.12\*\* ± 0.04 | -0.03\* ± 0.02 | 0.00 ± 0.04 | -0.00 ± 0.01 |
| age (in months) | 0.00 ± 0.07 |  | 0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.01 ± 0.00 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | -2.30 ± 2.31 |  | -0.06 ± 0.07 | 0.34\* ±0.17 | -0.10 ± 0.07 | 0.12 ± 0.17 | 0.01 ± 0.06 |
| Constant | -14.19 ± 6.26 |  | -0.31 ± 0.19 | -1.39\*\* ± 0.45 | 0.32 ± 0.19 | -0.11 ± 0.44 | -0.04 ± 0.17 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Web Table 3a. Linear probability of malnutrition, sugar consumption, and access to sugar through the PDS interacted with household wealth, **young cohort only**, Young Lives Waves 2-3, 3,492 observations

Web Table 3b. Linear probability of malnutrition, sugar consumption, and access to sugar through the PDS interacted with household wealth, **old cohort only**, Young Lives Waves 2-3, 1,787 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Sugar (in g) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to sugar through PDS | 7.52\*\*\* ± 2.00 |  |  |  |  |  |  |
| Sugar consumption in g/day |  |  | 0.00 ± 0.01 | -0.03 ± 0.01 | 0.00 ± 0.01 | 0.00 ± 0.02 | -0.00 ± 0.01 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | -4.11 ± 2.16 |  | -0.13 ± 0.07 | -0.49\*\* ± 0.18 | 0.14\* ± 0.07 | -0.26 ± 0.19 | 0.05 ± 0.07 |
| Middle wealth tertile  | -3.91 ± 2.26 |  | -0.08 ± 0.07 | -0.40\* ± 0.19 | 0.09\*\* ± 0.07 | -0.10 ± 0.19 | -0.03 ± 0.07 |
| PDS sugar \* richest wealth (ref) |  |  |  |  |  |  |  |
| PDS sugar \* poorest wealth | -2.32 ± 2.34 |  | 0.08 ± 0.05 | 0.15 ± 0.12 | -0.03 ± 0.05 | 0.20 ± 0.13 | -0.09 ± 0.05 |
| PDS sugar \* middle wealth | 1.97 ± 2.59 |  | 0.02 ± 0.07 | 0.20 ± 0.19 | -0.03 ± 0.07 | -0.10 ± 0.19 | 0.06 ± 0.07 |
| total daily energy intake (in 1,000 kcal) | 2.74\*\* ± 0.88 |  | -0.00 ± 0.02 | 0.12\* ± 0.05 | -0.02 ± 0.02 | 0.04 ± 0.05 | 0.00 ± 0.02 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.16\*\*\* ± 0.04 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 |
| food expenditure (ln) | 6.46\*\* ± 2.35 |  | 0.06 ± 0.05 | 0.10 ± 0.12 | 0.04 ± 0.05 | -0.18 ± 0.13 | 0.05 ± 0.05 |
| % of food expenditure in total household expenditure | -4.94 ± 4.03 |  | -0.11 ± 0.08 | -0.03 ± 0.20 | 0.04 ± 0.09 | 0.13 ± 0.21 | -0.04 ± 0.08 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | -6.48\*\*\* ± 1.01 |  | -0.02 ± 0.04 | -0.26\* ± 0.11 | 0.03 ± 0.04 | -0.03 ± 0.11 | -0.00 ± 0.04 |
| household living in rural area | 1.94 ± 1.40 |  | -0.11\*\* ± 0.04 | -0.10 ± 0.08 | 0.02 ± 0.04 | -0.37\*\*\* ± 0.10 | 0.10 ± 0.03 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | -3.24\*\*\* ± 0.47 |  | -0.01 ± 0.02 | -0.08 ± 0.06 | -0.02 ± 0.02 | 0.03 ± 0.06 | -0.01 ± 0.02 |
| dependency ratio | 10.54\*\* ± 3.13 |  | 0.12 ± 0.11 | 0.09 ± 0.27 | 0.19 ± 0.11 | -0.45 ± 0.29 | 0.14 ± 0.10 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | -0.60 ± 0.90 |  | -0.00 ± 0.02 | -0.11\* ± 0.05 | -0.01 ± 0.02 | 0.24\*\*\* ± 0.06 | -0.10 ± 0.02 |
| age (in months) | -0.17 ± 0.10 |  | -0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.00 ± 0.01 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 2.56 ± 2.92 |  | -0.07 ± 0.09 | 0.15 ± 0.22 | -0.11 ± 0.09 | 0.17 ± 0.23 | -0.06 ± 0.09 |
| Constant | 14.72 ± 18.23 |  | 0.43 ± 0.47 | 0.10 ± 1.11 | -0.55 ± 0.45 | -0.44 ± 1.18 | 0.04 ± 0.44 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Web Table 4a. Linear probability of malnutrition, rice consumption, and access to rice through the PDS, **young cohort only**, Young Lives Waves 2-3, 3,492 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Rice (in kg) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to rice through PDS | 0.03\*\*\* ± 0.01 |  |  |  |  |  |  |
| Rice consumption in kg/day |  |  | -1.87 ± 1.23 | -6.78\*\* ± 3.04 | 1.65 ± 1.57 | -1.68 ± 2.53 | -1.13 ± 1.01 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | 0.05\*\*\* ± 0.01 |  | -0.03 ± 0.07 | 0.11 ± 0.16 | -0.00 ± 0.08 | 0.09 ± 0.14 | 0.05 ± 0.06 |
| Middle wealth tertile  | 0.04\*\*\* ± 0.01 |  | 0.02 ± 0.06 | 0.16 ± 0.15 | -0.01 ± 0.07 | 0.04 ± 0.12 | 0.04 ± 0.05 |
| total daily energy intake (in 1,000 kcal) | 0.15\*\*\* ± 0.00 |  | 0.30 ± 0.19 | 1.03\* ± 0.45 | -0.24 ± 0.24 | 0.27 ± 0.38 | 0.16 ± 0.15 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.00\*\* ± 0.00 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | -0.00 ± 0.00 |
| food expenditure (ln) | -0.03\*\*\* ± 0.01 |  | 0.08\* ± 0.04 | -0.14 ± 0.10 | -0.00 ± 0.05 | -0.06 ± 0.08 | -0.02 ± 0.03 |
| % of food expenditure in total household expenditure | 0.08\*\*\* ± 0.01 |  | -0.03 ± 0.12 | 0.43 ± 0.32 | -0.08 ± 0.15 | 0.32 ± 0.27 | -0.00 ± 0.11 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | 0.02\*\*\* ± 0.00 |  | 0.00 ± 0.03 | 0.04 ± 0.08 | 0.02 ± 0.04 | -0.06 ± 0.07 | 0.04 ± 0.03 |
| household living in rural area | 0.03\*\*\* ± 0.01 |  | 0.05 ± 0.05 | -0.03 ± 0.11 | 0.04 ± 0.05 | -0.15 ± 0.10 | 0.09 ± 0.04 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | 0.01\*\*\* ± 0.00 |  | 0.02 ± 0.02 | 0.03 ± 0.05 | -0.00 ± 0.02 | 0.04 ± 0.04 | 0.01 ± 0.02 |
| dependency ratio | -0.08\*\*\* ± 0.02 |  | -0.18 ± 0.14 | -0.78\* ± 0.34 | 0.16 ± 0.16 | -0.31 ± 0.28 | -0.09 ± 0.11 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | 0.00 ± 0.00 |  | -0.05\*\* ± 0.02 | 0.13\*\* ± 0.05 | -0.04\* ± 0.02 | 0.01 ± 0.04 | -0.00 ± 0.02 |
| age (in months) | -0.00 ± 0.00 |  | -0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.01\*\* ± 0.01 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 0.04\* ± 0.02 |  | -0.05 ± 0.09 | 0.61\*\* ± 0.23 | -0.15 ± 0.07 | 0.28 ± 0.20 | 0.07 ± 0.07 |
| Constant | 0.11\* ± 0.04 |  | -0.02 ± 0.26 | -0.14 ± 0.66 | 0.03 ± 0.28 | 0.28 ± 0.54 | 0.10 ± 0.22 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Web Table 4b. Linear probability of malnutrition, rice consumption, and access to rice through the PDS, **old cohort only**, Young Lives Waves 2-3, 1,787 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Rice (in kg) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to rice through PDS | 0.05\*\*\* ± 0.01 |  |  |  |  |  |  |
| Rice consumption in kg/day |  |  | 0.34 ± 0.96 | -9.07\*\* ± 2.92 | 1.21 ± 0.89 | -2.91 ± 2.55 | 0.98 ± 0.94 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | 0.02\*\* ± 0.01 |  | -0.10\* ± 0.05 | 0.02 ± 0.14 | 0.08 ± 0.04 | -0.05 ± 0.12 | -0.03 ± 0.05 |
| Middle wealth tertile  | 0.01 ± 0.01 |  | -0.09\* ± 0.04 | -0.03 ± 0.12 | 0.04 ± 0.04 | -0.15 ± 0.10 | 0.01 ± 0.04 |
| total daily energy intake (in 1,000 kcal) | 0.15\*\*\* ± 0.00 |  | -0.05 ± 0.14 | 1.41\*\* ± 0.43 | -0.20 ± 0.13 | 0.48 ± 0.38 | -0.15 ± 0.14 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.00\*\* ± 0.00 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 |
| food expenditure (ln) | -0.02\* ± 0.01 |  | 0.08 ± 0.04 | -0.30\* ± 0.14 | 0.08 ± 0.04 | -0.25\* ± 0.12 | 0.06 ± 0.04 |
| % of food expenditure in total household expenditure | 0.08\*\*\* ± 0.02 |  | -0.14 ± 0.11 | 0.83 ± 0.35 | -0.07 ± 0.11 | 0.39 ± 0.30 | -0.13 ± 0.12 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | 0.03\*\*\* ± 0.01 |  | -0.04 ± 0.04 | 0.21 ± 0.13 | -0.02 ± 0.04 | 0.05 ± 0.11 | -0.02 ± 0.04 |
| household living in rural area | 0.04\*\*\* ± 0.01 |  | -0.12\* ± 0.05 | 0.21 ± 0.16 | -0.02 ± 0.05 | -0.26 ± 0.14 | 0.06 ± 0.05 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | 0.01\*\*\* ± 0.00 |  | -0.02 ± 0.02 | 0.12 ± 0.05 | -0.04\* ± 0.02 | 0.07 ± 0.05 | -0.02 ± 0.02 |
| dependency ratio | -0.05 ± 0.02 |  | 0.15 ± 0.11 | -0.60 ± 0.31 | 0.26\*\* ± 0.10 | -0.57\* ± 0.27 | 0.17 ± 0.10 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | 0.00 ± 0.01 |  | -0.01 ± 0.02 | -0.08 ± 0.07 | -0.01 ± 0.02 | 0.24\*\*\* ± 0.06 | -0.10\*\*\* ± 0.02 |
| age (in months) | -0.00 ± 0.00 |  | -0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | 0.00 ± 0.01 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 0.05 ± 0.02 |  | -0.04 ± 0.11 | 0.34 ± 0.35 | -0.13 ± 0.11 | 0.02 ± 0.29 | -0.00 ± 0.11 |
| Constant | 0.07 ± 0.11 |  | -0.39 ± 0.47 | 0.49 ± 1.39 | -0.64 ± 0.46 | -0.22 ± 1.19 | -0.05 ± 0.45 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |  |  |  |  |  |  |  |

Web Table 5a. Linear probability of malnutrition, rice consumption, and access to rice through the PDS interacted with household wealth, **young cohort only**, Young Lives Waves 2-3, 3,492 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Rice (in kg) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to rice through PDS | 0.05\*\*\* ± 0.01 |  |  |  |  |  |  |
| Rice consumption in kg/day |  |  | -1.43 ± 0.89 | -6.14\*\* ± 2.19 | 2.08\*\* ± 0.79 | -1.60 ± 1.94 | -0.11 ± 0.67 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | 0.09\*\*\* ± 0.01 |  | 0.01 ± 0.08 | 0.06 ± 0.18 | 0.0.4 ± 0.07 | 0.16 ± 0.16 | 0.05 ± 0.06 |
| Middle wealth tertile  | 0.07\*\*\* ± 0.01 |  | -0.01 ± 0.07 | 0.20 ± 0.17 | -0.06 ± 0.07 | -0.03 ± 0.14 | 0.04 ± 0.05 |
| PDS rice \* richest wealth (ref) |  |  |  |  |  |  |  |
| PDS rice \* poorest wealth | -0.05\*\*\* ± 0.01  |  | -0.07 ± 0.05 | 0.02 ± 0.12 | -0.07 ± 0.06 | -0.09 ± 0.11 | -0.06 ± 0.05 |
| PDS rice \* middle wealth | -0.04\* ± 0.01 |  | 0.02 ± 0.06 | -0.08 ± 0.15 | 0.04 ± 0.06 | 0.08 ± 0.11 | -0.05 ± 0.05 |
| total daily energy intake (in 1,000 kcal) | 0.15\*\*\* ± 0.00 |  | 0.23 ± 0.13 | 0.93\*\* ± 0.33 | -0.31\* ± 0.12 | 0.25 ± 0.29 | 0.01 ± 0.10 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.00\*\* ± 0.00 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 |
| food expenditure (ln) | -0.03\*\*\* ± 0.01 |  | 0.09\*\* ± 0.03 | -0.12 ± 0.08 | 0.01 ± 0.03 | -0.05 ± 0.07 | 0.01 ± 0.03 |
| % of food expenditure in total household expenditure | 0.08\*\*\* ± 0.01 |  | -0.07 ± 0.10 | 0.38 ± 0.25 | -0.12 ± 0.10 | 0.31 ± 0.22 | -0.09 ± 0.08 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | 0.02\*\*\* ± 0.00 |  | -0.01 ± 0.03 | 0.02 ± 0.07 | 0.01 ± 0.03 | -0.06 ± 0.06 | 0.02 ± 0.02 |
| household living in rural area | 0.03\*\*\* ± 0.01 |  | 0.04 ± 0.04 | -0.05 ± 0.09 | 0.02 ± 0.04 | -0.16 ± 0.09 | 0.06 ± 0.03 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | 0.01\*\*\* ± 0.00 |  | 0.02 ± 0.01 | 0.02 ± 0.03 | -0.01\* ± 0.01 | 0.04 ± 0.03 | -0.00 ± 0.01 |
| dependency ratio | -0.08\*\*\* ± 0.02 |  | -0.15 ± 0.11 | -0.72\* ± 0.29 | 0.19 ± 0.11 | -0.31 ± 0.25 | -0.01 ± 0.09 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | 0.06 ± 0.00 |  | -0.05\*\* ± 0.02 | 0.13 ± 0.05 | -0.04 ± 0.02 | 0.01 ± 0.04 | -0.00 ± 0.01 |
| age (in months) | -0.04\* ± 0.00 |  | -0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | -0.01\*\* ± 0.01 | 0.00 ± 0.00 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 0.06\*\* ± 0.01 |  | -0.06 ± 0.09 | 0.59\*\* ± 0.22 | -0.15 ± 0.09 | 0.28 ± 0.20 | 0.04 ± 0.07 |
| Constant | 0.10\* ± 0.05 |  | -0.07 ± 0.22 | -0.22 ± 0.60 | -0.02 ± 0.23 | 0.27 ± 0.50 | -0.02 ± 0.18 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |

Web Table 5b. Linear probability of malnutrition, rice consumption, and access to rice through the PDS interacted with household wealth, **old cohort only**, Young Lives Waves 2-3, 1,787 observations

|  |  |  |  |
| --- | --- | --- | --- |
|   | **FIRST-STAGE** |  | **SECOND-STAGE** |
|  | Model 1 |   | Model 2.1 | Model 2.2 | Model 2.3 | Model 2.4 | Model 2.5 |
|   | Rice (in kg) /day ± SE |  | Min dietary div ± SE | HAZ ± SE | Stunted ± SE | BMI-for-age z-score ± SE | Low BMI ± SE  |
| Access to rice through PDS | 0.04\*\* ± 0.01 |  |  |  |  |  |  |
| Rice consumption in kg/day |  |  | -0.44 ± 1.31 | -12.99\* ± 5.19 | 1.87 ± 1.26 | -6.14 ± 1.81 | 1.93 ± 0.67 |
| Richest wealth tertile (ref) |  |  |  |  |  |  |  |
| Poorest wealth tertile  | 0.01 ± 0.02 |  | -0.11 ± 0.10 | -0.41 ± 0.31 | 0.11 ± 0.10 | -0.47 ± 0.09 | 0.15 ± 0.03 |
| Middle wealth tertile  | 0.02 ± 0.02 |  | -0.17\* ± 0.09 | -0.23 ± 0.30 | 0.10 ± 0.09 | -0.28 ± 0.08 | 0.01 ± 0.03 |
| PDS rice \* richest wealth (ref) |  |  |  |  |  |  |  |
| PDS rice \* poorest wealth | 0.02 ± 0.02  |  | 0.03 ± 0.12 | 0.58 ± 0.40 | -0.06 ± 0.11 | 0.54 ± 0.32 | -0.22 ± 0.12 |
| PDS rice \* middle wealth | -0.00 ± 0.02 |  | 0.11 ± 0.09 | 0.30 ± 0.35 | -0.08 ± 0.10 | 0.21 ± 0.26 | -0.02 ± 0.10 |
| total daily energy intake (in 1,000 kcal) | 0.15\*\*\* ± 0.00 |  | 0.06 ± 0.20 | 2.00\* ± 0.77 | -0.30 ± 0.19 | 0.96 ± 0.62 | -0.29 ± 0.20 |
| **household food expenditure** |  |  |  |  |  |  |  |
| % of food item purchased | -0.00\*\* ± 0.00 |  | -0.00 ± 0.00 | -0.00 ± 0.00 | -0.00 ± 0.00 | -0.00 ± 0.00 | 0.00 ± 0.00 |
| food expenditure (ln) | -0.03\* ± 0.01 |  | 0.06 ± 0.05 | -0.40\* ± 0.20 | 0.10 ± 0.05 | -0.33\* ± 0.15 | 0.09 ± 0.05 |
| % of food expenditure in total household expenditure | 0.08\*\*\* ± 0.02 |  | -0.07 ± 0.14 | 1.19\* ± 0.54 | -0.13 ± 0.14 | 0.68 ± 0.44 | -0.21 ± 0.15 |
| **household characteristics** |  |  |  |  |  |  |  |
| primary caregiver with no education | 0.03\*\*\* ± 0.01 |  | -0.02 ± 0.05 | 0.35 ± 0.21 | -0.04 ± 0.05 | 0.17 ± 0.16 | 0.06 ± 0.07 |
| household living in rural area | 0.04\*\*\* ± 0.01 |  | -0.09 ± 0.06 | 0.37 ± 0.25 | -0.04 ± 0.06 | -0.13 ± 0.19 | 0.02 ± 0.02 |
| **household composition** |  |  |  |  |  |  |  |
| number of siblings | 0.01\*\*\* ± 0.00 |  | -0.01 ± 0.02 | 0.17\* ± 0.08 | -0.04\* ± 0.02 | 0.11 ± 0.06 | -0.03 ± 0.12 |
| dependency ratio | -0.05\* ± 0.02 |  | 0.12 ± 0.11 | -0.77 ± 0.42 | 0.29\* ± 0.12 | -0.72\* ± 0.33 | 0.21 ± 0.02 |
| **child characteristics** |  |  |  |  |  |  |  |
| sex (1=female) | 0.00 ± 0.01 |  | -0.01 ± 0.02 | -0.08 ± 0.09 | -0.01 ± 0.02 | 0.25\*\*\* ± 0.07 | -0.10\*\*\* ± 0.00 |
| age (in months) | -0.00 ± 0.00 |  | -0.00 ± 0.00 | -0.01 ± 0.01 | 0.00 ± 0.00 | 0.00 ± 0.01 | 0.00 ± 0.12 |
| **Other** |  |  |  |  |  |  |  |
| Wave (ref: first wave) | 0.06\* ± 0.02 |  | -0.02 ± 0.11 | 0.48 ± 0.46 | -0.15 ± 0.09 | 0.34 ± 0.34 | -0.04 ± 0.09 |
| Constant | 0.07 ± 0.11 |  | 0.47 ± 0.47 | 0.84 ± 1.76 | -0.70 ± 0.50 | 0.07 ± 1.35 | -0.13 ± 0.49 |
| *Notes* Estimates of 2nd stage of 2SLS difference model. 1st and 2nd stage models are adjusted for household food expenditure, household composition, other household characteristics, child characteristics, period effect, and duration dependency. Robust standard errors reported; \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001 |