

Raitzer, David A. et al.

**Working Paper**

## Nurturing nutrition: Evidence from a randomized trial of structured electronic food vouchers in the Philippines

ADB Economics Working Paper Series, No. 828

**Provided in Cooperation with:**

Asian Development Bank (ADB), Manila

*Suggested Citation:* Raitzer, David A. et al. (2025) : Nurturing nutrition: Evidence from a randomized trial of structured electronic food vouchers in the Philippines, ADB Economics Working Paper Series, No. 828, Asian Development Bank (ADB), Manila, <https://doi.org/10.22617/WPS250487-2>

This Version is available at:

<https://hdl.handle.net/10419/336540>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by/3.0/igo/>

# NURTURING NUTRITION

## EVIDENCE FROM A RANDOMIZED TRIAL OF STRUCTURED ELECTRONIC FOOD VOUCHERS IN THE PHILIPPINES

*David A. Raitzer, Rita Abdel Sater, Odbayar Batmunkh, Julia Girard,  
Lennart Reiners, and Amir Jilani*

**NO. 828**

December 2025

## ADB ECONOMICS WORKING PAPER SERIES

ADB Economics Working Paper Series

## Nurturing Nutrition: Evidence from a Randomized Trial of Structured Electronic Food Vouchers in the Philippines

David A. Raitzer, Rita Abdel Sater,  
Odbayar Batmunkh, Julia Girard,  
Lennart Reiners, and Amir Jilani

No. 828 | December 2025

The *ADB Economics Working Paper Series* presents research in progress to elicit comments and encourage debate on development issues in Asia and the Pacific. The views expressed are those of the authors and do not necessarily reflect the views and policies of ADB or its Board of Governors or the governments they represent.

David A. Raitzer ([draitzer@adb.org](mailto:draitzer@adb.org)) is a senior economist and Odbayar Batmunkh ([odbayar316@gmail.com](mailto:odbayar316@gmail.com)) is a consultant at the Economic Research and Development Impact Department, Asian Development Bank (ADB). Rita Abdel Sater ([abdelsaterr@afd.fr](mailto:abdelsaterr@afd.fr)) and Julia Girard ([girardj@afd.fr](mailto:girardj@afd.fr)) are impact evaluation officers at Agence Française de Développement. Lennart Reiners ([lreiners@adb.org](mailto:lreiners@adb.org)) is an urban development specialist at Sectors Department 2 and Amir Jilani ([ahjilani@adb.org](mailto:ahjilani@adb.org)) is a senior social sector specialist at Sectors Department 3, ADB.



Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO)

© 2025 Asian Development Bank  
6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines  
Tel +63 2 8632 4444; Fax +63 2 8636 2444  
[www.adb.org](http://www.adb.org)

Some rights reserved. Published in 2025.

ISSN 2313-6537 (print), 2313-6545 (PDF)  
Publication Stock No. WPS250487-2  
DOI: <http://dx.doi.org/10.22617/WPS250487-2>

The views expressed in this publication are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use. The mention of specific companies or products of manufacturers does not imply that they are endorsed or recommended by ADB in preference to others of a similar nature that are not mentioned.

By making any designation of or reference to a particular territory or geographic area in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

This publication is available under the Creative Commons Attribution 3.0 IGO license (CC BY 3.0 IGO) <https://creativecommons.org/licenses/by/3.0/igo/>. By using the content of this publication, you agree to be bound by the terms of this license. For attribution, translations, adaptations, and permissions, please read the provisions and terms of use at <https://www.adb.org/terms-use#openaccess>.

This CC license does not apply to non-ADB copyright materials in this publication. If the material is attributed to another source, please contact the copyright owner or publisher of that source for permission to reproduce it. ADB cannot be held liable for any claims that arise as a result of your use of the material.

Please contact [pubsmarketing@adb.org](mailto:pubsmarketing@adb.org) if you have questions or comments with respect to content, or if you wish to obtain copyright permission for your intended use that does not fall within these terms, or for permission to use the ADB logo.

Corrigenda to ADB publications may be found at <http://www.adb.org/publications/corrigenda>.

Note:

In this publication, “\$” refers to United States dollars and “PHP” refers to Philippine pesos.

## ABSTRACT

We present the findings of a pilot that randomized provision of structured electronic food vouchers to poor households in the Philippines, which was designed to inform a new national food voucher program. The study utilized a matched pair cluster-randomized controlled trial to evaluate the effectiveness of vouchers plus nutrition education sessions. It involved 4,883 poor households across five provinces, randomly assigned to the control group or to receive nutrition education and monthly electronic food vouchers worth PHP3,000 (\$55) with pre-allocated shares for different food groups. After 6 months, statistically significant improvements are found in household food expenditure, dietary diversity, and food security, although the dietary and food security effects are modest on average. Food expenditure responses to voucher allocations are strongest for proteins and for fruits and vegetables, whereas the carbohydrate allocations are more fungible. Notably, dietary effects are more pronounced in highly urban areas, in households enrolled in an existing conditional cash transfer program, in those with better nutrition knowledge at baseline, in smaller-sized households, and in those that had more recently redeemed the voucher. This suggests that effectiveness could be enhanced by adjusting voucher allocation ratios towards underconsumed food groups, increasing the voucher amount, increasing redemption frequency, and improving nutrition education.

**Keywords:** food assistance, electronic food vouchers, nutrition, social protection

**JEL codes:** I12, I18, H23, I38

---

The grant fund for the study was received from the Japan Fund for Prosperous and Resilient Asia and the Pacific financed by the Government of Japan through the Asian Development Bank (ADB) and Agence Française de Développement (AFD). ADB Food Voucher Program to Reduce Food Insecurity and Malnutrition Technical Assistance supported the study, which was a collaboration with the Department of Social Welfare and Development (DSWD) and the World Food Programme (WFP). The authors thank DSWD and WFP colleagues for collaboration on pilot implementation and feedback during presentation of results. Miharu Kimwell and Rowena Mantaring provided excellent fieldwork, coordination, and research support. We are also grateful to Karin Schelzig and Cecilia Poggi for valuable comments and feedback. The data for this study were collected by Social Weather Stations, with special thanks to Linda Luz Guerrero, Ramon Calleja, and Jay Sandoval.

# 1 INTRODUCTION

The global prevalence of undernourishment rose to 9.1% in 2023, with Asia accounting for more than half of the world's population living with hunger (UNICEF et al., 2025). The relative affordability of food is an important driver of undernutrition. Diet quality data collected from 28 mostly lower- and middle-income countries in 2021–2022 showed that greater severity of food insecurity was associated with lack of access to all food groups, but with lower odds of consuming animal-sourced protein and fruits and vegetables in particular.<sup>1</sup>

Voucher assistance programs can help address food affordability. When it comes to directly addressing food insecurity at the household level, rather than the market level, there has been a shift in thinking and practice away from direct food or in-kind transfers towards cash or voucher assistance programs, which allow beneficiaries more agency. For example, cash or voucher assistance accounted for 24% of global funding use for international humanitarian assistance in 2022 (Network, 2025). Where local food markets are functional, supply is otherwise accessible, and financial systems are adequate, market-based assistance, such as food vouchers, has the potential to increase consumption of healthy and locally produced food, protect beneficiary choice, and positively influence broader societal outcomes, including productivity and health. Many of these voucher programs either are effectively cash transfers in the name of food security or are restricted to a staple item, such as rice.

Evidence suggests food assistance programs (mainly cash and in-kind transfers) can be effective. Evaluations of global food assistance programs support these claims, although the findings are mixed and not necessarily comparable across contexts. A 2023 rapid review of food subsidies, including vouchers for food purchases, food distribution, and discount vouchers, found that most programs had only low to moderate effects on consumption, price, and health outcomes (Mansilla, Herrera, and von Uexkull, 2023). However, this review mainly included high-income countries. The Global Nutrition Cluster (2020) synthesis of cash and voucher assistance systematic reviews published between 2012 and 2017 found “consistent positive impact” on proximate nutrition determinants, including household food consumption and dietary diversity, with more evidence supporting the impacts of childhood versus adult dietary diversity. Effects on more distal health outcomes were mixed. There were more consistent positive impacts on childhood stunting for programs targeting the under-five age group, equivocal findings on wasting, and limited evidence for effects on micronutrient deficiencies.

The consumption effects of programs were generally more observed with greater subsidy intensity and when food programs were implemented concurrently with existing social assistance programs. Complementary programs are likely to have effects that are greater than the sum of their individual parts. For example, health impacts of cash transfers appeared to be stronger

---

<sup>1</sup> Data from the Diet Quality Questionnaire (DQQ), in which respondents are scored “zero vegetable or fruit” (ZVF) if there was no consumption of vegetables or fruits, and “animal source food” (ASF) if there was consumption of at least one animal-sourced food in the 24 hours preceding the interview. Data from the Global Diet Quality Project (2024). <https://www.dietquality.org>, in UNICEF et al. (2025).

when interventions were (i) targeted to households with young children and (ii) combined with social and behavioral change communication (SBCC) on infant and young child feeding practices (Manley et al., 2020).

While there is extensive evidence on the impacts of cash and in-kind transfers, there is comparatively little and mixed rigorous evidence on the effectiveness of food vouchers on food security, nutrition, and health outcomes in low- and middle-income countries. Implementation details can partly explain variations in program effects. In a randomized experiment in Ecuador, Hidrobo et al. (2014) compared the impact of unconditional cash transfers, food vouchers, and in-kind food provision, all with nutrition education. All three interventions improved food quantity and quality, measured by per capita food consumption value, caloric intake, and dietary diversity. However, food vouchers led to significantly greater improvements in dietary diversity compared to the other modalities, mainly because of larger increases in the number of days consuming vegetables, eggs, milk, and dairy. Evidence from Ethiopia further suggests combining food vouchers with an educational component can have significant impacts: a food voucher combined with behavior change communication achieved significant improvements in child diet quality and stunting outcomes compared to control households, whereas vouchers without any educational component showed no effects (Han, Kim, and Park, 2021). In contrast, a program in Pakistan (Fenn et al., 2017) that used vouchers for specific fresh foods at designated shops did not improve nutritional outcomes among children under five and was associated with a decrease in mean hemoglobin levels, potentially because of the restrictive nature of the voucher system and vendor practices. Implementation details, such as flexibility in purchasing and market functioning, appear to have been critical in shaping voucher program outcomes.

Other causal studies that evaluate food voucher outcomes do not examine absolute effectiveness, owing to the lack of a pure comparison (no intervention) group, but study their impacts relative to other food assistance modalities, such as in-kind or cash assistance. They conclude that vouchers are more effective than in-kind transfers in reducing poverty and can have similar impacts to cash transfers. For example, Banerjee et al. (2023) studied the transition from in-kind rice transfers to approximately equivalent electronic vouchers redeemable for rice and eggs in Indonesia. They found a fall in poverty among the poorest households by 20%, alongside improvements in food quality. In an earlier randomized controlled trial (RCT) in Democratic Republic of Congo, Aker (2013) compared food vouchers to unconditional cash transfers among internally displaced persons. Both interventions were associated with significant increases in food consumption from baseline to endline, but no statistically significant differences were found between the two modalities. Similarly, no differences in food consumption were observed between recipients of unconditional cash transfers and food vouchers in an RCT in Georgia. Food vouchers actually reduced total consumption, likely because of the increased cost associated with shopping at voucher-accepting shops (Borrella-Mas, Millán-Quijano, and Terskaya, 2023). Overall, while food vouchers show promise in improving food security and

nutrition, especially when integrated with complementary programs, their effectiveness remains context-dependent and is shaped by program design and implementation features.

This paper presents a study that rigorously evaluates the impacts of a pilot designed to inform a national electronic food voucher program in the Philippines, the Walang Gutom (Zero Hunger) Food Stamp Program (WGP). Addressing inadequate food intake among the country's most vulnerable households is an urgent policy priority. A recent comparison between globally recommended healthy diet benchmarks and food consumption and prices faced by the poorest 20% of households in the Philippines shows substantial shortfalls. On average, these households consume 30%–50% less than recommended levels, with proteins and fruits and vegetables making up almost all the gap.<sup>2</sup> The pilot was implemented as an RCT, in which food vouchers were provided to food-poor households once monthly and redeemable at selected participating food retailers. The Government of the Philippines intends to scale up the WGP to the poorest 750,000 households by 2027. Results from this impact evaluation are intended to inform scale-up design and operational decisions, including for targeting, voucher restrictions, and monetary amount, among others.

This paper addresses several gaps in the existing literature. First, the tested voucher design has unique characteristics that have not been studied previously in any context. In this pilot, the vouchers were “structured”, or allocated into food groups—that is, a fixed share of the voucher could be used only for a specific target type of food (e.g., carbohydrates, protein, fruits and vegetables). In addition, the vouchers were conditional on attending monthly nutritional SBCC sessions, which provides the opportunity to study the complementarity between these interventions on food security and nutrition outcomes. The impact evaluation was conducted to provide valuable insights on the effectiveness of the intervention delivered with these restrictions, and whether they had significantly influenced dietary food-intake patterns. Moreover, as food consumption/acquisition data are collected in detail, it is possible to see responses to each allocation within the voucher. These responses may be lower for inframarginal consumption, such as in the case of carbohydrates and oils, which are already consumed at high levels by households,<sup>3</sup> than extramarginal consumption in the case of fruits, vegetables, and proteins, which have lower consumption levels.

Second, there is a need to test voucher effects in the context of the Philippines, where nutritional performance lags other countries at similar levels of economic development. Evidence suggests transfers and vouchers targeted to specific food groups, especially when coupled with nutrition education, are a more cost-effective way to improve outcomes than in-kind food distribution. However, it remains unclear whether a specific design for vouchers offers an

---

<sup>2</sup> Authors' calculations, based on the Food and Agriculture Organization of the United Nations (FAO) Healthy Diet Basket as consumption benchmark, in Food Prices for Nutrition—Diet Cost Metrics for a Better-Fed World: <https://sites.tufts.edu/foodpricesfornutrition/methods/>. Consumption and price data were sourced from a nationally representative survey, the Expanded National Nutrition Survey 2018/2019, and food consumer price indices.

<sup>3</sup> “Inframarginal” here refers to households that already consume at least as much of a good as the value of the food voucher allocated to it. For example, if a household's baseline carbohydrate intake exceeds the share of the voucher earmarked for carbohydrates, the household can choose to substitute the voucher for preexisting consumption and free up the voucher value as cash.

effective means for improving food security and nutritional outcomes for the poorest households in the Philippines. Although food voucher programs have been the subject of impact evaluations in different contexts, they have not been rigorously evaluated in the Philippines, where nutritional deficiencies continue to persist, despite the presence of other social assistance programs such as the Pantawid Pamilyang Pilipino Program (4Ps) conditional cash transfer program.

The third gap that we address relates to impact heterogeneity. The paper exploits different sample heterogeneity to identify the conditions under which the food voucher is effective. For example, the RCT includes a sample that is split equally between the highly urbanized setting of Tondo, Manila (one of the highest population density areas globally), and four rural regions of the Philippines. It also includes households that have received existing social protection programs, mainly the conditional cash transfer program, and those that have not. There is also variation in the time between a household's last voucher redemption and the interview date, which we exploit to assess how elapsed time moderates the effect.

The paper is organized as follows: Sections 2 and 3 provide more detail on the design and rationale of the pilot study and the intended scale-up. Section 4 describes the data, methods, and analysis. Results are presented in Section 5. Section 6 concludes.

## **2 THEORY AND EXPECTATIONS**

In theory, the effect of a food voucher on overall consumption, food consumption, and dietary diversity is ambiguous. Economic theory and empirical literature show that at least two factors play a role—namely, the voucher amount relative to household's food consumption and the household's marginal propensity to consume food.

Food vouchers are expected to increase food consumption. Economic theory suggests consumption is effectively unrestricted, since money is fungible. In other words, a food voucher could increase the consumption of items not included in the voucher by freeing up cash that would have otherwise been spent on food. For this to happen, household spending must be inframarginal, meaning a household spends more money on a food group than it receives through the voucher for the group. In this case, a voucher will act as an income transfer, and whether households choose to allocate the money to food or not will depend on their marginal propensity to consume the food group. In other words, the marginal propensity to consume food from vouchers and cash transfers will be equal for households with inframarginal consumption. However, empirical studies, mainly in the context of the Supplemental Nutrition Assistance Program (SNAP) (“the food stamp program”) in the United States, have rejected this theory and have shown that the marginal propensity to consume food out of food subsidy income is significantly higher than that for cash—making it less fungible. This is named the “cash-out puzzle” (Beatty and Tuttle, 2015; Hastings and Shapiro, 2018). The most popular explanations come from behavioral economics, in which the voucher amount is allocated to the targeted good under “mental accounting”, or that the intervention makes some food groups more salient.

Conventional unsegmented or carbohydrate-focused food vouchers are expected to increase dietary diversity primarily through an income effect. By covering expenditures generally or carbohydrate-rich items, typically staple foods, vouchers free up household budgets to reallocate towards high-value, more nutritious foods. Under what has become known as Bennett's Law (Bennett, 1941), as income rises, households consistently shift towards consuming a broader array of foods, reflecting the declining marginal utility of calories from staples and the superior nature of proteins and fruits and vegetables compared to staple foods, which are inferior goods. This effect should be particularly strong at lower income levels, where food constitutes a larger share of total expenditure, staples constitute the largest share of food expenditure, and superior foods are under-consumed—thus increasing the likelihood that voucher recipients will diversify their diets. Supporting these predictions, White et al. (2021) observed that households that have very low dietary diversity at baseline show greater marginal propensity to diversify food out of a food voucher than beneficiaries starting at higher diversity levels.

From a behavioral economics perspective, the composition of a structured food voucher can influence how households allocate spending across different food groups. First, if the voucher is designed to have allocations for under-consumed food groups among the target population, such as proteins and fruits and vegetables, those voucher allocations may be more extramarginal than vouchers for carbohydrates, so households have less possibility to substitute for existing consumption, and the voucher is less fungible. The perishability of these items may further restrict substitution possibilities. Moreover, even when the voucher is theoretically fungible and nonbinding, mechanisms such as mental accounting and perceived policy signaling can shape both the amount of the transfer used for food consumption and the types of foods purchased. Specifically, even if households are free to reallocate their budgets, the foods explicitly featured in the voucher are more salient and are therefore more likely to be consumed. For instance, Banerjee et al. (2023) found that, when Indonesian households transitioned from in-kind rice transfers to vouchers redeemable for rice or eggs, only egg consumption increased out of all foods, despite standard price theory predicting no change from in-kind to equal-amount vouchers for unconstrained households. This suggests a “stickiness” effect, whereby the foods featured in voucher programs influence household preferences and consumption behaviors beyond purely budgetary considerations.

### **3 BACKGROUND: THE WALANG GUTOM PROGRAM**

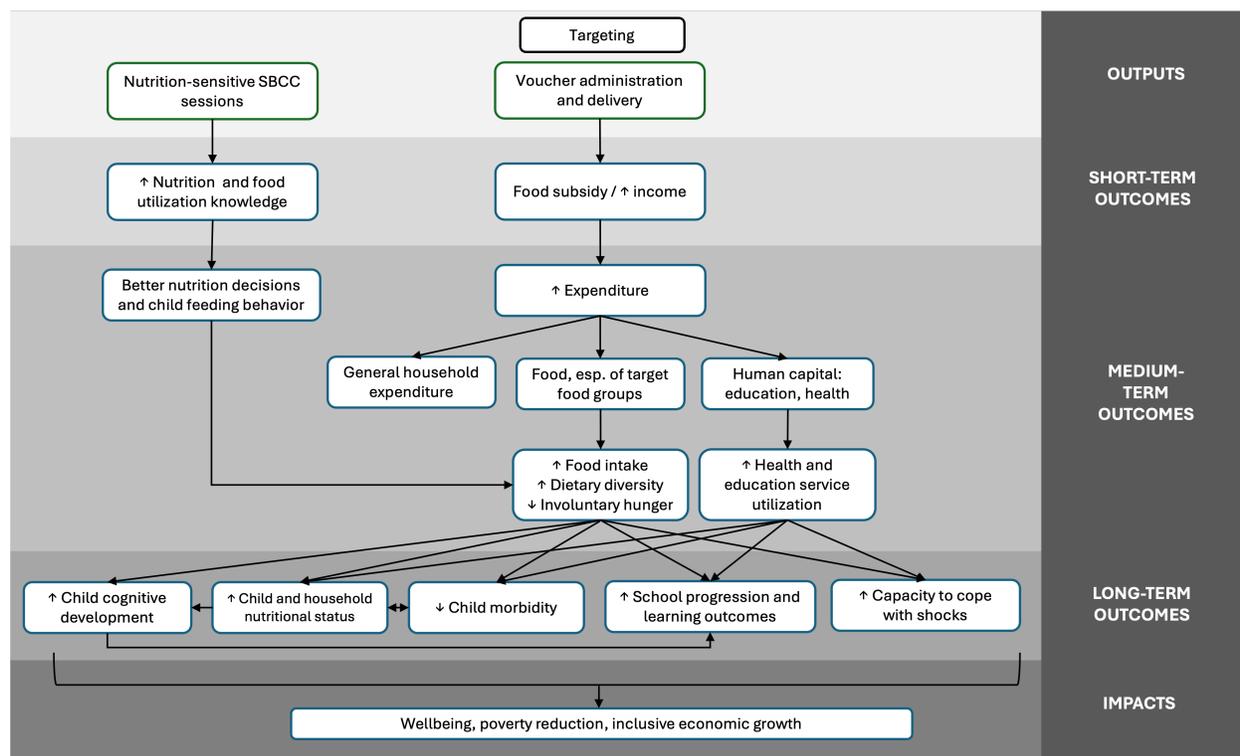
#### **3.1 Pilot to Inform National Program**

In 2021, the Philippines Inter-Agency Task Force on Zero Hunger spearheaded implementation of Pilipinas Kontra Gutom (Philippines Against Hunger), a national multisectoral effort to end hunger by 2030. By 2023, an executive order established the Walang Gutom (Zero Hunger) Food Stamp Program, or WGP (GOP, 2023). The WGP, implemented by the Department of Social Welfare and Development (DSWD), is envisioned to deliver electronic food vouchers to the poorest

750,000 food-insecure households across the entire country to alleviate hunger, reduce food insecurity, and improve nutritional outcomes. Underlying the program are two impact mechanisms, which constitute the main program characteristics: (i) income augmentation through electronic food vouchers and (ii) nutrition-sensitive SBCC interventions.

Before the national program rollout, the Government of the Philippines requested that the Asian Development Bank (ADB), Agence Française de Développement (AFD), and World Food Programme (WFP) test the intended program design through a pilot with the same design characteristics. The pilot was conducted to provide insights into how the envisioned electronic vouchers, in conjunction with SBCC, could facilitate access to nutrition-rich food and prevent child malnutrition among poor, vulnerable, and food-insecure households. In response to the request, an RCT was implemented during a 6-month pilot phase from December 2023 to July 2024. The pilot had the theory of change presented in Figure 1 and elaborated further below.

Figure 1: Program Theory of Change



Source: Authors.

### 3.1.1 Electronic Food Vouchers

The pilot provided monthly food vouchers via Electronic Benefit Transfer (EBT) cards. As part of the pilot, households received EBTS containing a value of PHP3,000, or about \$55, per month. Importantly, redemption is limited to eligible food commodities based on a fixed ratio of carbohydrates (50% of value), proteins (30% of value), and dietary fiber, including fruits and

vegetables (20% of value). The allocations were enforced via dedicated point of sale machines at retailers, using identifying codes for all items eligible for purchase. This way, the pilot aimed to improve households' overall caloric and nutrient intake by ensuring access to essential and nutritious foods, including during shocks. During the pilot, EBT redemption was possible only at accredited retailers once per month, and unused amounts could not be rolled over to succeeding redemption periods.

### **3.1.2 Social and Behavior Change Communication Sessions**

The voucher was accompanied by monthly SBCC sessions, with attendance obligatory for EBT recipients before each redemption. DSWD collaborated with WFP for the development of nutrition education modules, and their implementation was facilitated by local-level trained government staff. The sessions were designed to equip households with critical knowledge about maternal, infant, and household nutrition, and they focused on the use of the Go, Grow, Glow pedagogy, which teaches about carbohydrates, proteins, and fruits and vegetables, respectively. Additionally, sessions cover safe water, sanitation, and hygiene (WASH) practices to foster an environment conducive to better health outcomes and reduced illness.

### **3.1.3 Pilot Targeting**

The impact evaluation was conducted as an RCT with baseline and endline data collection. It was implemented across five provinces—Isabela, Camarines Sur, Manila, Surigao del Norte, and Maguindanao del Norte—with one municipality per province chosen for the study. These were initially selected by DSWD to form a sample of the poor in the country in terms of regional diversity, rural/urban status, and livelihood situation. The sample was split evenly between Manila and the other provinces, so as to be able to understand effects in both highly urbanized and rural settings. Within the municipalities, households were identified from an eligible pool using the latest Listahanan 3 (National Household Targeting System for Poverty Reduction) database.

Listahanan 3 is the third iteration of the country's national socioeconomic registry, covering 15.5 million households through comprehensive house-to-house surveys. Household poverty and vulnerability status in Listahanan is determined using a proxy-means test, which uses a regression model to predict household income based on observable characteristics such as housing materials, household assets, location, and access to basic services. The pilot targeted households with predicted incomes in the bottom 1 million of Listahanan 3, modeled after the targeting approach under the national WGP, with the exception that the pilot enrolled households irrespective of 4Ps status, whereas the General Appropriations Act funding 2024 implementation of the WGP excluded 4Ps households.

In addition, a total of 21 retailers where participants could redeem the EBTs were selected across the five municipalities, including eight mobile retailers. Table 1 depicts key statistics from the sampling and surveying milestones. At baseline, a total of 5,655 households were surveyed,

out of which 5,160 households were selected for inclusion in the study. We calculated the distance of each household to fixed locations or mobile vendors that expressed interest in participating in the pilot. Households outside metro Manila, which were more than 20 kilometers from either a fixed location or a mobile vendor, were not included in the randomization. Most of these 495 households were in Isabela and Maguindanao del Norte province.

Half of the households in the study are located in the municipality of Tondo, a highly urbanized part of metro Manila; the other half are located in more rural parts of the country.

Table 1: Distribution of Pilot Households

Province	Municipality	Surveyed at Baseline	Included in Randomization	Assigned to Treatment	Enrolled into Program
Isabela	San Mariano	1,273	959	487	454
Camarines Sur	Garchitorena	407	357	202	186
Manila	Tondo	2,920	2,920	1,492	1,283
Surigao del Norte	Dapa	777	765	384	318
Maguindanao del Norte	Parang	278	159	67	57
<b>TOTAL</b>		<b>5,655</b>	<b>5,160</b>	<b>2,632</b>	<b>2,300</b>

Source: Authors' calculations using data from household baseline survey in 2023.

Tondo is a highly urbanized area compared to the other pilot sites, differing both in context and in pilot implementation. Table 2 illustrates these differences. For instance, a larger proportion of households in Tondo have access to cold food storage. Refrigerator ownership is particularly important, as it enables households to safely store perishable foods purchased with vouchers, thereby sustaining dietary diversity and nutritional benefits beyond the days immediately following redemption. Households living in Tondo are also far less likely to have been engaged in self-food production, whether through farming, livestock, or fishing. In contrast, households living outside of Tondo are farther from the designated redemption retailer than households in Tondo, which may decrease voucher effectiveness. This implies that the pooled results for all sites including Tondo may not be representative of the primarily rural population being targeted for scale-up. These characteristics may also contribute to differences observed between outcomes in Tondo vs non-Tondo sites.

Table 2: Comparison of Tondo and Non-Tondo Pilot Sites

	Not Tondo	Tondo
Refrigerator/freezer ownership	5%	15%
Household head has salaried job	41%	47%
Household has crops, livestock, or fishery	54%	2%
Distance to vendor (km)	6.5	0.9
Reported # of redemptions	5.9	6.4
Days since last redemption	26.1	11.9
# times bought grain in 1 month	5.7	13.1
# times bought meat in 1 month	2.3	6.6

km = kilometer, Tondo = Tondo District of Manila.

Source: Authors' calculations using data from household endline survey in 2024.

### 3.2 Hypotheses Tested

Considering the intervention design, theory of change (Figure 1), evidence, and economic theory allows us to formulate the following predictions:

1. Receipt of the voucher will not displace other sources of household income or lead to dependency effects, in line with other social protection programs (Raitzer, Batmunkh, and Yarcia, 2021).
2. Some of the voucher will be inframarginal, so the full voucher amount may not translate to increased food acquisition. Freed expenditure will allow expenditure on other basic needs and human capital to rise, while expenditure on vice goods such as tobacco and alcohol will not, in accordance with what has been observed with other social protection programs (Raitzer, Batmunkh, and Yarcia, 2021).
3. Household food acquisition and food consumption will increase following the receipt of the food voucher. However, there will be a differential response to voucher allocations for carbohydrates, which are already consumed at high levels, and proteins and fruits and vegetables, which are consumed at far below recommended levels. The higher baseline consumption of carbohydrates allows vouchers to be inframarginal, as households can easily substitute purchases under a voucher for other consumption. However, the lower baseline consumption of other food groups makes this substitution far more difficult. In addition, the income elasticity of consumption of proteins and fruits and vegetables is far higher than that of carbohydrates, so that the income effect of transfers will also favor their consumption.
4. Nutrition knowledge and/or attitudes will improve after nutrition training.

5. Increased intake, especially of proteins and fruits and vegetables, along with knowledge improvements will lead to an improvement in food security, as well as short-term child health indicators.

Effects on per capita food consumption and food security indicators are expected to be larger for:

1. Households in Tondo than households outside of Tondo, as Tondo households have more access to refrigeration, lower travel costs to retailers, and less ability to self-produce food;
2. Households with better baseline nutrition knowledge, as they can better utilize the acquired food;
3. Participants in the 4Ps conditional cash transfer program, as it may provide nutrition training via Family Development Sessions, as well as complementary incentives to invest in human capital;
4. Smaller vs larger households, because the per capita value of the voucher will be greater;
5. Households with more recent voucher redemption relative to the timing of the endline survey, as raw proteins and fruits and vegetables are perishable, especially in the context of limited refrigerator ownership;
6. Households with lower initial levels of food consumption, as they have limited ability to substitute the voucher for existing consumption.

### **3.3 Matched Pair Cluster Randomization**

The design of the study is a matched pair cluster-assigned RCT. Using global positioning system (GPS) coordinates from the baseline survey, we created a total of 362 clusters, 242 in Tondo and 120 in the other provinces. The minimum size of each cluster was six households outside Tondo and four within Tondo. Isolated households that were more than 3 kilometers from the nearest other eligible households were not included in the randomization, and a minimum distance of 200 meters was ensured between clusters. The logic behind the clustering was to create as much separation as possible between later assigned treatment and control clusters to contain spillover effects from treated to control households. For urban areas, cluster assignment followed existing barangay (the lowest administrative unit) outlines up to the size of 55 households, after which smaller clusters were created. For rural areas, given large barangay areas, we created clusters using code that checks where any household is within 200 meters of the selected household. A handful of clusters had to be manually assigned in cases where the code was giving easily distinguishable clusters.

Based on the clusters, we employed multivariate pair matching for the randomization to improve study power. Clusters were paired with similar clusters based on a set of baseline attributes taken from the baseline survey using Mahalanobis Distance Matching. The variables used were household size, per capita household income, food diversity index, and per capita food expenditure. In Tondo, barangays are numbered from 1 to 905, with geographically close barangays sharing a similar number. The barangay number was also included in the nearest neighbor matching with intention of reducing distance between barangays in the same pair. Outside Tondo, cluster size

and distance of cluster to fixed pilot vendors were also included. Within the 181 matched pairs, all households in one cluster of a pair were randomly assigned to receive the treatment, while all households in the other cluster did not receive access. This way, a total of 2,632 households were assigned to treatment. Appendix Table A1 depicts the baseline characteristics across treatment and control group households, revealing that, on average, the groups were balanced.<sup>4</sup>

Enrollment of the selected households was conducted by DSWD and WFP. Out of the 2,632 that were offered enrollment, 2,300 registered for participation. Over the 6-month pilot period, six redemption periods were completed across most pilot sites, except for Tondo, where a seventh redemption took place as part of the commencement of national scale-up, and for Maguindanao del Norte, where only five redemptions took place, owing to a delayed start to the pilot.

### **3.4 Data Collection**

Primary data were collected through a baseline survey conducted in November 2023 and an endline survey conducted in July–August 2024. Data collection included household surveys at baseline and endline as well as surveys of registered participating food retailers and village-level (barangay) surveys at endline. All interviews were conducted face to face by a private national survey firm that prepared and implemented the surveys. Each household interview took around 2 hours on average to complete, while both barangay and retailer interviews took an average of 1 hour each. The household surveys were directed toward the meal planner of each household and covered modules on household demographics, income and occupation, and food consumption and security, among others. At the time of the endline data collection, a total of 4,883 households (95%) from the assigned treatment and control group could be relocated and fully enumerated.

The endline survey was timed to be within the same month as the final voucher redemption, but logistics created variation in the elapsed time from redemption to surveys. For households that joined the pilot, 21% had received their last voucher redemption within 10 days from the endline survey date (Table 3). This share increases to 64% within 20 days and 84% of beneficiaries within the last 30 days, which was the recall period for the food acquisition module.

---

<sup>4</sup> The Appendix is available at <http://dx.doi.org/10.22617/WPS250487-2>.

Table 3: Days Since Last Redemption

Province	Municipality	Average Days Since Redemption	Last Redemption <10 days	Last Redemption <20 days	Last Redemption <30 days
Isabela	San Mariano	34	0%	0%	17%
Camarines Sur	Garchitorena	23	0%	27%	97%
Manila	Tondo	12	32%	100%	100%
Surigao del Norte	Dapa	24	0%	9%	95%
Maguindanao del Norte	Parang	7	56%	100%	100%
<b>Overall</b>		<b>18</b>	<b>21%</b>	<b>64%</b>	<b>84%</b>

Note: Only using households registered in Walang Gutom Monitoring Information System. Days since last redemption calculated using date of interview and date of last redemption from administrative data. Column 3 shows average number of days since last redemption for each study location. Columns 4–6 show share of pilot households interviewed within 10, 20, and 30 days since their last redemption. Source: Authors' calculations using data from household endline survey in 2024.

### 3.4.1 Validity of the Design

**Internal validity.** The randomization achieved a high level of balance on observable characteristics. Although there was slight attrition, this did not threaten internal validity. Households surveyed at endline remained balanced on all major outcomes at baseline, as shown in Table A1.

**External validity.** There was no difference between randomly assigned treatment group households that ended up joining the pilot and households that were offered the pilot but did not join (Table A2). Table A3 shows that households that were not reachable at endline had lower monthly incomes and lower total food expenditure. These households were more likely to have a self-employed household head and had a small household size. There was no difference in per capita food acquisition or hunger at baseline.

## 4 EMPIRICAL METHODOLOGY

### 4.1 Empirical Model

We estimate the impact of the WGP on key outcomes in a straightforward cross-sectional empirical framework enabled by our randomization and strong baseline balance. Our data allow the estimation of two effects: (i) intent-to-treat (ITT) effects, which consider assignment to treatment rather than actual treatment as the intervention, and (ii) average treatment effects on the treated (ATT), which allow accounting for non-compliance, especially in the treatment group. In our model, we compare outcomes in the treated group to those of the control group at the end of the intervention while controlling for the baseline level of the outcome as well as additional covariates accounting for any remaining differences between groups. The following equations specify the main models:

$$Y_{icp}^{post} = \beta_0 + \beta_1 T_{icp}^{assigned} + \beta_3 Y_{icp}^{pre} + \gamma_p + \delta' X_{icp} + \epsilon_{ip} \quad (1)$$

where  $Y_{icp}^{post}$  is the outcome of interest of household  $i$  of cluster  $c$  in pair  $p$  at endline.  $T_{cp}^{assigned}$  is a binary indicator for whether household  $i$  is in a cluster  $c$  assigned to the pilot.  $Y_{icp}^{pre}$  is the outcome of household  $i$  at baseline before the intervention.  $\gamma_p$  are pair fixed effects.  $X_{icp}$  is a vector of household-specific control variables (baseline household size, whether a shock occurred in the year preceding the endline survey, proximity to the market). Standard errors are clustered at the cluster-pair level. All estimates are obtained using ordinary least squares (OLS).

While this first equation will give ITT estimates, the following equations instrument actual treatment status prior to regression of the preferred outcomes to obtain ATT estimates:

$$T_{icp}^{treated} = \alpha_0 + \alpha_1 T_{cp}^{assigned} + \alpha_3 Y_{icp}^{pre} + \gamma_p + \rho' X_{icp} + u_{ip} \quad (2)$$

$$Y_{icp}^{post} = \beta_0 + \beta_1 \hat{T}_{icp}^{treated} + \beta_3 Y_{icp}^{pre} + \gamma_p + \delta' X_{icp} + \epsilon_{ip} \quad (3)$$

where notation follows that of equation 1, and  $T_{icp}^{treated}$  is a binary indicator of effectively being a Walang Gutom beneficiary. Equations 2 and 3 are estimated using two-stage least-squares (2SLS). Although assignment non-compliance was small in our sample (see Table 1), we focus on ATT in the following, given the interest in effects among those who actually participated in the pilot. First-stage results from equation 2 can be found in Appendix Table A8.

It should be noted that the impact we measure combines the financial effect of the voucher and the effect of the SBCC sessions, which cannot be disentangled. A similar program having only the voucher component might thus have a different impact on beneficiaries.

Subgroup analysis uses the following equations with two treatment variables and two instruments, where the first stage equations are shown below (4 and 5):

$$T_{icp}^{treated} = \alpha_0 + \alpha_1 T_{cp}^{assigned} + \alpha_2 T_{cp}^{assigned \text{ in subgroup}} + \alpha_3 Y_{icp}^{pre} + \gamma_p + \rho' X_{icp} + u_{ip} \quad (4)$$

$$T_{icp}^{treated \text{ in subgroup}} = \alpha_0 + \alpha_1 T_{cp}^{assigned} + \alpha_2 T_{cp}^{assigned \text{ in subgroup}} + \alpha_3 Y_{icp}^{pre} + \gamma_p + \rho' X_{icp} + u_{ip} \quad (5)$$

where  $T_{cp}^{assigned \text{ in subgroup}}$  instrument is the interaction of treatment assignment variable and the time-invariant subgroup indicator. The subgroups we test are location, nutrition knowledge, receiving other support programs, household size, recent redemption of voucher, and per capita spending less than median at baseline.  $T_{icp}^{treated \text{ in subgroup}}$  is actual pilot participation interacted

with the time-invariant subgroup indicator. The predicted treatments from equations 4 and 5 are used as predictor variables in the second-stage equation 6:

$$Y_{icp}^{post} = \beta_0 + \beta_1 \hat{T}_{icp}^{treated} + \beta_2 \hat{T}_{icp}^{treated \text{ in subgroup}} + \beta_3 Y_{icp}^{pre} + \gamma_p + \delta' X_{icp} + \epsilon_{ip} \quad (6)$$

In the second-stage results (equation 6),  $\beta_1$  is the estimated intervention impact for the sample not in the subgroup. To this coefficient, we add the coefficient of  $\beta_2$ , which is the additional impact in the subgroup of interest. This results in  $\beta_4$ , which is the intervention impact in the subgroup of interest, using the linear combination command in Stata (equation 7):

$$\beta_4 = \beta_1 + \beta_2 \quad (7)$$

## 4.2 Limitations

One key limitation of this study is that it measures effects after only 6 months of pilot implementation, so as to provide rapid insights relevant to scaling up the national WGP. As a result, long-term changes to nutrition and health are difficult to detect. Further compounding these limitations is the fact that, in some surveys, more than 30 days had elapsed between the most recent voucher redemption and the survey date, allowing the effects on food intake to dissipate (this represents about 700 surveys, see Table 3). The survey also did not collect data on the quantity of food intake to understand the effects on nutrition, so that only approximate effects on diversity are included, with less precision. Child anthropometric measurements were not taken, and the study instead relies on parents' recall of child visit records to characterize health outcomes.

In addition, while the study is statistically powered to detect overall effects of treatment relative to control, power for subgroup analysis is often less sufficient, especially when the subgroup of interest is not so large. Inference in this context often relies on the relative magnitudes of the coefficients subgroup compared with control, but in some cases the ability to detect statistically different coefficients between the subgroups is more limited. We report interaction terms to test this in Appendix 6.

Another limitation of this study is the imprecise measurement of savings. At baseline, 92% of households reported having 0 savings in any form (at home, in a bank, in a cooperative or microfinance institution, etc.), which is unlikely to reflect the reality. The under-reporting of savings may stem from concerns that disclosing savings could make households appear relatively better-off and therefore ineligible for participation in the pilot. Consequently, we are unable to assess whether the voucher, if it substitutes for some food expenditures, results in higher savings.

Finally, we do not measure spillover effects. It is possible that beneficiary households shared part of the food they acquired with relatives and neighbors, especially for perishable food items, if they lacked access to refrigeration. This would not have affected the control group, as control

clusters were not located close to treated clusters. However, this implies that part of the voucher effects are not being captured, as relatives and neighbors were not surveyed.

## 5 RESULTS

As noted earlier, the participation rate for the pilot is 87% among those assigned to treatment and 0% among those assigned to control. Those households that were assigned to treatment but did not participate were primarily households that could not be relocated and registered. As these households did not incur the expense of vouchers, the relevant treatment effect for policy is the ATT rather than the ITT. The rest of the results focus on ATT estimates, while ITT estimates are presented in Appendix 4. In general, the ITTs are similar to the ATTs multiplied by the participation rate (87%). Assignment to treatment has strong explanatory power in the first stage of the ATT regressions, as illustrated in Appendix 5.

### 5.1 Average Treatment Effect on the Treated

#### 5.1.1 Household Income and Expenditure

One concern that may arise about an electronic voucher system restricted to specific retailers is whether retailers raise prices to capture the voucher value. Table 4 illustrates that no significant price effects are detected on food items frequently purchased by households covered by the vouchers. This means all the voucher value is effectively provided to households.

Table 4: Impact of Pilot on per Kilogram Price of Food Items (in PHP)

Outcome Variable	Control Mean	Treatment Effect	Std. Error	N. Obs.	N. Cluster Pairs
Panel A: Food acquisition unit price (PHP)					
Chicken price per kg	202.4	0.2	2.1	2,848	174
Fish price per kg	159.6	1.0	8.2	908	138
Pork price per kg	296.6	5.3	3.6	1,981	163
Rice price per kg	57.3	-0.4	0.3	2,778	168

N. Obs. = number of observations, Std. Error = standard error.

Notes: This table presents the average treatment effect on the treated (ATT) of being in a treatment household relative to control households on the unit price of food items. The treatment variable is the randomized treatment assignment at baseline. Control mean shows the value of the outcome variable in the control group at endline. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

Table 5 shows the effect of treatment on household income, expenditure and subjective wellbeing.<sup>5</sup> The first notable result is that the value of the transfer is all additional to income, as there is no significant effect on other income received, wage income, or labor force participation. The absence of any “dependency effect” means the whole voucher value translates into an expansion of household purchasing power.

The analysis is able to detect increases in expenditure (including “gifts”) that correspond well to the total voucher amount. Statistically significant increases in expenditure total PHP2,325 out of the PHP3,000 voucher amount. A slightly lower amount than the full voucher value is plausible to expect, given that some households had a final redemption of the electronic voucher that was around 1 month before the survey and may have fallen out of the recall period. Out of the increased expenditure, PHP1,692 corresponds to an increase in food spending/acquisition. This suggests that the voucher can significantly increase food consumption, but that there may be some substitution for existing consumption in the way the voucher is used.

The balance of the voucher value translates into PHP633 of increased other monthly spending, of which rent accounted for nearly half. There is no statistically significant increase in spending on “vice goods,” such as alcohol, gambling, and tobacco, among households that received the voucher. The voucher has no significant effect on reported savings or borrowing.

The voucher causes significant increases in subjective wellbeing, which is consistent with an increased consumption level. However, receipt of the voucher also makes households report lowered indices of social capital. This may arise from social jealousy regarding a benefit not delivered to entire communities.

---

<sup>5</sup> This acquisition includes purchased food, gifts, in-kind, and self-produced food from farming, fishing, and livestock.

Table 5: Impact of Pilot on Income and Expenditure

Outcome Variable	Control Mean	Treatment Effect	Std. Error	N. Obs.	N. Cluster Pairs
Panel A: Income and labor force participation					
Total monthly income (PHP)	17,571	-193	806	4,883	175
Monthly wages (PHP)	16,239	-173	754	4,883	175
# people working	1.748	0.046	0.044	4,883	175
Days worked in 1 week (0–7)	2.884	-0.056	0.068	4,748	175
Hours worked in 1 day (0–24)	5.003	-0.103	0.102	4,272	175
# people looking for work	0.456	-0.022	0.029	4,883	175
Panel B: Food and nonfood expenditures (PHP)					
Total food expenditures 1 month	9,083	1,692***	198	4,883	175
Total nonfood expenditures 1 month	10,421	633*	363	4,883	175
School expenditures 1 month	2,705	168	134	4,883	175
Rent/durables expenditures 1 month	3,635	263**	128	4,883	175
Other expenditures 1 month	2,353	192	163	4,883	175
Hygiene/health expenditures 1 month	1,203	12	65	4,883	175
“Vice” expenditures 1 month	525	-43	58	4,883	175
Panel C: Subjective wellbeing					
Cantril ladder (0–10)	5.035	0.335***	0.109	4,883	175
Self-reported poverty (0–1)	0.763	-0.016	0.014	4,883	175
Social Capital index (0–3)	2.312	-0.097***	0.037	4,883	175
Panel D: Financial outcomes (PHP)					
Current savings	346	-36	86	4,883	175
Current borrowing	2,517	259	487	4,883	175

N. Obs. = number of observations, Std. Error = standard error.

Notes: This table presents the average treatment effect on the treated (ATT) of being in a treatment household relative to control households on income and expenditure outcomes. The treatment variable is the randomized treatment assignment at baseline. Control mean shows the value of the outcome variable in the control group at endline. All values are reported on a monthly spending basis. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Total food spending is winsorized at 99%; this means that values from 99.1% to 100% were set to the value of the 99th percentile. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

### 5.1.2 Nutrition Knowledge and Attitudes

Table 6 shows that, on average, the pilot does not significantly improve households' nutrition knowledge through the SBCC sessions. However, we do observe a positive and significant impact

of the pilot on households' perceptions on the importance of what adults and children eat, and how much this impacts their health.

Table 6: Impact of the Pilot on Nutritional Knowledge and Attitudes

Outcome Variable	Control Mean	Treatment Effect	Std. Error	N. Obs.	N. Cluster Pairs
Panel A: Nutritional knowledge					
Nutrition quiz score (0–16)	9.218	0.059	0.079	4,883	175
Share answered correctly (0–1)	0.542	0.003	0.005	4,883	175
Attitude: Food impacts health of adults (0–10)	5.648	0.344***	0.115	4,883	175
Attitude: Food impacts health of children (0–10)	5.845	0.237**	0.115	4,883	175
Attitude: Vegetables impacts health of children (0–10)	6.701	0.192	0.119	4,883	175

N. Obs. = number of observations, Std. Error = standard error.

Notes: This table presents the average treatment effect on the treated (ATT) of being in a treatment household relative to control households on nutritional knowledge outcomes. The treatment variable is the randomized treatment assignment at baseline. Control mean shows the value of the outcome variable in the control group at endline. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable. Questions on the relationship between food consumption and health of household members were asked from food planners using a Likert scale from 0 to 10 on whether they agreed with statements that eating choices affected adult health and child health, and specifically whether eating vegetables affected child health.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

### 5.1.3 Food Consumption and Food Security

The intervention drives statistically significant increases in acquisition in all three target food types. Following the receipt of food vouchers, households increase expenditure on carbohydrates, proteins, and fruits & vegetables by 17%, 21%, and 36%, respectively, as shown in Panel A of Table 7. However, relative to the voucher amount, the strongest response is for proteins, for which 73% of the voucher value allocated to protein (PHP900) translates into increased acquisition, followed by fruits and vegetables, for which the share is 59% (the voucher allocated PHP600 to fruits and vegetables). The carbohydrate share is most fungible, with only 40% of the voucher value allocated to carbohydrates (PHP1,500) translating into increased consumption.

The increases in household food consumption should, in principle, translate into improved nutritional outcomes in line with the theory of change. Indeed, while incidence of frequent hunger decreases by 20% compared to 15% observed in the control group (significant at the 5% level), the reduction in reported hunger in the last 3 months and in the prevalence of moderate to severe food insecurity as measured by the Food Insecurity Experience Scale (FIES) is small and significant only at the 10% level. For example, the pilot decreases self-reported hunger in the past 3 months by 3 percentage points as compared to the 53% observed in the control group. It appears that increased per capita monthly food consumption of PHP262 (or less than PHP10 per day) is insufficient to substantially reduce hunger. It may also be noted that, even after the increased consumption from

the voucher, average spending remains 26% below the Food and Agriculture Organization of the United Nations (FAO) minimum cost of a healthy diet (ADB, 2024). There are small and weakly significant increases in both male and female adult food consumption scores (FCS), which reflect dietary diversity. Effects on both boys and girls are insignificant, although they have higher diversity than adults in the control group.

Panel C in Table 7 shows the results for households' perception of food insufficiency—that is, whether they feel like they do not consume enough of each food group. The pilot significantly reduces the proportion of household declaring an insufficient consumption of cereals and fruits and vegetables <sup>6</sup>. This is in line with expectations, as the main reason reported for consuming too little of the different food groups at baseline was the cost of foods, for all categories but nuts and seeds. Protein, which most frequently had cost as the main reason for inadequate consumption at baseline, has the lowest insufficiency reduction.

---

<sup>6</sup> It should be noted that the pilot is likely to have two simultaneous but opposite effects on these perception variables. First, through higher awareness of the importance for health of certain food groups, and the reception of nutrition information, more households could become conscious they were not consuming enough of certain food groups. On the other hand, the voucher itself could alleviate some financial constraints, allowing households to increase their consumption of these food groups. Consequently, the magnitudes of these effects could appear smaller because of these two opposite dynamics.

Table 7: Impact of the Pilot on Food Expenditure and Food Security

Outcome Variable	Control Mean	Treatment Effect	Std. Error	N. Obs.	N. Cluster Pairs
Panel A: Food expenditures disaggregated 1 month (PHP)					
All food (total)	9,083	1,692***	198	4,883	175
All food (per capita)	1,478	262***	34	4,874	175
Carbohydrates (total)	3,515	611***	70	4,883	175
Protein (total)	3,128	656***	96	4,883	175
Fruits and vegetables (total)	991	355***	40	4,883	175
Other food (total)	1,449	53	51	4,883	175
Panel B: Food security					
Hunger in last 3 months (0–1)	0.534	-0.030*	0.017	4,883	175
Experiences hunger frequently (0–1)	0.150	-0.028**	0.011	4,883	175
FIES moderate or severe food insecurity (0–1)	0.751	-0.024*	0.014	4,803	175
FIES severe food insecurity (0–1)	0.344	-0.022	0.015	4,803	175
FCS (household) (10–112)	53.051	0.900	0.600	4,882	175
FCS (males 18+) (10–112)	51.102	1.138*	0.606	4,319	175
FCS (females 18+) (10–112)	52.238	1.084*	0.592	4,611	175
FCS (boys 3–17) (10–112)	53.585	0.554	0.698	3,825	175
FCS (girls 3–17) (10–112)	53.740	0.831	0.772	3,661	175
Panel C: Perceived food insufficiency (share of households) (0–1)					
Insufficiency: carbohydrates	0.372	-0.028**	0.014	4,883	175
Insufficiency: protein	0.418	-0.014	0.012	4,883	175
Insufficiency: fruits and vegetables	0.361	-0.036***	0.011	4,883	175
Insufficiency: other food	0.486	0.020	0.016	4,883	175

FCS = food consumption score, FIES = Food Insecurity Experience Scale, N. Obs. = number of observations, Std. Error = standard error.

Notes: This table presents the treat effect on the treated (ATT) of being in a treatment household relative to control households on food consumption outcomes. The treatment variable is the randomized treatment assignment at baseline. Control mean shows the value of the outcome variable in the control group at endline. All values are reported on a monthly spending basis. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Total food spending is winsorized at 99%; this means values from 99.1% to 100% were set to the value of the 99th percentile. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable. Perceived food sufficiency refers to the share of households reporting eating “too little of” each food category.

Source: Authors’ calculations using data from household baseline and endline surveys in 2023 and 2024.

### 5.1.4 Child Nutrition and Health

No significant effects are detected on child nutrition (Panel A Table 8). However, child nutrition is hard to measure and report upon in a conventional recall survey, so this may owe to measurement imprecision. As another way to capture effects of better nutrition, health is also queried. Food vouchers can improve child health through multiple direct and indirect pathways.

Directly, food vouchers increase access to nutritious foods, strengthen children’s immunity and reduce incidence of illnesses such as coughs, colds, and diarrhea. Indirectly, by relaxing household food budgets, vouchers can generate an income effect that allows greater spending on nonfood items, such as better access to healthcare or improved water/hygiene sources, that further support child health. Additionally, SBCC sessions that address WASH practices promote healthier caregiving and environmental behaviors, reinforcing these positive health outcomes. For girls below the age of 5, there are significant reductions in reported incidence of symptoms associated with common childhood illnesses and nutrition-related conditions. The coefficient for boys is negative but insignificant. Compared to the control group mean, this effect is considerable. For example, incidence of illness among girls decreases by 12 percentage points compared to 54% in the control group, a 22% decrease. Overall incidence of fever and coughs/colds falls by 23% and 17%, respectively. Incidence of diarrhea decreases by 34%, but the coefficient is significant only at the 10% level. This suggests child health may be improved, even if we cannot capture it with dietary measures. This likely reflects challenges in precisely measuring child nutrition owing to recall bias, or that improvements in child health occur mainly through the income or SBCC session effects. It should be noted, however, that we do not observe increases in expenditure on hygiene and health in treated households in Table 5.

Table 8: Impact of the Pilot on Children’s Dietary Diversity and Health

Outcome Variable	Control Mean	Treatment Effect	Std. Error	N. Obs.	N. Cluster Pairs
Panel A: Children’s dietary diversity					
FCS (all children 3–17) (10–112)	53.932	0.730	0.657	4,547	175
Minimum acceptable diet (all children 0–2) (0–1)	0.139	-0.011	0.043	638	138
Minimum meal frequency (all children 0–2) (0–1)	0.487	0.024	0.054	638	138
Minimum dietary diversity (all children 0–2) (0–1)	0.149	-0.017	0.043	638	138
Panel B: Health of children under 5 years old (share of children under 5) (0–1)					
Any illness (boys)	0.468	-0.044	0.033	1,177	161
Any illness (girls)	0.543	-0.119***	0.039	1,085	164
Fever (all children)	0.335	-0.076***	0.027	1,966	173
Cough/cold (all children)	0.339	-0.059**	0.030	1,966	173
Diarrhea (all children)	0.096	-0.031*	0.016	1,966	173
Underweight (all children)	0.049	-0.012	0.011	1,966	173
Micro-nutrient deficiency (all children)	0.029	-0.002	0.010	1,966	173

FCS = food consumption score, N. Obs. = number of observations, Std. Error = standard error.

Notes: This table presents the average treatment effect on the treated (ATT) of being in a treatment household relative to control households on children’s dietary diversity and health outcomes. The treatment variable is the randomized treatment assignment at baseline. Control mean shows the value of the outcome variable in the control group at endline. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable.

Source: Authors’ calculations using data from household baseline and endline surveys in 2023 and 2024.

## **5.2 Subgroup Analysis**

This section explores how treatment effects vary among subgroups by examining the linear combination of interaction effects and base coefficients for each subgroup. The interaction terms for the subgroup differences in effects are presented in Appendix 6.

### **5.2.1 Tondo vs Provincial**

Effects on food expenditures do not exhibit overall sizable differences between Tondo and other regions, although the total food consumption effect is a little higher in Tondo, driven mostly by higher expenditure on protein and carbohydrates (Table 9). Results for food security and dietary diversity are somewhat mixed. The intervention has stronger effects in Tondo on the FCS and, to a lesser extent, on the frequency of hunger. In contrast, the reduction in food insecurity is more pronounced in areas outside Tondo (Table 10). With respect to child health outcomes, the overall likelihood of an illness of any kind is stronger and more statistically significant outside Tondo, but the effect appears to vary by illness (significant reduction of fever and diarrhea occurrence in Tondo, and of cough, cold, and underweight outside Tondo) (Table 11).

### **5.2.2 Level of Nutrition Knowledge**

Several programs implemented by the government and nongovernment organizations (NGOs) in the Philippines provide nutrition training. The evaluated pilot also required attendance at SBCC sessions as a condition for receiving food vouchers. We hypothesize that higher household nutrition knowledge enhances the voucher's impact by enabling more nutritious use of the voucher amount.

To test this, we split households into two groups—those below and those above the median baseline nutrition knowledge score. We observe that, while food acquisition effects are independent of baseline nutrition knowledge (Table 9), improvements in food security (frequent hunger and FIES) and dietary diversity are larger among households with higher nutrition knowledge (Table 10). Similarly, households with greater nutrition knowledge show more consistent improvements in child health outcomes (Table 11).

### **5.2.3 Coverage by Other Social Protection Programs (Conditional Cash Transfers)**

The 4Ps is the Philippines' largest social protection scheme, providing conditional cash transfers to poor households conditional on school and health checkup attendance. Given the substantial overlap between 4Ps and WGP beneficiaries (71% of our sample at baseline, as reported by households), we expect synergistic effects that enhance wellbeing outcomes. Combining cash transfers with food vouchers increases household purchasing power and flexibility, allowing families to purchase a wider range of nutritious foods and essential nonfood items. This should

improve food security and create healthier conditions conducive to better child nutrition and health outcomes.

Subgroup analyses show that, compared to non-4Ps households, 4Ps households show larger increases in spending per capita on fruits and vegetables (Table 9). Reductions in reported hunger in the past 3 months, frequent hunger, and food insecurity (FIES) are greater and only significant in households receiving the 4Ps cash transfer (Table 10). Moreover, 4Ps households exhibit significant improvements in child health outcomes, with lower incidence of illness, fever, and coughs/colds. These findings suggest potential complementarities between the voucher intervention and existing social assistance programs.

#### **5.2.4 Household Size and Treatment Intensity**

During the pilot, all participating households received the same monthly voucher amount of PHP3,000, regardless of household size. With a median household size of seven members in the pilot, this corresponds to approximately PHP5 per meal per person, assuming three meals per day, or around PHP3 per meal when considering observed effects on food acquisition. We therefore hypothesize that smaller households will experience greater improvements owing to higher per capita voucher value available to them.

Subgroup analysis confirms that per capita food acquisition increases more among smaller households (fewer than or equal to seven members), especially for proteins and fruits and vegetables. Smaller households have a 43% higher food per capita effect. In response to the voucher, smaller households expand per capita consumption by 50% more on protein and 85% more on fruits and vegetables, compared to bigger households (Table 9). This is reflected in better food security and nutrition outcomes: smaller households are less likely to report frequent hunger and exhibit higher increase in adult FCS scores (Table 10). However, this does not translate into better child health indicators. Child health improves more in larger households, as there are more significant decreases in any illness, fever, and diarrhea incidence.

#### **5.2.5 Time Since Voucher Redemption**

During the pilot phase, participating households were able to redeem their vouchers only once a month. Some of the items included in the voucher allocation, especially proteins, are perishable. We thus hypothesize that improvements in the dietary diversity persist for only a limited number of days after redemption. To analyze this, we focus on the Tondo sample, exploiting the fact that endline interviews were conducted over the period of few weeks.

We exploit this variation by splitting the Tondo sample into two groups: households that redeemed their voucher within 11 days of the survey and those that redeemed earlier. Households redeeming within 11 days show significantly higher improvements in dietary diversity, reflected in higher adult and child FCS scores (Table 10), likely driven by greater fruit and vegetable acquisition (Table 9). This pattern is consistent with the 7-day recall period for nutrition

indicators: households interviewed 2 or more weeks after redemption may have already consumed most perishable foods. This suggests that more frequent redemptions—or mechanisms for storing perishable items—are necessary to sustain dietary improvements, particularly given the limited refrigeration access among sample households (10% at baseline).

### **5.2.6 Level of Baseline Food Consumption**

Households with lower baseline levels of food consumption are more likely to be extramarginal, rather than inframarginal, with respect to the value of the food vouchers provided. Consequently, these households have less scope to substitute the voucher for their existing food spending, as well as greater margin of improvement on total food acquisition and on food security outcomes. To explore this heterogeneity, we divide the sample into households with baseline food consumption below and above the median. The results indicate substantially larger effects among the lower consumption group: households below the median increase their food acquisition by 47% more per capita than those that consumed above the median at baseline. This pattern holds across carbohydrates, protein, and fruits and vegetables. However, these gains in acquisition do not translate into measurable distinctive improvements in food security indicators or child health outcomes. In fact, improvements in child outcomes seem to be more significant in households that spent more than the median at baseline. This could be due to differences in demographics.

Table 9: Impact of Pilot on Food Expenditures (PHP), by Different Subgroups

	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Per Capita Total	Carbohydrates	Protein	Fruit/Veg.	Other
Full sample	1,692*** (198)	262*** (34)	86*** (11)	100*** (15)	57*** (7)	4 (8)
Tondo	1,839*** (265)	250*** (46)	84*** (12)	105*** (20)	51*** (8)	-10 (14)
Outside Tondo	1,502*** (295)	275*** (50)	89*** (19)	94*** (24)	64*** (11)	22*** (8)
Higher nutrition knowledge (baseline)	1,769*** (233)	278*** (43)	85*** (14)	109*** (20)	59*** (8)	-2 (11)
Lower nutrition knowledge (baseline)	1,624*** (263)	248*** (47)	88*** (16)	93*** (21)	55*** (9)	9 (11)
Received 4Ps CCT	1,785*** (225)	283*** (37)	87*** (12)	105*** (16)	62*** (7)	5 (9)
Did not receive CCT	1,459*** (280)	210*** (56)	84*** (19)	89*** (30)	44*** (10)	1 (15)
Smaller than median household size	1,597*** (221)	308*** (47)	99*** (17)	120*** (23)	74*** (10)	9 (12)
Larger than median household size	1,791*** (264)	216*** (42)	74*** (12)	81*** (17)	40*** (6)	-1 (9)
Last redemption <= 11 days (Tondo only)	1,895*** (305)	233*** (61)	86*** (19)	92*** (26)	58*** (10)	-30* (17)
Last redemption >11 days (Tondo only)	1,831*** (408)	278*** (68)	87*** (19)	121*** (32)	45*** (12)	10 (19)
Below median food consumption (baseline)	1,768*** (256)	314*** (47)	101*** (17)	114*** (22)	64*** (9)	1 (12)
Above median food consumption (baseline)	1,628*** (256)	214*** (44)	71*** (13)	87*** (19)	50*** (8)	7 (11)
Control group mean	9,083	1,478	536	483	153	228
N. of Obs./Cluster Pairs	4,883/175	4,874/175	4,883/175	4,883/175	4,883/175	4,883/175

4Ps = Pantawid Pamilyang Pilipino Program, CCT = conditional cash transfer, N. Obs. = number of observations, Tondo = Tondo District of Manila, veg. = vegetables.

Notes: This table presents the average treatment effect on the treated (ATT) of being in the treatment household relative to the control household on food acquisition outcomes. The instrumental variables method was used with the treatment variable being administrative participation status and the instrument being assigned into a treatment cluster. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Column 1 shows total food expenditure, while columns 2–6 are converted to per capita adjusted values. Time since redemption subgroup analysis was only done for households residing in Tondo, as they received seven voucher redemptions instead of five or six elsewhere, and their last redemption date was closest to the endline survey dates. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable. Coefficient for households in subgroup is  $\beta_4$  from equation 7, while coefficient for households outside subgroup is  $\beta_1$  from equation 6.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

Table 10: Impact of the Pilot on Food Security and Dietary Diversity, by Different Subgroups

	(1)	(2)	(3)	(4)	(5)	(6)
	Hunger 3mo.	Freq. Hunger	FIES	FCS Avg.	FCS Adult	FCS Child
Full sample	-0.030* (0.017)	-0.028** (0.011)	-0.024* (0.014)	0.900 (0.600)	1.043* (0.570)	0.730 (0.657)
Tondo	-0.023 (0.020)	-0.031* (0.016)	0.001 (0.016)	1.252** (0.601)	1.327** (0.587)	0.977 (0.652)
Outside Tondo	-0.038 (0.028)	-0.024 (0.015)	-0.055** (0.025)	0.465 (1.086)	0.687 (1.025)	0.430 (1.204)
Higher nutrition knowledge (baseline)	-0.041* (0.024)	-0.035** (0.017)	-0.041** (0.018)	1.283* (0.694)	1.215* (0.648)	0.968 (0.757)
Lower nutrition knowledge (baseline)	-0.021 (0.026)	-0.024 (0.015)	-0.009 (0.018)	0.546 (0.868)	0.860 (0.855)	0.519 (0.949)
Received 4Ps CCT	-0.044** (0.019)	-0.038*** (0.013)	-0.027* (0.015)	0.834 (0.708)	0.992 (0.662)	0.736 (0.774)
Did not receive CCT	0.008 (0.032)	-0.004 (0.021)	-0.015 (0.023)	1.054 (0.962)	1.158 (0.964)	0.710 (1.007)
Smaller than median household size	-0.044* (0.024)	-0.037** (0.016)	-0.022 (0.019)	1.298 (0.798)	1.652** (0.779)	1.169 (0.905)
Larger than median household size	-0.014 (0.022)	-0.019 (0.015)	-0.025 (0.018)	0.484 (0.780)	0.409 (0.761)	0.317 (0.813)
Last redemption <= 11 days (Tondo only)	-0.023 (0.029)	-0.009 (0.022)	-0.009 (0.024)	2.964*** (0.850)	3.085*** (0.836)	2.816*** (0.936)
Last redemption >11 days (Tondo only)	-0.022 (0.030)	-0.057** (0.024)	0.013 (0.019)	-0.329 (0.930)	-0.307 (0.903)	-0.765 (1.035)
Below median food consumption (baseline)	-0.017 (0.027)	-0.036** (0.016)	-0.030 (0.020)	0.883 (0.865)	0.827 (0.823)	0.805 (0.958)
Above median food consumption (baseline)	-0.041** (0.021)	-0.020 (0.015)	-0.018 (0.018)	0.911 (0.733)	1.253* (0.718)	0.656 (0.794)
Control group mean	0.534	0.150	0.751	53.051	51.732	53.932
N. of Obs./Cluster Pairs	4,883/175	4,883/175	4,803/175	4,882/175	4,878/175	4,547/175

3mo. = 3 months, 4Ps = Pantawid Pamilyang Pilipino Program, avg. = average, CCT = conditional cash transfer, FCS = food consumption score, FIES = Food Insecurity Experience Scale moderate or severe food insecurity indicator, freq. = Frequent, N. Obs. = number of observations, Tondo = Tondo District of Manila.

Notes: This table presents the average treatment effect on the treated (ATT) of being in the treatment household relative to the control household on food security and dietary diversity outcomes. Instrumental variables method was used with treatment variable being administrative participation status and the instrument is being assigned into a treatment cluster. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Column 1 is a binary variable for any hunger reported in the last 3 months. Column 2 refers to households who experienced hunger often or frequently in the last 3 months. Column 3 is the raw sum of FIES positive responses with higher values indicating more food insecurity. Column 4 is the food consumption score average for all household members. Columns 5-6 disaggregate FCS for adults and children. Covariates included: presence of market near house, flood or typhoon shock at endline, baseline household size and baseline value of outcome variable. Time since redemption subgroup analysis was only done for households residing in Tondo, as they received 7 voucher redemptions instead of 5 or 6 elsewhere, and their last redemption date was closest to the endline survey dates. Coefficient for households in subgroup is  $\beta_4$  from Equation 7, while coefficient for households outside subgroup is  $\beta_1$  from Equation 6.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

Table 11: Impact of the Pilot on Children's Health, by Different Subgroups

	(1)	(2)	(3)	(4)	(5)	(6)
	Any Illness	Fever	Cough/Cold	Diarrhea	Underweight	MND
Full sample	-0.100*** (0.029)	-0.076*** (0.027)	-0.059** (0.030)	-0.031* (0.016)	-0.012 (0.011)	-0.002 (0.010)
Tondo	-0.068* (0.037)	-0.093** (0.036)	-0.032 (0.038)	-0.048** (0.023)	0.008 (0.013)	0.002 (0.011)
Outside Tondo	-0.138*** (0.043)	-0.058 (0.040)	-0.090** (0.045)	-0.010 (0.021)	-0.032* (0.017)	-0.007 (0.019)
Higher nutrition knowledge (baseline)	-0.106*** (0.038)	-0.088** (0.037)	-0.091** (0.037)	-0.022 (0.021)	0.001 (0.015)	-0.016 (0.014)
Lower nutrition knowledge (baseline)	-0.094** (0.041)	-0.065* (0.037)	-0.026 (0.039)	-0.040* (0.024)	-0.024 (0.015)	0.012 (0.014)
Received 4Ps CCT	-0.117*** (0.032)	-0.104*** (0.031)	-0.072** (0.033)	-0.034* (0.019)	-0.018 (0.013)	-0.007 (0.012)
Did not receive CCT	-0.062 (0.047)	-0.009 (0.045)	-0.027 (0.046)	-0.023 (0.027)	0.003 (0.019)	0.010 (0.018)
Smaller than median household size	-0.119*** (0.045)	-0.020 (0.040)	-0.056 (0.042)	-0.014 (0.027)	-0.024 (0.018)	-0.015 (0.020)
Larger than median household size	-0.086** (0.034)	-0.107*** (0.031)	-0.059* (0.035)	-0.040** (0.020)	-0.005 (0.013)	0.006 (0.011)
Last redemption <= 11 days (Tondo only)	-0.101* (0.052)	-0.074 (0.051)	-0.018 (0.048)	-0.062* (0.035)	0.023 (0.020)	0.006 (0.016)
Last redemption >11 days (Tondo only)	-0.047 (0.047)	-0.106** (0.047)	-0.044 (0.052)	-0.040 (0.029)	-0.012 (0.015)	-0.001 (0.013)
Below median food consumption (baseline)	-0.098** (0.043)	-0.034 (0.037)	-0.065 (0.040)	-0.014 (0.023)	-0.001 (0.016)	-0.013 (0.015)
Above median food consumption (baseline)	-0.101** (0.039)	-0.113*** (0.034)	-0.053 (0.039)	-0.045** (0.020)	-0.021 (0.015)	0.007 (0.012)
Control group mean	0.476	0.335	0.339	0.096	0.049	0.029
N. of Obs./Cluster Pairs	1,966/173	1,966/173	1,966/173	1,966/173	1,966/173	1,966/173

4Ps = Pantawid Pamilyang Pilipino Program, CCT = conditional cash transfer, MND = micronutrient deficiency, N. Obs. = number of observations, Tondo = Tondo District of Manila.

Notes: This table presents the average treatment effect on the treated (ATT) of being in the treatment household relative to the control household on the probability that average child under 5 in the household experienced any of the listed symptoms in the past 2 weeks. The instrumental variables method was used with the treatment variable being administrative participation status and the instrument being assigned into a treatment cluster. Asterisks indicate statistical significance at the 1% \*\*\*, 5% \*\*, and 10% \* levels. Standard errors are clustered at the cluster pair level. Covariates included presence of market near house, flood or typhoon shock at endline, baseline household size, and baseline value of outcome variable. Column 1 is a binary variable that takes a value of 1 if a child experienced any of the individual symptoms listed in columns 2–6. Time since redemption subgroup analysis was done only for households residing in Tondo, as they received seven voucher redemptions instead of five or six elsewhere, and their last redemption date was closest to the endline survey dates. Coefficient for households in subgroup is  $\beta_4$  from equation 7, while coefficient for households outside subgroup is  $\beta_1$  from equation 6.

Source: Authors' calculations using data from household baseline and endline surveys in 2023 and 2024.

## 6 CONCLUSIONS

Results show the piloted interventions have effects that are statistically significant and substantial, especially under certain conditions. This affirms that structured electronic vouchers, coupled with behavior change communication interventions, can be an effective way to improve dietary diversity and nutrition among low-income, food-insecure households. No dependency effects are detected, and food acquisition significantly and substantially increases. SBCC delivery has detectable effects on attitudes. The voucher drives statistically significant improvements in hunger, food security, food diversity, and child health.

Differences in effectiveness among intervention components and among subgroups generally follow hypotheses laid out, and suggest how the program design might be improved. In particular, effects are larger for more extramarginal voucher components, for 4Ps beneficiaries, when per capita voucher amounts are larger, and when nutrition knowledge is better, and are strongest soon after vouchers are redeemed. This indicates that the voucher effectiveness can be enhanced by specific reforms.

Voucher allocations can be increased for proteins and fruits and vegetables to increase nutritional responses to the intervention. In line with expectations, high baseline consumption of carbohydrates and oils makes that share of the food voucher inframarginal and largely fungible, even among low-income households. To promote healthier diets, improve nutrition, and increase food consumption overall, the voucher allocation ratio can be adjusted in favor of proteins and fruits and vegetables.

Hunger reductions and child health improvements are found to be more pronounced among 4Ps households, but 4Ps households have faced restrictions from eligibility in the broader Walang Gutom Program. Allowing the participation of 4Ps households can help to enhance the achievement of program objectives, especially for children.

Nutritional outcomes can also be boosted by improved nutrition behavior change communication. The effectiveness of the pilot in changing food consumption patterns depends on meal planners' nutrition knowledge. At the same time, the effects of the monthly nutrition sessions under the pilot on nutrition knowledge are limited. This suggests enhancing knowledge sessions has the potential to amplify dietary outcomes.

Effect strength depends on voucher intensity, or the per capita value. The gap between the minimum cost of a healthy diet and mean food expenditures of the targeted households is far higher than the voucher amount. This means there is scope to further increase effects from vouchers on food consumption to reduce hunger and food insecurity. One way to achieve this sort of deepened coverage is to allow the food voucher intervention to piggyback on the conditional cash transfer, which also seeks to improve investments in human capital, including in health and nutrition. Pilot results show improvements in food security and child health are concentrated among 4Ps households.

More frequent and flexible redemption schedules (ideally, continuous and open redemption) can improve food security outcomes, as effects are strongest soonest after redemption. Only a small minority of beneficiaries, especially in rural areas, had access to refrigerators and other cold storage. This limits the period through which the consumption of perishable proteins and fruits and vegetables can be stored and the period in which consumption of these items is boosted by the voucher. Effects can occur for a larger share of the time if redemption is more frequent. More frequent redemptions are also necessary if voucher allocations for proteins and fruits and vegetables are increased and/or voucher amounts are raised.

Looking ahead, the findings highlight both the potential of electronic food vouchers and the need for continued inquiry into how design features and delivery systems shape their effectiveness. While pilot evidence is encouraging, future work should continue to test refinements, such as adjusted voucher amounts and food allocations, strengthened nutrition sessions, and more flexible redemption. Future work can also more precisely measure food intake responses and attempt to capture food-sharing spillover effects that may dilute effects on treated households. Equally critical will be evaluating program performance as vouchers expand nationwide, when new household behaviors and market dynamics, including potential general equilibrium effects, may shape outcomes in ways not observed in a pilot context. A commitment to continuous, evidence-based adaptation can ultimately help strengthen social protection programs, including electronic food vouchers, so they can sustainably improve food security and nutrition at scale.

## REFERENCES

- ADB. 2024. "Voucher Amount Options for the Walang Gutom 2027 Food Stamp Program." *ADB Social Protection Policy Brief Series* .
- Aker, Jenny C. 2013. "Cash or coupons? Testing the impacts of cash versus vouchers in the Democratic Republic of Congo." *Center for Global Development Working Paper* (320).
- Banerjee, Abhijit, Rema Hanna, Benjamin A Olken, Elan Satriawan, and Sudarno Sumarto. 2023. "Electronic food vouchers: Evidence from an at-scale experiment in Indonesia." *American Economic Review* 113 (2):514–547.
- Beatty, T. K. and C. J. Tuttle. 2015. "Expenditure response to increases in in-kind transfers: Evidence from the Supplemental Nutrition Assistance Program." *American Journal of Agricultural Economics* (97-2):390–404.
- Bennett, Merrill K. 1941. "International Contrasts in Food Consumption." *Geographical Review* 31 (3):365–376.
- Borrella-Mas, Miguel Ángel, Jaime Millán-Quijano, and Anastasia Terskaya. 2023. "How do labels and vouchers shape unconditional cash transfers? Experimental evidence from Georgia." *IEB Working Paper 2023/09* .
- Fenn, Bridget, Tim Colbourn, Carmel Dolan, Silke Pietzsch, Murtaza Sangrasi, and Jeremy Shoham. 2017. "Impact evaluation of different cash-based intervention modalities on child and maternal nutritional status in Sindh Province, Pakistan, at 6 mo and at 1 y: A cluster randomised controlled trial." *PLoS Medicine* 14 (5):e1002305.
- Global Nutrition Cluster. 2020. "Evidence and guidance note on the use of cash and voucher assistance for nutrition outcomes in emergencies." .
- GOP. 2023. "Establishing the Walang Gutom 2027: Food Stamp Program as a Flagship Program of the National Government." URL <https://pco.gov.ph/wp-content/uploads/2023/10/20231012-EO-44-FRM.pdf>. The Government of the Philippines, Executive Order No 44.
- Han, Yaeun, Hyuncheol Bryant Kim, and Seollee Park. 2021. "The roles of nutrition education and food vouchers in improving child nutrition: Evidence from a field experiment in Ethiopia." *Journal of Health Economics* 80:102545.
- Hastings, J.S. and J.M.. Shapiro. 2018. "How Are SNAP Benefits Spent? Evidence from a Retail Panel." *American Economic Review* 108 (12):3493–3540.
- Hidrobo, Melissa, John Hoddinott, Amber Peterman, Amy Margolies, and Vanessa Moreira. 2014. "Cash, food, or vouchers? Evidence from a randomized experiment in northern Ecuador." *Journal of Development Economics* 107:144–156.

- Manley, James, Yarlini Balarajan, Shahira Malm, Luke Harman, Jessica Owens, Sheila Murthy, David Stewart, Natalia Elena Winder-Rossi, and Atif Khurshid. 2020. "Cash transfers and child nutritional outcomes: a systematic review and meta-analysis." *BMJ Global Health* 5 (12):e003621.
- Mansilla, Cristián, Cristian A Herrera, and Erik von Uexkull. 2023. "Food subsidies to promote healthy eating and reduce food prices: A rapid literature review." *Washington: World Bank Group* .
- Network, CALP. 2025. *How Much Support is Delivered by Cash and Voucher Assistance?* Active Learning Network for Accountability and Performance.
- Raitzer, David, Odbayar Batmunkh, and Damaris Yarcia. 2021. "Intrahousehold Responses to Imbalanced Human Capital Subsidies: Evidence from the Philippine Conditional Cash Transfer Program." *Asian Development Bank Economics Working Paper Series No. 645* .
- UNICEF et al. 2025. *The State of Food Security and Nutrition in the World 2025: Addressing high food price inflation for food security and nutrition*. Food & Agriculture Organization of the United Nations.
- White, Justin S, Gabriel Vasconcelos, Matthew Harding, Mandy M Carroll, Christopher D Gardner, Sanjay Basu, and Hilary K Seligman. 2021. "Heterogeneity in the effects of food vouchers on nutrition among low-income adults: a quantile regression analysis." *American Journal of Health Promotion* 35 (2):279–283.

## Nurturing Nutrition

### *Evidence from a Randomized Trial of Structured Electronic Food Vouchers in the Philippines*

The paper describes results from a rigorous pilot, which tested structured electronic food vouchers for poor households, so as to inform the design of a national voucher program in the Philippines. The pilot intervention consisted of monthly vouchers structured into food group allocations plus nutrition education, tested via a matched pair cluster-randomized trial involving 4,883 repeatedly surveyed households. Vouchers significantly increased food spending, dietary diversity, and food security, though dietary and hunger effect magnitudes were modest. Impacts were stronger for proteins and fruits and vegetables, and in urban areas, smaller households, soon after redemptions, among those with greater nutrition knowledge, and among conditional cash transfer recipients. Corresponding program adjustments could enhance effectiveness.

### About the Asian Development Bank

ADB is a leading multilateral development bank supporting inclusive, resilient, and sustainable growth across Asia and the Pacific. Working with its members and partners to solve complex challenges together, ADB harnesses innovative financial tools and strategic partnerships to transform lives, build quality infrastructure, and safeguard our planet. Founded in 1966, ADB is owned by 69 members—50 from the region.



### ASIAN DEVELOPMENT BANK

6 ADB Avenue, Mandaluyong City  
1550 Metro Manila, Philippines  
[www.adb.org](http://www.adb.org)