JANUARY 2021

DISCUSSION PAPER SERIES NO. 2021-01

Longer-term Effects of the *Pantawid Pamilyang Pilipino* Program: Evidence from a Randomized Control Trial Cohort Analysis (Third Wave Impact Evaluation)

Aniceto C. Orbeta Jr., Kris Ann M. Melad, and Nina Victoria V. Araos

Philippine Institute for Development Studies

CONTACT US:

RESEARCH INFORMATION DEPARTMENT
Philippine Institute for Development Studies

18th Floor, Three Cyberpod Centris - North Tower
EDSA corner Quezon Avenue, Quezon City, Philippines

publications@mail.pids.gov.ph
(+632) 8877-4000

https://www.pids.gov.ph

Longer-term Effects of the *Pantawid Pamilyang Pilipino* Program:
Evidence from a Randomized Control Trial Cohort Analysis
(Third Wave Impact Evaluation)

Aniceto C. Orbeta Jr.
Kris Ann M. Melad
Nina Victoria V. Araos

PHILIPPINE INSTITUTE FOR DEVELOPMENT STUDIES

January 2021

Abstract

This study was conducted as part of the 3rd wave impact evaluation of the Pantawid Pamilyang Pilipino program. The objective is to analyze the longer-term “lock-in” effects of time-critical program inputs on education and health outcomes for specific cohorts of beneficiaries. The cohorts are known to benefit more from inputs received at critical points in their first 1000 days of life and from age-appropriate start of schooling. The data, collected from November to December 2017, covered 2,265 households with children born between April 2009 and April 2013 from the original treatment and control barangays of the first impact evaluation of the program that used Randomized Control Trial (RCT) design. The sampling was designed to take advantage of the phased implementation and capture children born within the period when there was asymmetry in program participation and receipt of benefits between treatment and control areas. Children and mothers in the original treatment areas are presumed to have received program benefits during the critical period while children and mothers in the control areas are presumed to have received benefits beyond the critical period. The findings show that timely exposure to Pantawid Pamilya inputs during the first 1000 days of life result in lower prevalence of severe underweight, prevalence of illness with diarrhea, and fever among children. Positive program impact was observed for age of start of schooling in first grade (grade 1) and cumulative number of years of delay in schooling, but these results were not consistently observed in other estimations that control for confounding variables. The small impact of the program in level progression in primary school suggest that the control group were able to catch-up with their counterparts in the treatment group. In general, results of the study highlight the importance of providing program inputs together with a comprehensive package of supplementary interventions during the first 1000 days of life to achieve significant results in health and nutrition outcomes of children. Misconceptions on the start of schooling must also be addressed to ensure that children start school on time and avoid delays in progression through grade levels.

Keywords: Pantawid Pamilya, Cash transfers, RCT, Cohort, lock-in effects, health, nutrition

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Longer-term Effects of the Pantawid Pamilyang Pilipino Program: Evidence from a Randomized Control Trial Cohort Analysis (Third Wave Impact Evaluation)

Aniceto C. Orbeta, Jr., Kris Ann M. Melad, and Nina Victoria V. Araos[1]

1. Introduction

This report presents the findings of the RCT Cohort study component of the 3rd wave impact evaluation of the *Pantawid Pamilyang Pilipino Program (Pantawid Pamilya)*. This study follows through the cohort analysis conducted in 2014 with the same objective of assessing longer-term "lock-in" effects of Pantawid Pamilya on education and health outcomes among specific cohorts of population that received program inputs during critical time periods. Besides knowing the impact of program inputs, it will also contribute to the literature of the importance of correct timing and targeting of inputs on health and education outcomes. The study utilized the data collected in 2017 from households located in the original treatment and control areas of the first wave of evaluation on the program. Assignment to treatment and control groups was based on the original treatment and control assignment of the areas, but analysis was limited to specific cohorts of children and women depending on the timing of receipt of benefits to observe "lock-in" effects of the program. The assumption behind lock-in effects is that time-critical inputs have larger effects when provided at the right time than if provided outside that period.

Section 1 of the report presents the background of the program, results of previous program evaluations, and the research objectives and research questions. Section 2 discusses the analytical framework of the study, identifies the hypotheses, and presents the review of related literature. Section 3 discusses the methodology, data sources and identification strategy while Section 4 presents the results. Finally, Section 5 discusses the results while Section 6 concludes and provides policy recommendations.

1.1. Background of the program

The *Pantawid Pamilyang Pilipino Program* is the central social protection strategy of the Philippine government targeted towards alleviating poverty in the short-term and addressing the intergenerational transmission of poverty in the long run. The program is patterned after conditional cash transfer programs (CCTs) which were initially implemented in Latin America. The success of CCTs—documented by various studies and evaluations—have led to other developing countries, particularly in Western and Southeast Asia and Africa, to follow suit in implementing CCTs.

In the Philippines, program implementation of *Pantawid Pamilya* began in 2008, under the management of the Department of Social Welfare and Development (DSWD). The program registered 300,000 beneficiaries in its first year and has been expanded to serve a total of almost 4.9 million beneficiaries across 144 cities and 1,483 municipalities as of June 2018 (DSWD 2018).

[1] Senior Research Fellow, Supervising Research Specialist, and Research Analyst, respectively, at the Philippine Institute for Development Studies. The authors gratefully acknowledge the guidance of Technical Working Group (TWG) consisting of members from the DSWD, PIDS, World Bank, Asian Development Bank, and UNICEF. The usual disclaimer applies.

1.1.1. Program conditions

The program requires beneficiary households to fulfill conditionalities related to education and health to be qualified to receive program benefits. These conditionalities strengthen the pathways through which the program intends to achieve impact. The program conditionalities are the following:

- *Health conditionalities for pregnant women*
  - Health facility visit at least once every two months for pre- and postnatal care services. The pregnant woman, during her pregnancy should have at least one prenatal consultation for every trimester.
  - Basic/Comprehensive Emergency Obstetric and Newborn Care (BEmONC/ CEmONC) services or delivery from skilled health professional should be availed by pregnant women
  - Availment of postnatal care services within six weeks after delivery of child

- *Health conditionalities for children*
  - Children 0-2 years old: Complete immunization following the DOH vaccination schedule.
  - Children 2-5 years old: Attendance to preventive health check-ups once every two months.
  - Children 6 to 14 years old (school-aged children): Receipt of deworming pills at least twice per year.

- *Education conditionalities*
  - Children 3-5 years old: Enrollment in Daycare or Kindergarten and attendance of at least 85 percent of school days in a month.
  - Children 6-18 years old: Enrollment in Elementary or High school and attendance of at least 85 percent of school days in a month; and

- *FDS conditionality*
  - Attendance in monthly Family Development Sessions (FDS) by Pantawid Pamilya grantee2 and/or spouse.
  - The FDS is a monthly learning seminar for beneficiary households that aim to capacitate parents on topics related to parenting, childcare, health and nutrition, community participation, disaster preparedness, children and women's rights, among others. The FDS is the program component that is primarily expected to generate positive behavioral changes among beneficiaries, that is, beyond the incentives being provided by the grants.

1.1.2. Targeting and eligibility

Program beneficiaries of *Pantawid Pamilya* are identified using the *Listahanan*, formerly known as the National Household Targeting System for Poverty Reduction (NHTS-PR). The *Listahanan* assesses households and predicts household income through a proxy means test (PMT). The requirements for program eligibility are as follows:

[2] The Pantawid Pamilya grantee is defined as "mother or the most responsible adult member of the household authorized to withdraw or receive the grants", according to the program operations manual (2015)

a. Household income must be below the provincial poverty threshold
b. Household should have at least one child aged 0-18 years old or pregnant household member, and
c. Household should be willing to comply with program conditionalities

1.1.3. Transfer package

The program provides separate grants for the fulfillment of the education and health conditionalities. The education grant is provided for up to three children per household—PHP 500 for each child in high school, and PHP 300 for each child in grade school—for 10 months a year. This is provided if monitored children fulfill the education conditionalities of enrollment and attendance. The health grant for each household is PHP 500 per month, given that all health conditionalities for children and pregnant women are complied with, and the grantee and/or spouse attend the monthly FDS. Lastly, a monthly rice subsidy of PHP 600 per household was also provided by the program beginning 2017.

1.1.4. First and second impact evaluation studies

To monitor program and implementation and to ensure that the program is on track in achieving its objectives, the program design of *Pantawid Pamilya* incorporated a monitoring and evaluation system from the outset. Since the beginning of implementation, two waves of impact evaluation studies have been conducted on the program in 2011 and 2013, respectively (DSWD and WB 2014; DSWD 2014).

The first impact evaluation observed significant improvements in education and health outcomes, as well as shifts in the consumption of beneficiary households. The program increased enrollment of young beneficiary children, and the attendance of children aged 6-17 years old. *Pantawid Pamilya* also increased access to maternal and child health services and improved the health-seeking behaviors of beneficiaries. Positive impact on nutrition outcomes was also noted, specifically on the prevalence of severe stunting. These improvements are reflected in changes in spending behavior of beneficiary household, who were noted to spend more on health and education and less on vice goods.

The second impact evaluation conducted found that the program raised awareness and use of family planning methods, improved enrollment, and lowered incidence of child labor for older children, improved access to and utilization of health and social services and resulted in a more positive outlook of parents for their children. The study also found no indications of dependency or increased spending on vice goods of adult beneficiaries.

Based on the findings of the two evaluations, *Pantawid Pamilya* had been found successful in its primary objectives of keeping children healthy and in school. Positive impact on education outcomes—such as enrollment and attendance—and health outcomes—such as health service utilization of both children and mothers—has been noted by previous impact evaluations. However, continued evaluation needs to be conducted to ascertain whether these improvements have been sustained, and if the program is on track to achieving its long-term goals.

1.1.5. 2014 Cohort Study

A cohort analysis study was first conducted in conjunction with the second impact evaluation (DSWD 2014). At the time of inception of the second-round evaluation, a study was to be performed using panel data of the first wave households to measure variations in the program impact on based on the length of exposure to the program. It was found later that the control group received back payments for grants they missed 18 months after the treatment households received the program benefits. Possible impact based on difference in length of exposure was therefore negated as benefits were reimbursed to the control group.

To maximize use of collected data, the analysis was re-focused to measure the program impact based on the timing of time-sensitive critical inputs in select life stages. The study followed specific cohorts of individuals from the treatment and control households where inputs from the program are expected to have measurable outcomes based on the timing of exposure.

The 2014 cohort study observed mixed results on indicators such as nutrition, birthweight, and education of children who benefited from the program during the critical period of their first 1,000 days of life, and birth spacing of Pantawid mothers with timely exposure to the program. Findings were inconsistent for child nutrition. Children who received program benefits in their first 1,000 days of life were less likely to be classified as underweight compared to those who became part of the program after the age of 2. No significant impact was observed, however, on stunting.

In terms of child health services and practices, Pantawid children were more likely to have received iron supplementation, and to have been breastfed within 24 hours of being born compared to non-Pantawid children. However, no significant difference was observed in terms of the reception of Vitamin A supplementation, regular weight monitoring, and exclusive breastfeeding for 6 months.

Timely interventions—such as the encouragement of improved maternal nutrition and better access to maternal care through the health conditionality and family development sessions—were also unsuccessful in producing desired results in terms of birthweight. No significant difference was observed in terms of the probability of low birthweight for children whose mothers received Pantawid Pamilya benefits for the full duration of their pregnancy. Results also display lower birthweight for children in the treatment group compared to the control group. This was attributed to similar access to and availment of maternal health services by mothers in the treatment and control groups.

Attendance to family development sessions was expected by the program to result in positive results in terms of birth spacing. The study noted a positive impact on longer birth intervals, but no impact on the observance of ideal birth spacing (Conde-Agudelo et al. 2006) for mothers in the treatment group who received program benefits more than nine months before their most recent birth. Beneficiary mothers with timely exposure to the program were found to have longer birth intervals compared to mothers who did not receive program benefits for the full duration of their most recent pregnancy. However, the program has not yet been successful in influencing mothers in the treatment group to observe ideal birth spacing of at least 18 months. Regarding education outcomes, the study analyzed three cohorts—Children aged 5 years old, 6 years old, and 12-14 years old in 2009. The study found that although there were similar enrollment rates for Pantawid and non-Pantawid children in 2013 for each of the cohorts, there was a significant reduction in years of delay in schooling for each cohort.

Beneficiary children enrolled in school at the appropriate age—Kinder for children aged 5 years old and Grade 1 for children aged 6 years old—had a significantly lower delay in years of schooling. Similar results were observed for children 12 to 14 years old, with reduction in delay by around a third of a year.

One explanation for the lack of significance in the wave two cohort study is the lack of power. As mentioned earlier, the sampling design was for a panel. This design did not capture enough number of observations for the cohort of interest.

1.2. Research Questions and Study Objectives

The objective of the study is to addresses the following set of research questions:

- Does timely receipt of program inputs within the 1000-day window improve health and nutrition outcomes of children?
- Does the receipt of the program promote ideal birth spacing among mothers?
- Does receipt of program inputs at critical ages reduce the delay in schooling of children?

To answer these research questions, this study analyzes the impact of timely receipt of program inputs for the following outcomes and cohorts:

- Health outcomes of young children:
    - Birthweight of children whose mothers received transfers at least nine months before delivery
    - Nutrition of children who received program benefits for a full 1,000 days, or were conceived after the onset of the program, and
    - Incidence of illness for children who received program benefits for a full 1,000 days or were conceived after the onset of the program
- Family planning, specifically birth spacing of mothers who received program benefits more than nine months before her most recent birth.
- Education indicators of school-aged children:
    - Delay in start of schooling of children in Kinder and Grade 1
    - Years of delay in schooling for specific age cohorts

2. Analytical Framework and Hypotheses

The study analyzes the "lock-in" effects of the program based on the concept that correct timing of receipt of inputs translates to better outcomes for the treatment group compared with their counterparts that received the inputs outside appropriate timing window. The analysis focused on child health outcomes that are affected by receipt of interventions during the first 1000 days of life (9 months of conception and first two years of life) such as nutrition and susceptibility to diseases, birth spacing of mothers; and education outcomes that are time relevant such as the start of schooling at a certain age, progression through grade levels, delays, and completion rates.

2.1. Hypotheses

Given the objectives of the study, the following hypotheses were tested:

- *Hypotheses 1. Timely receipt of Pantawid Pamilya benefits improves the nutrition and health outcomes of children***.** Timely introduction of *Pantawid Pamilya* intervention during the first 1000 days of child development results in improved nutritional outcomes and reduced incidence of illnesses. This is under the assumption that the program provided crucial inputs towards the health of the fetus during pregnancy, and during the early stages of child development.
- *Hypotheses 2. Timely receipt of Pantawid Pamilya benefits promotes achievement of ideal birth spacing*. This hypothesis allows testing whether exposure to the program increases the interval between conception or birth or mothers, thereby promoting the ideal birth spacing.
- *Hypotheses 3. Timely receipt of Pantawid Pamilya benefits reduces the delays in schooling of children***.** The third hypothesis allows us to test whether timely provision of grants reduces the delays in schooling of children.

2.2. Child Nutrition and Health

The first hypothesis is based on the concept that inputs during the first 1000 days of life of a child have important and lingering consequences on child development and growth. The first 1,000 days of life, beginning from conception until a child's second birthday, have been underscored by various organizations such as the World Health Organization (WHO) and UNICEF to be a critical period wherein timing of nutrition and health interventions are paramount to both present and future wellbeing of children.

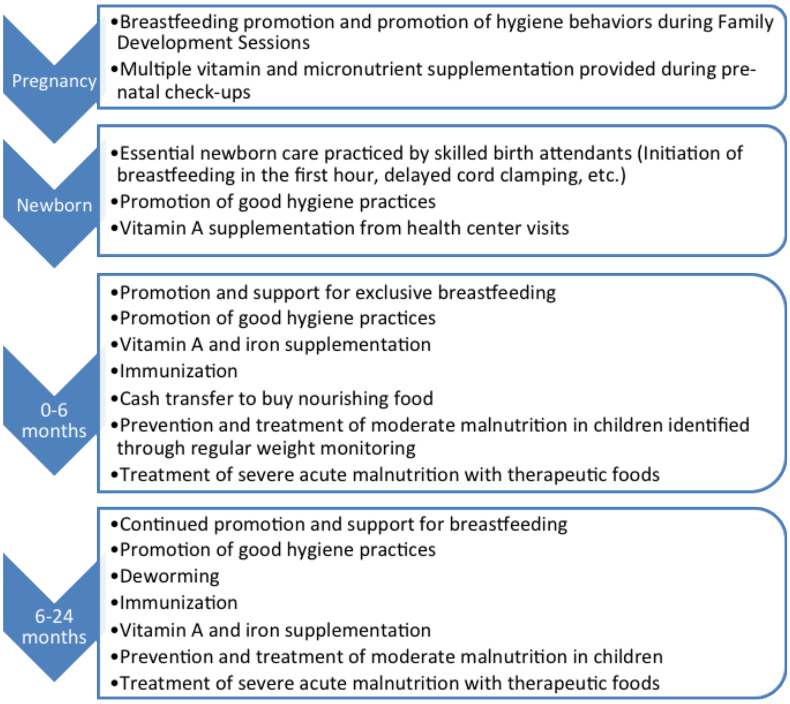
Growth failure has been pinpointed by the WHO (2013) to occur in the first two years of a child's life, emphasizing the need for interventions, not only for infants and young children, but also for pregnant and lactating women. Christian, et al. (2013) estimates that 20 percent of stunting is determined by conditions during pregnancy. Antenatal interventions such as nutrient supplementation, and immunization and screening for infections and diseases are decisive in shaping newborn outcomes.

Recommended interventions include promotion and support of maternal nutrition, immediate and exclusive breastfeeding, and micronutrient and food supplementation. These aim to provide adequate nutrition for infants, young children, and women of reproductive age to promote growth and development of children, particularly during this period. Figure 2.1 provides a list of key health and nutrition inputs in the first 1000 days of life.

Besides improving access to maternal and child health services, the importance of counselling and support, like family development sessions conducted by *Pantawid Pamilya* has been noted by various studies (WHO 2013; Arriagada et al. 2018). These have been found to be successful in improving childcare and parenting practices, which are crucial for the improvement not only for health outcomes, but also cognitive and socio-behavioral outcomes of children.

In addition to child health and nutrition, the first 1,000 days of life is a crucial window for cognitive development, which shapes outcomes and welfare much later in life. Limited development during this period may hinder future academic achievement and economic productivity and has a hand in the intergenerational transmission of poverty and malnutrition (Prado and Dewey 2014).

Figure 2.1. Key health and nutrition interventions in the first 1,000 days



Source: UNICEF (2014) and the Lancet Series on Maternal and Child Undernutrition (2008) as presented in the IE2 RCT Cohort Analysis by Orbeta, et. al.

Cash transfer programs, particularly those with conditionalities (CCTS), can potentially address maternal and child nutrition needs during this window (Arriagada et al. 2018). These human capital investments have been noted by various studies to lead to improvement in child health, nutrition, and education outcomes, and maternal health outcomes (Bastagli et al. 2016).

In the context of the study, imposition of Pantawid Pamilya health conditionalities on pregnant women and children and the provision of cash grants during this critical period is expected to translate to improved nutrition and health outcomes of children. Aside from these inputs, attendance to the Family Development Sessions is expected to increase the utilization of maternal and child health care services as well as improve the child care practices of beneficiaries. Outcomes assessed include the probability of being malnourished, incidence of common illness, and birthweight.

2.2.1. Nutritional outcomes

Stunting and other anthropometric measures dictate future welfare outcomes of children. Stunting reduction is a priority because this affects a multitude of outcomes. Nutrition interventions ensure proper physical and cognitive development, which dictate the future success of children both in school, and in the work force. This translates not only to better individual or household welfare, but also increased national economic productivity (Arriagada et. al 2018).

However, CCT program impacts on stunting are still largely limited (Manley et al. 2013). On average, Manley et. al noted that CCTs have a small positive impact on stunting, however, this is not statistically significant. Other studies on specific CCTs, observe a reduction in stunting for beneficiary children (Maluccio 2004; Paes-Sousa et al. 2011).

Better results are observed for CCTs targeted to poorer households, and for girls and younger children (Manley et al. 2013). The review also noted that transfers are more effective when combined with other interventions such as the provision of quality health care and proper sanitation, maternal education. Larger cash transfers have also been associated with positive impact on stunting (Fernald et al. 2008). Lastly, Lagarde et al. (2009) noted that supply-side factors play a large role in the success of CCTs in terms of health service utilization. CCTs are not likely to have a significant impact if there is limited access to quality health services.

A study on the impact of *Familias en Acción* (FA) in Colombia found a significant reduction of stunting and increase in height-for-age score of children under 24 months of age (Attanasio et al. 2005). No significant impact was observed, however, for children 24-48 months old and older than 48 months. This is consistent with the observation of Manley et al. (2013) that there are larger marginal effects for younger children.

Paes-Sousa et al. (2011), however, observed contrary findings. When disaggregated by age, no significant difference was observed for beneficiary children of BFP aged below 12 months—beneficiary children aged 12-35 months and 35-59 months experienced higher likelihoods of having adequate height for age. These are likely to have been facilitated by increased food security and preference for more nutritious food observed by other studies on the BFP in Brazil.

Likewise, studies on the impact of CCTs on wasting and underweight are mixed. While there are positive findings for some studies, many studies still do not observe significant impact on these indicators. A study by Ferré and Sharif (2014) on *Shombob* program in Bangladesh observed a significant decrease in the incidence of wasting, but no impact on the probability of being underweight. On the other hand, an evaluation of the RPS in Nicaragua noted reduction in the prevalence of stunting and wasting but noted no impact on wasting (Maluccio and Flores 2005).

Conditional cash transfers have been found to have significant effects on the utilization of child health services and child health outcomes, however, these are still limited. A crucial factor in the success of CCT interventions on child health outcomes was identified by multiple studies as the availability and accessibility of health services, length, and timing of exposure to program benefits, maternal education, as well as workshops and counselling for beneficiary households (Gertler 2004; Lagarde et al. 2009). Hossain et al. (2017) also note that nutrition-sensitive interventions, which include social safety nets, are more effective when paired with programs their study classified as nutrition-specific interventions such as dietary or micronutrient supplementation for mothers and children, breastfeeding promotion, and disease prevention and management. In addition to this, the study also attributed the success of the interventions to contextual factors such as strong political commitment, multi-sectoral cooperation, and community engagement.

2.2.2. Birthweight

Birthweight is indicative of subsequent anthropometric outcomes. Paes-Sousa et al. (2011) noted that children with normal birth weight had a higher likelihood of having adequate anthropometric measures. This stresses the need for interventions that address not only the nutrition and health of young children, but also of pregnant women and women of reproductive age.

CCTs have proven to have a positive impact on birthweight. Attanasio et al. (2005) observed different impact on birthweight for beneficiary children from urban and rural localities. Beneficiary children in urban localities had significantly higher birthweight by 58 grams compared to non-beneficiary children in the same areas. No significant impact was noted for rural beneficiary children.

In Mexico, beneficiary children of *Oportunidades* had higher birthweight and had a lower probability of being born with a low birthweight compared to non-beneficiaries (Barber and Gertler 2008). This impact was interpreted to be a possible result of better maternal nutrition, increased utilization of health services, and higher quality health care. In addition to these, Amarante et al. (2011)—who noted similar impact on birthweight for newborns in Uruguay—cited alternative mechanisms such as reduced maternal stress as a result of lower work hours of mothers and fewer births out-of-wedlock.

2.2.3. Child morbidity

CCTs also aim to reduce child morbidity by improving access to child health services and instructing parents on proper child care practices. In many cases, this has resulted in reduced incidence of illnesses such as diarrhea, fever, and cough for young children. In addition, as in the case of *Pantawid Pamilya*, parents are expected to visit health facilities to have their children fully immunized by age one, thereby reducing the incidence of vaccine preventable diseases among beneficiaries.

Gertler (2004) reported that beneficiary newborns and children below three years old had lower morbidity compared to non-beneficiary children in Mexico. Length of exposure to PROGRESA was found to have a significant impact on child morbidity. Beneficiary children with longer exposure (24 months) to the program had a significantly lower likelihood of being sick. No significant impact was observed for beneficiaries with shorter program exposure. A review of CCT impact on child health also observes similar findings on child morbidity, with a 22-25% decrease in likelihood of child being reported as sick (Lagarde et al. 2009).

Attanasio et al. (2005) noted a positive impact on the incidence of diarrhea for beneficiary children in rural areas, however no significant impact was observed for children from urban localities. The study also did not find any effect on likelihood that child displayed symptoms of respiratory illness.

2.3. Fertility and birth spacing

The second hypothesis assumes that provision of program benefits promotes ideal birth spacing of women in beneficiary households. Although the program does not directly aim to influence fertility decisions of beneficiaries, the program incentivizes utilization of maternal health care services during and after pregnancy through its conditionalities. This is expected to positively impact access of beneficiaries to services available in the health facilities, including counselling on responsible parenthood interventions and commodities. Moreover, the FDS is also expected to deliver messages on reproductive health through partnerships with the health facilities, and local and national agencies. Exposure to the program and access to maternal health care and family planning knowledge and interventions are expected to have an impact on the fertility behavior of mothers specifically by lengthening birth intervals.

Studies have shown having a short birth interval is associated with high risks for both the mother and the child (DeFranco et al. 2014). Findings of Agudelo et. al (2006) indicate that at least 18 months of birth space lowers the probability of delivering prematurely by half relative to conceiving within a year of giving birth. Birth intervals lower than 18 months are also associated with higher risk of adverse perinatal outcomes such as low birth weight, small for gestational age, and fetal death. (Conde-Agudelo et al. 2006).

In some evaluations, CCTs have been able to achieve lower fertility and increased birth spacing of program beneficiaries. In Nicaragua, the *Red de Protección Social* program was noted to have had a positive impact on birth intervals (Todd et al. 2012). However, this is not consistent across all contexts. Feldman et al. (2009) found that the *Oportunidades* program in Mexico had no significant impact in terms of birth spacing despite increased contraceptive use of program beneficiaries. This was explained as a potential outcome of decreased male migration as a result of the program, as well as a shift to modern contraceptive methods from traditional methods.

In general, studies on CCTs still need a better understanding of what shapes beneficiary behavior with regard to the fertility decisions households make. Although studies have narrowed down potential explanations, there is still a need for in-depth analysis of factors affecting fertility.

2.4. Education

The assumption for the 3rd hypotheses is that provision of grants and requirement of conditionalities is expected to result on-time school attendance and in lower risks of dropping out of school. Being at the age-appropriate schooling level is likewise expected to reduce the risk of dropout and improve progression through grade levels and eventually result in school completion.

Overall, conditional cash transfer programs have been found to significantly improve education outcomes of beneficiary children such as enrollment and attendance rates, educational attainment, and delays in schooling (Behrman et al. 2010; Orbeta et. al. 2015; Molina-Millán et al. 2018). Given that families are provided resources and incentives to keep their children in school, beneficiary children are more likely to enroll in school at the correct age and are less likely to drop out.

Studies commonly find that beneficiary children attain up to two additional years of schooling compared to non-beneficiary children, particularly with long term exposure to CCT programs (Behrman et al. 2005; Molina-Millan et al. 2016; Neidhöfer and Niño-Zarazúa 2017). A linear relationship between schooling attainment and program exposure has also been observed by some studies (Behrman et. al 2010).

Differential effects are also observed with regard to age and gender. Behrman et al. (2010) found that cohorts exposed to PROGRESA/Oportunidades at an earlier age—9–12 years old preprogram—accumulate more years of schooling (0.7–1 additional grade) compared to non-beneficiary children. Larger impacts were also observed by the study for boys compared to girls.

CCTs have also been noted to have a positive impact on dropout rates and high school completion rates. Beneficiary children of *Pantawid Pamilya* were observed to have a lower probability of dropping out of school, especially for the critical ages of 12–15, where risk of dropping out is higher (Paqueo et al. 2013). Increased high school completion rates were also noted in Colombia and Mexico for beneficiary children in the long-term (Baez and Camacho 2011; Parker and Vogl 2018).

3. Methodology

The study followed a cohort analysis approach where program outcomes are compared among a cohort of the population that share a common characteristic over a specific period (Windham, 2013). The treatment cohorts refer to beneficiaries that received time-critical interventions during specific points in time or period such as during a certain age or date, and the control group are those observations that received the intervention outside the time-critical period or did not receive the intervention at all. The analysis assessed whether the timing of receipt of the program inputs have "lock-in" effects on select health and education outcomes of children.

3.1. Sampling

The sample for the cohort analysis was drawn from the original treatment and control barangays used in the 1st wave Randomized Control Trial (RCT) and targeted a total of 2,500 households with at least one child born between April 2009 and April 2013 – the period within which eligible households in treatment barangays received program benefits. The sample was limited to households with at least one child in this pre-identified "critical cohort" to capture the greatest number of children for the assessment of impact of time-critical investments during the first 1,000 days of life.

In the sample selection, all households that participated in the second-round evaluation with at least one child in the critical cohort were automatically included in the selected sample. This totals to 972 households in the sample frame. For the remaining 1,528 households, 30 households in each barangay were selected at random from a list of households located in the sample areas that satisfy the sampling criteria of having at least one child born within the specified window. The replacement households were selected randomly among the remaining households in the sample frame. Replacement households satisfying the sampling criteria were not available in all barangays, making the sampling allocation not uniform across the areas.

Of the target 2,500 households, only 2,265 households were covered during the survey due to difficulties in tracking the specific households and the lack of available replacement households. Moreover, the distribution of the sample households per municipality was affected by the difficulty in tracking and lack of replacements (Table 3.1). The distribution of the sample households per barangay are reported in Appendix 1.

Table 3.1. Sample distribution by municipality

Region	Province	Municipality	No. of households
CAR	Mountain Province	Paracelis	220
		Sadanga	150
IV-B	Occidental Mindoro	Paluan	163
		Santa Cruz	204
VII	Negros Oriental	Basay	214
		Jimalalud	496
X	Lanao Del Norte	Lala	626
		Salvador	192
Total			2,265

3.2. Outcome indicators

Majority of the outcomes studied were health and nutrition outcomes of children that are most likely to be affected by timing of maternal and child health care interventions based on the concept of the first 1000 days of life as discussed in Section 2. These include anthropometric measurements, susceptibility to common childhood diseases like diarrhea, fever, and cough, and birth weight. Incidence of vaccine-preventable diseases was also included as an indicator as beneficiaries are expected to have availed of the complete immunization schedule by age one.

Birth spacing outcomes were also studied following the assumptions discussed in Section 2.3. The outcomes examined include birth interval between consecutive births, and whether ideal birth spacing is achieved.

In addition, the analysis also looked at education indicators on delays in schooling as these are expected to be influenced by the timing of receipt of program benefits. Delay in schooling was measured by the difference between the expected completed years in schooling versus the actual completed years of schooling of child. The expected completed years of schooling was based on two criteria: (1) the actual age that the child first enrolled in in Grade 1; and (2) the prescribed age-appropriate grade level of the Department of Education. Table 3.2 shows the list of specific outcome indicators included in the analysis and the corresponding definitions.

Table 3.2 Outcome indicators included in the analysis

Outcome indicator	Definition
Underweight	Children weight-for-age index lower than -2 sd
Severe underweight	Children with weight-for-age index lower than -3 sd
Stunting	Children with height-for-age index lower than -2 sd
Severe stunting	Children with height-for-age index lower than -3 sd
Wasting	Children with weight-for-height index lower than -2 sd
Severe wasting	Children with weight-for-height index lower than -3 sd
Incidence of Diarrhea	Children has had diarrhea in the past 4 weeks
Incidence of illness with fever	Children has had an illness with fever in the past 4 weeks
Incidence of illness with cough	Children has had an illness with cough in the past 4 weeks
Incidence of vaccine preventable diseases	Children has had a case of a vaccine preventable disease
Weight at birth	Weight of child in grams

Outcome indicator	Definition
Underweight	Children weight-for-age index lower than -2 sd
Low birth weight	Child with birth weight lower than 2500 grams
Birth spacing interval	Birth interval between pregnancies in days
Ideal birth spacing	Mother achieved birth spacing of at least 18 months between two pregnancies
Child started school on time	Child's age at the start of schooling, and whether the child started on time, i.e., 5 years old (Kinder) and 6 years old (Grade 1)
Delay in schooling (in years)	No. of years of delay in schooling based on: (1) age at start of grade 1; (2) prescribed start of schooling
Grade/year levels accomplished	Number of grade/year levels accomplished by child
Completion rate in Elementary	Proportion who graduated in Elementary among children at least 12 years old

3.3. Treatment Assignment

The assignation to treatment and control group in the sample was based treatment control assignment in the original RCT sample. The randomized assignment is utilized because it is expected to produce balance between treatment and control households. Children or mothers in treatment areas are presumed to have received program benefits during the critical period of the outcome of interest while children and mothers in the control areas are presumed to have received benefits beyond the critical period.

The date of actual exposure was derived from the Pantawid Pamilya administrative data. The time of first receipt of grants was estimated to have happened one month after the household first appeared in the payroll for cash grants (Appendix 2). Households who appeared in the payroll January 2011, however, were estimated to have received the cash grants on February 2012. These households were the control households of the original RCT that received backload payments worth 12 months of grants after they were released from the RCT. Based on these assumptions, the treatment group received their first cash grants almost two years ahead of the control group.

To capture the asymmetry between receipt of benefits in the control and treatment areas, observations included in the analysis were households who received their first grant February 2009 to February 2014. This totaled to 1,739 households. The cross-overs in the sample, possibly due to relocation of residence of the households from control to treatment and vice versa, is small at 3 to 5 percent for control and treatment groups, respectively.

Table 3.2 Cross-over rate in control and treatment groups

	Control Area	**Treatment Area**
Received before Feb-2012 (Treatment)	26	836
Received on/after Feb-2012 (Control)	829	48
TOTAL	**855**	**884**
Cross-over rate (%)	3.0%	5.4%

Critical cohorts of children or women were identified based on the critical time periods applicable to the type of outcome being measured. For the health and nutrition outcomes of children, the critical period is the first 1000 days of life of the child starting from conception until the child turns two years of age. The children in treatment households are presumed to have receive program benefits and time-critical inputs at the appropriate time periods. On the other hand, the children in the control households received benefits later, outside the first 1,000 days (Table 3.3). Similar arguments apply to the analysis of the difference in birthweight.

The analysis of birth spacing is limited to women aged 15 to 49 years that had at least two births within the conception/birth in the window from program initiation to the release of the control from the study. Similarly, treatment and control group were determined by the RCT assignment.

Table 3.3 Critical cohort included in the analysis, by type of outcome

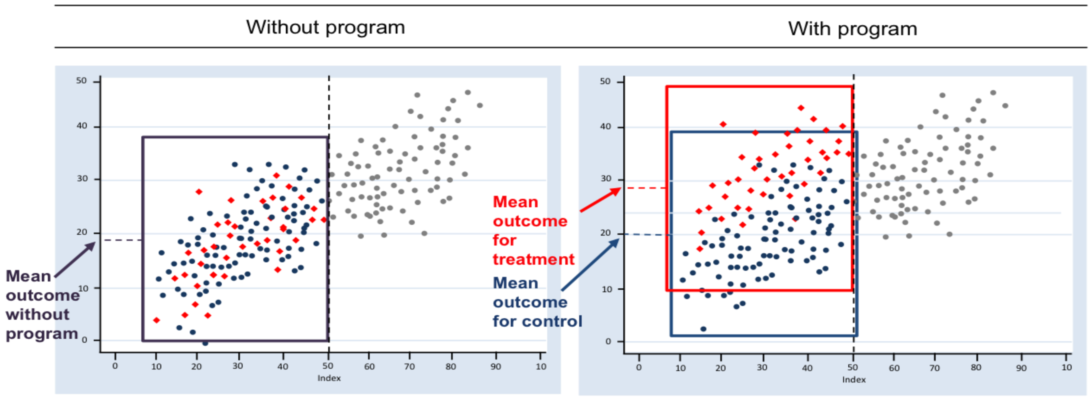
Outcome	Cohort
Child health outcomes • Underweight, stunting, wasting; • Incidence of illnesses – fever, cough, and diarrhea Birthweight	Children born during the period from program initiation to the time of release of control areas from the study (in the data this is February 2009 to January 2012)
Birth spacing	At least two consecutive conception and births during the period from program initiation to the time of release of control areas from the study (in the data this February 2009 to January 2012)
Education • Enrollment in Grade 1 on/before age 5 or 6 • Delays in schooling • Grade levels accomplished • Completion of elementary	Children 5 or 6 years old in the period from program initiation to the time of release the control areas from the study (in the data this is February 2009 to January 2012)

Although the focus of the RCT cohort analysis is the health and nutritional outcomes of children, analysis on time-critical inputs extends to education as well. This can be in the form of enrollment at the age-prescribed levels. Treatment and control groups were again determined by the RCT assignment and cohorts included in the analysis were children aged 5 or 6 on February 2009 to January 2012. The ages 5 and 6 were used to identify the critical cohort of children as these are the prescribed ages at which children are expected to start schooling in Kindergarten and Grade 1. The estimation of impact was performed separately for the two cohort groups despite an overlap between them. For children age 5 years during the reference period, the outcomes of interest were start of enrollment in kindergarten. On the other hand, outcomes studied for children age 6 years during the reference period include start of schooling, delays, progression through grade levels, and completion of elementary school level.

3.4. Estimation Strategy

The analysis of the cohort study followed the standard analysis of an RCT except that the analysis of the control and treatment subgroups is limited on cohort of children or mothers based on the asymmetry in the receipt of program inputs.

Figure 3.2. Randomized Control Trial (RCT) Evaluation



Note: Vertical dashed line at index value of 50 shows the hypothetical cut-off for program eligibility
Legend:
◆ Treatment group
● Control group

Source: Orbeta, et. al. 2015

In an RCT design of evaluation, program impact is measured by comparing the mean of outcome indicators of households in treatment group and the mean among households in the control group. Both the control and treatment households are eligible to the program but receipt of treatment is randomly assigned. Before receipt of intervention, the mean of the control and treatment groups are the same (Figure 3.2). After the program, it is expected that the mean of the control and the treatment differs on relevant outcome indicators. The difference in the means, if any, is considered the impact attributable to the program.

The estimate of program impact is calculated using the equation:

$$y_{ij} = \alpha + \beta T_j + \sum_p \gamma X_{ij} + \sum_m \lambda V_j + \eta_{ij}$$

where:

y denotes the outcome of interest in *household* (or individual) *i* in barangay *j*

α, β, γ, λ are parameters to be estimated

T is the binary variable which is equal to 1 if the household (or the individual) is in a treatment barangay and 0 if in a control barangay

η is the random error term

X is a set of *p* individual-specific variables like age, sex, household characteristics, etc.

V is a set of *m* barangay-specific variables like supply of health services and schools

The outcome for an eligible household or individual in the treatment group is obtained by:

$$E(y_{ij}|T = 1) = \alpha + \beta + \sum_p \gamma X_{ij} + \sum_m \lambda V_j$$

Likewise, the outcome for an eligible household or individual in the control group is obtained by:

$$E(y_{ij}|T=0) = \alpha + \sum_{p} \gamma X_{ij} + \sum_{m} \lambda V_j$$

The effect of the treatment is then derived from the difference between the expected outcomes of the control and treatment groups:

$$E(y_{ij}|T=1) - E(y_{ij}|T=0) = \beta$$

The above functional form represents the calculation of program impact on continuous outcome variables. In the analysis, probit regression was used for binary outcome variables and OLS for linear outcome variables. Standard errors were clustered at the barangay level and municipal-fixed effects were included to control for omitted variables related to geographical location.

The small cross-overs between control and treatment groups means intention to treat (ITT) analysis is done where control and treatment assignment is based on the original randomization done in the first wave of evaluation rather than actual receipt of benefits which may not be random. This means that the program effects were estimated for all households based on their treatment assignment of the barangay units regardless if individual households "crossed over" or relocated to new barangay with a different treatment assignment than its original location.

3.5. Balance Tests

Before the estimation of treatment effect balance tests were performed to ensure that the baseline characteristics of the treatment and control groups are comparable. Although the treatment and control assignment followed the original assignment in the first wave RCT, the analysis in this study only included a subset of the RCT population and may not reflect the same characteristics as the full population of the original RCT. It is also expected that there is imbalance in the sampling allocation across areas since some of the households previously part of the control and treatment groups have not been sampled due to ineligibility in terms of the cohort window criteria.

Balance analyses were performed by testing whether the mean baseline characteristics of treatment and control groups are statistically similar. The Kolmogorov-Smirnov two sample test and t-tests for equality of means were performed on covariates used in the estimation model. Imbalances were dealt with by adding related covariates in the estimation.

3.6. Controlling for Covariates

Relevant covariates were included in the regression models depending on the result of the balance tests. The covariates include demographic control variables such as the age and sex of child, household characteristics, and indicators of supply conditions for health and education services in the community. The list of covariates per type of outcome is shown in Table 3.4.
The covariates on household characteristics and educational attainment of household members were baseline data from the targeting survey done in 2008. Meanwhile, data on supply conditions were from the data collection of the first impact evaluation conducted in 2011 as it was the earliest data available for the analysis.

For nutrition and health outcomes, household sanitation variables that indicate positive condition or type of water source and toilet facility were included as model covariates. Positive water sources were community water systems or wells, while the negative water sources were rainwater, springs, or rivers. Positive condition of toilet facility included water-sealed or closed pit toilet while open pit or lack of a toilet facility were considered negative. Supply-side covariates related to the access of the households to health services in the barangay were also added. The same covariates, except for the household sanitation and education of household members, were included in the model for birthweight outcomes.

For birth spacing, the age of the mother, household size, and access to health facilities in the barangay were included in the models. For education outcomes, the age of the child, household size, educational attainment of the household members and availability of education facilities in the barangay were controlled for in the estimation.

Table 3.4. Demographic and supply covariates, by type of outcome

Outcome Variable	Individual-level Covariates	Household-level Covariates	Supply Covariates
Nutrition and health	° Age of child (in months, months^2) ° Sex of child	° Household size (2009) ° Household Water and Toilet Condition (2009) ° Educational attainment of adult household members (2009)	Access to health facility in the barangay (2011) ° BHS ° RHU ° Gov't Hospital ° Number of doctors
Birthweight	° Sex of child	° Household size (2009)	Access to health facility in the barangay (2011) ° BHS ° RHU ° Gov't Hospital ° Number of doctors
Birth spacing	° Age of mother	° Household size (2009)	Access to health facility in the barangay (2011) ° BHS ° RHU
Education	° Age of child (years) ° Sex of child	° Household size (2009) ° Educational attainment of adult	Number of schools (public or private) in the barangay (2011) ° Preschool ° Elementary ° High School

4. Results

This section presents the results of the estimation of the program effect on outcomes identified in Section 3.2. The results of the analysis presented include the description of the sample that satisfied the critical cohort criteria for each type of outcome, results of the balance tests performed, and the estimates of four models that estimate the average marginal effect of the treatment – generally defined as receipt of Pantawid Pamilya benefits during critical periods. Model 1 is the basic model that included only the treatment assignment variable and the outcome variable. Model 2 added the characteristics of the child as covariates; usually these included the age of the child in months or years, and the sex of the child. Characteristics of the mother, water and sanitation condition of the household, and proportion of members by educational attainment were added in Model 3. Model 4 added the variables for the presence of health or education facilities in the barangay. All models adjusted for clustering at the barangay level. Fixed effects using municipal dummies were included in Models 2 to 4 of all outcomes.

4.1. Nutrition Outcomes and Incidence of Illness

The critical cohort for the analysis of nutrition and health outcomes were children who were or born from February 2009 to January 2012 during which the treatment households were introduced to the program and the control households were yet to be released from the first RCT. In total, around 1,643 children were included in the analysis. This consisted of 803 children in the control group and 840 children in the treatment group.

4.1.1. Balance tests

Results of the balance test of the potential covariates are shown below. From the table, there is an imbalance between treatment and control groups for baseline characteristics such as quality of water and toilet facilities in the household, and household size. Higher proportion of the treatment group had good water (44% versus 35%) and toilet facilities (82% versus 78%) compared to the control, and household size is slightly smaller (5.5 versus 5.8) in the treatment group. Imbalance is also observed in all supply covariates but the advantage of having better supply conditions between control and treatment areas vary across the indicators. For instance, higher proportion of treatment areas have access to barangay health stations and government hospitals, while more barangays in control areas have access to rural health units and reported higher number of doctors that provide services. These variables on household size, sanitation, and health supply conditions, together with the educational attainment of household members which showed slight imbalance between control and treatment, were included in the estimation models.

Table 4.1. Balance tests for relevant covariates of child nutrition and health outcomes

Covariate	Number of obs.	Sample Mean	Control Mean	Treatment Mean	T Test (p-value)	K-Smirnov (p-value)
Age in years	1,643	6.893	6.900	6.888	0.819	1.000
Sex of child: 1=Male	1,643	0.508	0.510	0.502	0.629	NA
Household size (2017)	1,643	6.470	6.580	6.367	0.027**	0.178
Caretaker's sex (2017)	1,643	0.058	0.060	0.056	0.662	NA
Caretaker's age (2017)	1,643	39.620	39.300	39.929	0.129	0.245
Water and Sanitation: Positive toilet condition (2008)	1,643	0.395	0.350	0.437	0.000***	NA
Water and Sanitation: Positive water source (2008)	1,643	0.802	0.780	0.818	0.091*	NA
Household size (2008)	1,585	5.584	5.690	5.482	0.035**	0.681
Proportion of adult members (>25yo) with educational attainment (2008)						
No grade completed	1,585	0.059	0.070	0.053	0.210	0.998
Elementary	1,585	0.570	0.580	0.558	0.238	0.855
High School	1,585	0.293	0.280	0.308	0.071*	0.402
College or above	1,585	0.078	0.080	0.080	0.705	1.000
Presence of barangay health station in barangay (2011)	1,643	0.671	0.710	0.637	0.003***	NA
Presence of rural health unit in barangay (2011)	1,643	0.083	0.070	0.096	0.040**	NA
Presence of government hospital in barangay (2011)	1,643	0.090	0.120	0.061	0.000***	NA
Number of doctors providing services in the barangay health facilities (2011)	1,632	0.676	0.390	0.952	0.000***	0.000

*** p<0.01, ** p<0.05, * p<0.10

4.1.2. Impact estimates

Table 4.2 shows the proportion of children who are underweight, stunted, and wasted based on their anthropometric measurements and age-specific standards by treatment assignment. For all types of indicators except severe wasting, the proportion of children with poorer nutrition outcomes is higher in the control group than in the treatment group. Test of difference in means indicate that difference between groups is only significant for severe underweight and severe stunting. In both indicators, the proportion of malnourishment is lower among the treatment children.

Table 4.2. Proportion of underweight, stunting, and wasting by treatment assignment

Outcome	Control		Treatment		T Test	
	Obs.	Proportion	Obs.	Proportion	P value	
Underweight	773	0.325	813	0.310	0.529	
Severe underweight	773	0.096	813	0.068	0.041	**
Stunting	762	0.427	808	0.395	0.202	
Severe stunting	762	0.125	808	0.095	0.063	*
Wasting	648	0.066	640	0.056	0.450	
Severe wasting	648	0.015	640	0.016	0.978	

*** p<0.01, ** p<0.05, * p<0.10

Results of the estimation of program impact on nutrition outcomes show that receipt of the program during the first 1000 days of life results in better nutrition outcomes among children (Table 4.3). From the results, the proportion of severely underweight children is lower by three percentage points for the treatment group compared to the control (6.5% versus 9.5% in control). This was consistently seen across four models that were estimated. For all other outcomes on nutrition, however, difference between control and treatment groups were not significantly different. This is despite computed impact estimates consistently having negative signs in almost all models indicating lower proportion of stunting and wasting in the treatment group.

Table 4.3. Average marginal effects for nutrition outcomes

Outcomes		Model 1	Model 2	Model 3	Model 4
Underweight (proportion)	Impact	-0.015	-0.014	0.001	0.001
	Std. Error	0.030	0.024	0.030	0.031
	Control	0.325	0.324	0.315	0.315
	No. of Obs.	1,586	1,586	1,529	1,519
Severe underweight (proportion)	Impact	-0.028*	-0.027**	-0.026*	-0.029**
	Std. Error	0.016	0.013	0.015	0.015
	Control	0.096	0.095	0.094	0.096
	No. of Obs.	1,586	1,586	1,529	1,519
Stunting (proportion)	Impact	-0.032	-0.031	-0.020	-0.018
	Std. Error	0.030	0.028	0.029	0.030
	Control	0.427	0.426	0.421	0.419
	No. of Obs.	1,570	1,570	1,513	1,503
Severe stunting (proportion)	Impact	-0.029	-0.025	-0.017	-0.011
	Std. Error	0.021	0.019	0.020	0.020
	Control	0.125	0.122	0.116	0.112
	No. of Obs.	1,570	1,570	1,513	1,503
Wasting (proportion)	Impact	-0.010	-0.008	-0.015	-0.015
	Std. Error	0.015	0.014	0.015	0.015
	Control	0.066	0.065	0.071	0.071
	No. of Obs.	1,288	1,288	1,241	1,234
Severe wasting	Impact	0.000	0.002	-0.001	-0.001
	Std. Error	0.007	0.006	0.007	0.006

Outcomes		Model 1	Model 2	Model 3	Model 4
(proportion)	Control	0.015	0.016	0.016	0.016
	No. of Obs.	1,288	1,168	1,241	1,234
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality
	Model	Probit	Probit	Probit	Probit
	Covariates	None	Child char.	Child and HH char.	Child, HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Individual covariates - age in months, age in months squared, sex; Household characteristics – toilet and water facilities, household size proportion of members by level of educational attainment; and Supply covariates – BHS, RHU, government hospital, and number of doctors in the community.

Table 4.4 shows the incidence of diarrhea, cough, fever, and vaccine preventable diseases among children in treatment and control groups. Incidence of diarrhea was different between control and treatment, with the treatment group having incidence rate of 2.6 percent in the past four weeks compared to 5.6 percent in the control group. Incidence rates for other indicators are comparable for treatment and control.

Table 4.4. Incidence of illnesses among children by treatment assignment

Outcome	Control		Treatment		T Test
	Obs.	Proportion	Obs.	Proportion	P value
Diarrhea in the past 4 weeks	803	0.056	838	0.026	0.002***
Fever in the past 4 weeks	803	0.247	839	0.231	0.466
Cough in the past 4 weeks	802	0.266	839	0.261	0.834
Any vaccine preventable disease	803	0.093	840	0.092	0.904

*** p<0.01, ** p<0.05, * p<0.10

Results of the estimation of program impact on child morbidity show that children in the treatment group have lower likelihood of having diarrhea by 3.1 percentage points (Model 4) compared to children in the control group. This means that timely receipt of inputs during the first 1000 days of life results in lower incidence of diarrhea in children. Although susceptibility to diarrhea, and other diseases, is primarily driven by hygiene and sanitation practices and conditions of the household, susceptibility to diarrhea may also be influenced by chronic diseases and malnutrition affected by inputs received during the first 1000 days of life.

Moreover, lower incidence of illness with fever was noted among children in the treatment group. Predicted incidence rates of fever in the past four weeks among the children in the treatment and control group were 21.8 percent and 26.3 percent, respectively, using the model that controls for all identified covariates. Estimates of impact in the other models were not found to be significant between control and treatment.

No significant impact was seen on other indicators of child morbidity such as incidence of illness with fever and vaccine preventable diseases. Predicted incidence of illness with fever in the past four weeks were 27 percent for control and 25 percent for treatment (Table 4.5). In terms of proportion of children that contracted diseases that could have been prevented by immunization, the estimates were at 10.1 percent for control and 8.8 percent for the treatment group. Even though the differences between treatment and control were negative in sign, the values were relatively small.

Table 4.5. Average marginal effects for child morbidity

Outcome		Model 1	Model 2	Model 3	Model 4
Incidence of diarrhea in the past 4 weeks (proportion)	Impact	-0.030**	-0.031***	-0.029**	-0.031**
	Std. Error	0.013	0.012	0.012	0.013
	Control	0.056	0.057	0.055	0.057
	No. of Obs.	1,641	1,641	1,583	1,573
Incidence of fever in the past 4 weeks (proportion)	Impact	-0.015	-0.022	-0.035	-0.045*
	Std. Error	0.027	0.025	0.026	0.027
	Control	0.247	0.250	0.258	0.263
	No. of Obs.	1,642	1,642	1,584	1,574
Incidence of cough in the past 4 weeks (proportion)	Impact	-0.005	-0.007	-0.015	-0.017
	Std. Error	0.029	0.028	0.029	0.030
	Control	0.266	0.267	0.269	0.269
	No. of Obs.	1,641	1,641	1,583	1,573
Incidence of any vaccine preventable disease (proportion)	Impact	-0.002	-0.004	-0.006	-0.013
	Std. Error	0.019	0.016	0.019	0.019
	Control	0.093	0.094	0.097	0.101
	No. of Obs.	1,643	1,643	1,585	1,575
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality
	Model	Probit	Probit	Probit	Probit
	Covariates	None	Child char.	Child and HH char.	Child, HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Child covariates - age in months, age in months squared, sex; Household characteristics – toilet and water facilities, household size proportion of members by level of educational attainment; and Supply covariates – BHS, RHU, government hospital, and number of doctors in the community.

4.2. Birthweight

In total, 610 children were included in the analysis of birthweight outcomes. Although the same cohort of children was studied in the analysis of nutrition and morbidity outcomes, very few children had data on their weight at birth. Note that the children in this cohort were already ages 5 to 8 at the time of data collection in 2017; and, in the absence of documents that serve as reference for the birthweight, respondents had to report the weight of these children based on what they remember. Expectedly, majority of the children did not have data on their birth weight.

Of the 610 children, 309 were children in the control group while 303 were in the treatment group (Table 4.6). Comparing the averages in the two groups, higher weight at birth and lower proportion of low birth weight was observed among the children in the treatment group. The difference was only statistically significant for proportions of low birthweight (6 percentage points) based on the test of difference of means. However, it must be noted that the average birthweight for both groups of children were close to the threshold of 2500 grams for low birthweight.

Table 4.6. Mean birthweight and proportion of low birthweight by treatment assignment

Outcome	Control		Treatment		T Test	
	Obs.	Mean	Obs.	Mean	P value	
Weight at birth, in grams	309	2,555.8	303	2,636.3	0.281	
Low birthweight (proportion)	309	0.427	303	0.360	0.088	*

*** p<0.01, ** p<0.05, * p<0.10

4.2.1. Balance tests

Results of the balance test of potential covariates among the critical cohort of children in the analysis of birthweight outcomes are shown below. Test of difference of means between control and treatment showed that baseline household characteristics were balanced (Table 4.7). Significant difference was observed, however, in supply side variables. As in the balance test for the critical cohort of nutrition and health outcomes, treatment areas have better access barangay health stations and government hospitals, while control areas have better access to rural health units and servicing doctors.

Table 4.7. Balance tests to identify covariates for birthweight

Covariate	Number of obs.	Sample Mean	Control Mean	Treatment Mean	T Test (p-value)	K-Smirnov (p-value)
Sex of child: 1=Male	610	0.515	0.520	0.512	0.879	NA
Mother/caretaker's age, 2017	612	37.899	37.920	37.881	0.946	0.931
Household size, 2008	589	5.565	5.670	5.466	0.219	0.303
Proportion of adult members (>25yo) with educational attainment (2008)						
No grade completed	589	0.051	0.060	0.040	0.142	0.984
Elementary	589	0.492	0.500	0.486	0.717	0.895
High School	589	0.338	0.330	0.350	0.444	0.869
College or above	589	0.119	0.110	0.124	0.640	1.000
Presence of barangay health station in barangay	612	0.796	0.840	0.749	0.005*	NA
Presence of rural health unit in barangay	612	0.075	0.050	0.102	0.012**	NA
Presence of government hospital in barangay	612	0.109	0.160	0.056	0.000*	NA
Presence of any government health facility in barangay	609	0.552	0.280	0.830	0.000*	0.011

*** p<0.01, ** p<0.05, * p<0.10

4.2.2. Impact estimates

Impact estimates on the timely provision of program inputs on birthweight outcomes are shown in Table 4.8. No significant impact on the average birthweight was observed although higher birthweights were observed among the treatment group compared to control. In terms of the likelihood of having low birthweight, that is weight at birth of less than 2500 grams, significant impact was noted using Model 2 (controlling for sex of child). From the results, children in the treatment group were less likely to be born with low birthweight by 6.7 percentage points (42.9% among control and 36.2% among treatment). These children presumably were able to benefit from program interventions for the full duration of their first 1000 days of life. Although the estimates in the other models were not significant, the predicted values for the control mean and impact were comparable. This may point to the possibility that the observed impact in Model 2 could have been significant in other models, but the lower sample size reduced the power of the estimates, that is, despite the addition of covariates in the model. In summary, the results are inconclusive and needs to be verified through further research or replication of the study with a larger sample size.

Table 4.8. Average marginal effects for birthweight outcomes

Outcome		Model 1	Model 2	Model 3	Model 4
Birthweight of child (grams)	Impact	80.5	73.7	59.1	87.5
	Std. Error	127.5	75.9	125.5	130.1
	Control	2,555.8	2,557.5	2,566.5	2,550.8
	No. of Obs.	612	610	587	584
	Model	OLS	OLS	OLS	OLS
Low birthweight <2500g (proportion)	Impact	-0.067	-0.067*	-0.056	-0.066
	Std. Error	0.063	0.040	0.062	0.063
	Control	0.427	0.429	0.423	0.430
	No. of Obs.	612	610	587	584
	Model	Probit	Probit	Probit	Probit
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality
	Covariates	None	Child char.	Child and HH char.	Child,HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Individual covariates - sex; Household characteristics –household size; and Supply covariates – BHS, RHU, government hospital, and number of doctors in the community.

4.3. Birth spacing

The critical cohort for birth spacing outcomes requires two consecutive births or conception within the critical period of February 2009 to January 2012. As the period of reference only covers a three-year interval, it is expected that the only few observations in the sample will satisfy the criteria for critical cohort. In total, only 228 women were included in the analysis of birth spacing outcomes.

From the Table 4.9, women in the control group have longer birth spacing intervals and higher proportion with birth spacing of at least 18 months. Differences were however not significant between groups. For both control and treatment, the average birth interval is more than 720 days or at least 24 months, and proportion of women with ideal birth spacing within the window is at 78 percent and 86 percent for treatment and control, respectively.

Table 4.9. Average birth spacing interval and proportion of ideal birth spacing by treatment assignment

Outcome	Control		Treatment		T Test
	Obs.	Mean	Obs.	Mean	P value
Birth spacing interval (days)	97	752.0	131	723.7	0.395
Birth spacing at least 18 months/ 540 days (proportion)	97	0.856	131	0.779	0.143

4.3.1. Balance tests

Results of the balance test of covariates for birth spacing show that observations in the control and treatment groups were similar in terms of age, household size, and presence of barangay health station in the barangay (Table 4.10). Only the presence of a rural health unit in the barangay was imbalanced between the two groups, with the control group having better access to a RHU in the community (7% compared to 4.6%).

Table 4.10. Balance Tests to identify covariates for birth spacing outcomes

Covariate	Number of obs.	Sample Mean	Control Mean	Treatment Mean	T Test (p-value)	K-Smirnov (p-value)
Mother/caretaker's age, 2017	228	36.434	36.460	36.412	0.948	1.000
Household size, 2008	219	5.347	5.520	5.222	0.273	0.654
Presence of barangay health station in barangay (proportion)	228	0.702	0.740	0.672	0.252	NA
Presence of rural health unit in barangay (proportion)	228	0.070	0.100	0.046	0.095*	NA

*** p<0.01, ** p<0.05, * p<0.10

4.3.2. Impact estimates

The results of the estimation showed no significant difference in the birth spacing outcomes of women in the control and treatment groups. Consistent with the means presented in the previous table, the predicted birth interval for both control and treatment groups is at least 720 days or 24 months (Table 4.11). Nonetheless, since the analysis was limited to a small sample only, the outcome may be re-evaluated in further studies using a bigger sample size.

Table 4.11. Average marginal effects for birth spacing outcomes

Outcome		Model 1	Model 2	Model 3	Model 4
Birth spacing intervals in days	Impact	-28.3	-19.0	-30.8	-23.7
	Std. Error	30.4	27.9	31.2	31.2
	Control	752.0	746.7	751.9	747.8
	No. of Obs.	228	228	219	219
	Model	OLS	OLS	OLS	OLS
Ideal birth spacing (proportion)	Impact	-0.077	-0.071	-0.072	-0.060
	Std. Error	0.051	0.052	0.053	0.053
	Control	0.856	0.840	0.849	0.843
	No. of Obs.	228	214	219	219
	Model	Probit	Probit	Probit	Probit
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality
	Covariates	None	Child char.	Child and HH char.	Child, HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Individual covariates - age; Household characteristics –household size; and Supply covariates – BHS, RHU, in the community.

4.4. Education: Cohort of children 5 years old in February 2009 to January 2012

The estimation of impact of the program on time critical education outcomes used two cohorts of children: children who were 5 years old from February 2009 to January 2012 and children who were 6 years old during the same time. This subsection presents the results using the cohort of children aged 5 years old from February 2009 to January 2012.

In total, 1,042 children formed the cohort of interest. Of which, 500 were in the control group and 542 were in the treatment group (Table 4.12).

On the average, children in the control and treatment groups start kinder at the same time, that is at age 5. The proportion of children who started Kindergarten on or before age 5 is also comparable between treatment and control 78 percent and 77 percent, respectively. Closer inspection of the data showed that among those who did not start enrollment in Kinder by age 5, majority started at age 6 (21.5% of the total sample), while a few (2% of the total) started at age 7 or older (not shown).

Table 4.12. Means of early childhood education outcomes, by treatment assignment

Outcome	Control		Treatment		T Test
	Obs.	Mean	Obs.	Mean	P value
Age child started Kinder (years)	500	5.244	542	5.186	0.112
Child started Kinder at age 5 (proportion)	500	0.770	542	0.779	0.740

*** p<0.01, ** p<0.05, * p<0.10

4.4.1. Balance tests

Potential covariates for this cohort of children included age of the child in years, sex of the child, household size and educational attainment of household members at baseline, and the number of preschools in the barangay. From the results, imbalance between control and treatment were observed in educational attainment and access to preschool in the barangay. Based on the averages, there were slightly more public or private preschools in treatment barangays compared to control (2.8 versus 2.5) in 2011 (Table 4.13).

Table 4.13. Balance tests to identify covariates for early childhood education outcomes

Covariate	Number of obs.	Sample Mean	Control Mean	Treatment Mean	T Test (p-value)	K-Smirnov (p-value)
Age in years	1,178	11.287	11.300	11.275	0.667	0.967
Sex of child: 1=Male	1,178	0.467	0.470	0.467	1.000	NA
Household size, 2008	1,160	5.858	5.900	5.814	0.457	0.865
Proportion of adult members (>25yo) with educational attainment (2008)						
No grade completed	1,160	0.054	0.050	0.054	0.951	1.000
Elementary	1,160	0.561	0.590	0.535	0.034**	0.199
High School	1,160	0.297	0.280	0.313	0.142	0.597
College or above	1,160	0.088	0.080	0.098	0.138	0.956
Number of preschool in barangay	1,178	2.666	2.500	2.834	0.051*	0.007

4.4.2. Impact estimates

The findings indicate that start of schooling did not differ between the treatment and control children included in the analysis (Table 4.14). Based on this, there is no evidence to support the hypothesis that timely provision of program inputs for children 5 years old result in on-time enrollment in Kindergarten. This was consistently seen for both age at start of enrollment in Kinder, and the proportion of children who started Kinder at 5 years old.

Table 4.14. Average marginal effects for early childhood education outcomes

Outcomes		Model 1	Model 2	Model 3	Model 4
Age child started Kinder	Impact	-0.058	-0.065	-0.064	-0.070
	Std. Error	0.054	0.046	0.052	0.051
	Control	5.244	5.248	5.249	5.252
	No. of Obs.	1,042	1,042	1,027	1,027
	Model	OLS	OLS	OLS	OLS
Child started Kinder at age 5 (proportion)	Impact	0.009	0.012	0.011	0.013
	Std. Error	0.037	0.029	0.034	0.034
	Control	0.770	0.768	0.767	0.766
	No. of Obs.	1,042	1,042	1,027	1,027
	Model	Probit	Probit	Probit	Probit
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality

Outcomes		Model 1	Model 2	Model 3	Model 4
	Covariates	None	Child char.	Child and HH char.	Child,HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Individual covariates – age, sex; Household characteristics –household size, proportion of household members by level of education; and Supply covariates – number of preschool in the barangay

4.5. Education: Cohort of children 6 years old in February 2009 to January 2012

This subsection presents the results of the analysis among the cohort of children who were 6 years old in February 2009 to January 2012. In all, there were 1,105 children who were included in the analysis. This consisted of 559 children in the control and 546 children in the treatment (Table 4.15). On the average, children in the treatment group started Grade 1 earlier than children in the control group. The significant difference between control and treatment was not observed however in terms of proportion of children that started Grade 1 on or before age 6 despite the 3.6 percentage point difference in proportions (70% in treatment versus 66.4% in control).

In terms of the number of years of delay in schooling, both outcome indicators examined showed that the average delay among treatment group children is lower compared to children in the control group. The average number of levels accomplished and completion rates in elementary, regardless of what age they started schooling, were not statistically different between control and treatment. It must be noted however that for both treatment and control groups, completion rates in elementary where high at 87 percent among children in control, and 90 percent among children in the treatment group. Table 4.16 shows the distribution of the children in the control and treatment by grade level as of SY 2017-2018. As of data collection, the children in the critical cohort were ages 11 to 13. Expectedly, majority (77.4%) of the children were in Grade 6 or in the first two levels of junior high school.

Table 4.15. Means of education outcomes, by treatment assignment

Outcome	Control		Treatment		T Test	
	Obs.	Mean	Obs.	Mean	P value	
Age child started Grade 1	559	6.390	546	6.300	0.022	**
Child started Grade 1 at age 6 (proportion)	559	0.664	546	0.701	0.178	
Number of years delay, based on prescribed starting age	536	0.556	523	0.438	0.084	*
Number of years delay, based on age started Grade 1	533	0.906	522	0.724	0.031	**
Number grade levels accomplished	536	5.767	523	5.837	0.362	
Elementary Completion (proportion)	447	0.870	419	0.895	0.260	

*** p<0.01, ** p<0.05, * p<0.10

Table 4.16. Distribution of control and treatment by grade level as of SY 2017-2018

Grade level as of SY 2017-2018	Control	Proportion Treatment	Sample
No grade completed	0.002	0.000	0.001
Daycare or Kinder	0.000	0.002	0.001
Grade 1	0.002	0.000	0.001
Grade 2	0.002	0.002	0.002
Grade 3	0.004	0.009	0.006
Grade 4	0.018	0.024	0.021
Grade 5	0.091	0.071	0.081
Grade 6/Elementary Graduate	0.278	0.254	0.266
Grade 7/1st Year High School	0.294	0.289	0.291
Grade 8/2nd Year High School	0.194	0.241	0.217
Grade 9/3rd Year High School	0.069	0.062	0.066
Grade 10/4th Year High School	0.002	0.002	0.002
Elementary ADM/ALS	0.002	0.000	0.001
Out of School	0.045	0.042	0.043
SPED	0.000	0.002	0.001

4.5.1. Balance tests

Results of the balance test between treatment and control show that the sample is balanced except for the educational attainment of household members where higher proportion of adult members in the treatment households were able to finish high school compared to control. On the average, there were 2 to 3 public or private preschools and 1 or 2 public or private elementary schools per barangay in 2011 (Table 4.17). However, the data also shows that not all barangays had a high school as of 2011.

Table 4.17. Average marginal effects for education outcomes

Covariate	Number of obs.	Sample Mean	Control Mean	Treatment Mean	T Test (p-value)	K-Smirnov (p-value)
Age in years	1,109	12.317	12.350	12.287	0.299	0.971
Sex of child: 1=Male	1,109	0.503	0.500	0.506	0.832	NA
Household size, 2008	1,100	6.079	6.140	6.013	0.270	0.906
Proportion of adult members (>25yo) with educational attainment (2008)						
No grade completed	1,100	0.058	0.060	0.056	0.699	1.000
Elementary	1,100	0.566	0.600	0.533	0.009***	0.036
High School	1,100	0.285	0.260	0.312	0.014**	0.177
College or above	1,100	0.091	0.080	0.099	0.248	0.997
Number of preschool in barangay	1,109	2.677	2.600	2.761	0.352	0.006
Number of elementary school in barangay	1,109	1.791	1.810	1.775	0.772	0.029
Number of high school in barangay	1,109	0.414	0.430	0.402	0.579	0.053

*** p<0.01, ** p<0.05, * p<0.10

4.5.2. Impact estimates

Estimates generated using the four models among children 6 years old during the critical period show that children in the treatment group started grade 1 earlier than children in the control group. This impact was only significant in Model 2 estimates (Table 4.18). Although not statistically significant, impact estimates for the other models were comparable and consistent in sign.

In terms of proportion of children who started Grade 1 on or before age 6, the treatment showed higher values at 70 percent compared to the control at 67 percent. The difference was, however, not significant between the two.

Delays in schooling were measured as the difference of the expected grade level and the actual grade level of the child. Expected grade level was determined based on two standards: (1) based on prescribed grade level vis-à-vis age by the Department of Education; and (2) based on expected grade level of a child according to what age he/she started the first grade. Using DepEd prescribed grade level, children in the treatment group experienced less delay compared to the control by 0.08 of a year (1 month) and 0.12 year (1 ½ months) on the average. This difference was not statistically significant between the two comparison groups.

Using the expected grade level that adjusted for the age of the child when he/she started grade 1, significant impact was noted in Model 2 where number of years of delay is up to 0.2 or 2 ½ months on the average. This however was not observed in other models. For the 3rd and 4th models that controlled for household characteristics and supply conditions, the estimated impact is lower at 0.13 or 1 ½ months on the average.

Number of grade levels accomplished for the children in the treatment group is 5.8 levels and 5.7 levels for the control. This measure reflects the predicted number of grade levels accomplished by the children in the control and treatment groups at the time of data collection regardless of when they started schooling. From the results, receipt of program inputs at age 6 does not result in significantly higher number of grade levels completed.

The final indicator studied pertains to the completion rate in elementary or the proportion of children in the sample that were able to complete elementary education. The sample only included children at least 12 years old as of data collection. No significant difference between the proportion of children that completed elementary between the control and treatment were noted. Predicted completion rate for both control and treatment is between 87 to 88 percent.

Table 4.18. Average marginal effects for education outcomes

Outcomes		Model 1	Model 2	Model 3	Model 4
Age child started Grade 1	Impact	-0.090	-0.101**	-0.086	-0.087
	Std. Error	0.062	0.050	0.058	0.058
	Control	6.390	6.395	6.390	6.390
	No. of Obs.	1,105	1,105	1,096	1,096
	Model	OLS	OLS	OLS	OLS
Child started Grade 1 at age 6 (proportion)	Impact	0.038	0.047	0.032	0.031
	Std. Error	0.041	0.034	0.040	0.040
	Control	0.664	0.659	0.666	0.667
	No. of Obs.	1,105	1,105	1,096	1,096
	Model	Probit	Probit	Probit	Probit
Number of years delay, based on prescribed starting age	Impact	-0.118	-0.116	-0.072	-0.069
	Std. Error	0.104	0.079	0.090	0.084
	Control	0.556	0.555	0.536	0.534
	No. of Obs.	1,059	1,059	1,050	1,050
	Model	OLS	OLS	OLS	OLS
Number of years delay, based on age started Grade 1	Impact	-0.182	-0.195*	-0.137	-0.133
	Std. Error	0.139	0.106	0.125	0.117
	Control	0.906	0.913	0.888	0.885
	No. of Obs.	1,055	1,055	1,046	1,046
	Model	OLS	OLS	OLS	OLS
Number grade levels accomplished	Impact	0.071	0.116	0.072	0.069
	Std. Error	0.106	0.079	0.090	0.084
	Control	5.767	5.745	5.768	5.769
	No. of Obs.	1,059	1,059	1,050	1,050
	Model	OLS	OLS	OLS	OLS
Elementary Completion (proportion)	Impact	0.025	0.028	0.012	0.007
	Std. Error	0.032	0.027	0.030	0.026
	Control	0.870	0.869	0.876	0.879
	No. of Obs.	866	866	862	862
	Model	Probit	Probit	Probit	Probit
	Clustering	Barangay	Barangay	Barangay	Barangay
	Fixed Effects	-	Municipality	Municipality	Municipality
	Covariates	None	Child char.	Child and HH char.	Child, HH & Supply char.

*** p<0.01, ** p<0.05, * p<0.10

Notes: Individual covariates – age, sex; Household characteristics –household size, proportion of household members by level of education; and Supply covariates – Number of preschool, elementary school, and high school in the barangay

5. Discussion

The hypothesis of the study is that the receipt of program benefits during critical periods by the treatment group puts them at an advantage over the control group. The results of the analysis which were presented in Section 4 are further discussed here.

- ***Timely health interventions contribute to reduced prevalence of severe underweight, diarrhea, and fever.***

The study observed positive impact on nutrition, specifically a reduction in the prevalence of severe underweight for treatment group children. However, no significant impact was observed on stunting and wasting despite predicted prevalence rates being lower in the treatment group compared to control.

According to the WHO (2010), stunting or having low height for age reflects the cumulative effects of undernutrition and infections that start during the child's fetal development, while wasting generally indicates acute weight loss but also can occur from chronic malnourishment. On the other hand, underweight is considered a composite indicator that may occur due to stunting caused by long term depravation or poor environmental conditions, or due to wasting which is usually caused by short term illnesses like diarrhea. Because of this, it is usually difficult to interpret changes in prevalence of underweight as both stunting and wasting affects the measurement of the child's weight. However, the lower prevalence of severe stunting in the treatment relative to the control in the test of difference in means (Table 4.2) may be an indication that the findings on underweight have been partly driven by the lower severe stunting prevalence.

The result is contrary to findings of the regression discontinuity design (RDD) study of the third wave of impact evaluation, which noted negative impact on nutrition outcomes such as the prevalence of underweight and stunting. This inconsistency in the results of stunting and underweight may be attributed to the importance of timing of relevant inputs in instigating impact on outcomes such as nutrition. It must be noted that the RDD study used a cross-section sample of households that may have been exposed to the program at different times, while the RCT study specifically studied children who have been exposed during critical time periods. The findings of this study on nutrition points to how critical the 1,000-day window is to a child's health and nutrition. Not only do interventions need to be targeted to the correct group, but they also need to be provided at the right time.

Significant reduction in the probability of treatment group children having low birthweight was observed in only one out of four models examined. Although this result may indicate positive impact of the program on the children's neonatal development and maternal health among those who received program benefits on time, the inconsistency of the estimates makes the findings inconclusive.

The lack of strong positive impact on stunting as well as birthweight may be explained partly by the utilization levels of the mothers of the children included in the analysis. Note that low birthweight is highly dependent on the health and nutrition of the pregnant women, including poor health care during pregnancy (WHO, 2010). Likewise, 20 percent of stunting can be attributed to fetal undernutrition– which is primarily due to maternal health conditions during pregnancy (Christian, et al. 2013, WHO 2014). Table 5.1 shows the average utilization levels of the mothers in the control and treatment groups during their pregnancy of the children in the critical cohort.

From the data, no significant difference was observed in most of the inputs on maternal health care. Although skilled-birth attendance and facility-based delivery were higher for pregnancies in the treatment group, it must be noted that prenatal and postnatal care services were either indifferent between the comparison groups or worse off in the treatment. For instance, a lower proportion of the pregnancies were able to receive tetanus toxoid injections during prenatal care visits, potentially pointing to relatively poorer quality of services availed by the treatment group. In addition, prenatal care services from a health facility and availment of postnatal care services were lower in proportion for the treatment group compared to the control. These observations show that although treatment households were able to receive cash grants, conditionalities, and FDS sessions earlier than the control group, the availment of maternal health care services has not improved significantly in terms of prenatal and postnatal services during the reference period. This is an important observation as all the maternal health care services, counselling and interventions related to the care of the fetus and the newborn are provided during the prenatal and postnatal visits in the health facilities.

Table 5.1. Utilization of maternal health care services during pregnancy of critical cohort of children

Maternal Health Care inputs	Total Obs.	Control Mean	Treatment Mean	Diff. (T-C)	T Test p value	
Number of prenatal care visits during the pregnancy	1,188	5.518	5.360	-0.158	0.262	
At least 1 prenatal care visit during the pregnancy	1,211	0.978	0.982	0.004	0.625	
At least 4 prenatal care visits during the pregnancy	1,211	0.755	0.774	0.019	0.438	
Weight was taken during prenatal visit	1,184	0.935	0.947	0.012	0.377	
Height was taken during prenatal visit	1,176	0.781	0.778	-0.003	0.911	
Blood pressure was taken during prenatal visit	1,186	0.950	0.942	-0.008	0.536	
Urine sample was taken during prenatal visit	1,183	0.385	0.395	0.010	0.729	
Blood sample was taken during prenatal visit	1,176	0.309	0.322	0.013	0.626	
Tetanus toxoid injection was provided during prenatal visit	1,171	0.859	0.824	-0.035	0.099	*
All services were availed during prenatal visit	1,187	0.212	0.228	0.016	0.512	
Prenatal care availed from a skilled health professional	1,225	0.947	0.934	-0.013	0.335	
Prenatal care availed from a health facility	1,224	0.917	0.887	-0.030	0.080	*
Iron supplementation during the pregnancy	1,222	0.925	0.892	-0.034	0.119	
Frequency of iron supplementation during the pregnancy	1,193	79.082	72.089	-6.994	0.113	
Skilled birth attendance	1,218	0.481	0.538	0.057	0.046	**
Skilled birth attendance by a doctor	1,218	0.148	0.173	0.026	0.220	
Skilled birth attendance by a nurse	1,218	0.040	0.044	0.004	0.730	
Skilled birth attendance by a midwife	1,218	0.327	0.352	0.025	0.357	
Facility-based delivery	1,235	0.305	0.386	0.081	0.003	***

Maternal Health Care inputs	Total Obs.	Control Mean	Treatment Mean	Diff. (T-C)	T Test p value	
Postnatal care	1,233	0.772	0.722	-0.050	0.045	**
Postnatal care within 24 hours	903	0.323	0.309	-0.015	0.636	
Postnatal care within 72 hours	903	0.510	0.498	-0.012	0.718	
Postnatal care from a skilled health professional	918	0.790	0.830	0.041	0.116	
Postnatal care from a skilled health professional, within 24 hours	903	0.262	0.286	0.024	0.427	
Postnatal care from a skilled health professional, within 72 hours	903	0.386	0.403	0.017	0.601	
Postnatal care from a health facility	1,218	0.460	0.485	0.025	0.373	

*** p<0.01, ** p<0.05, * p<0.10
T = Treatment; C= Control

This study also found lower incidence of diarrhea and fever among children in the treatment group compared to control. Since susceptibility to infections is largely influenced by sanitation practices of the household, the water and toilet conditions of the households of the cohort children included were examined and shown in Table 5.2 . The proportion of children whose households have sanitary toilet types (e.g., water-sealed, closed pit) is higher by 5 percentage points in the treatment group relative to control. Compared to the baseline averages (Table 4.1), the proportion with sanitary toilet facilities have drastically improved by around 40 percentage points for both control and treatment. However, the relative difference between control and treatment proportions – with the treatment having better toilet facilities compared to control – had already been observed at baseline. In contrast, the proportion of children with safe water source (e.g., community water system, peddler, wells) in the treatment and control were comparable at 77 percent and 79 percent, respectively. The proportions for water source were also relatively stable compared to the baseline.

Table 5.2. Water and sanitation conditions of households, 2017

Water and sanitation conditions, 2017	Total Obs.	Control Mean	Treatment Mean	Diff. (T-C)	T Test p value	
Proportion of children living in households with sanitary/positive toilet condition	1,641	0.777	0.827	0.050	0.010	**
Proportion of children living in households with safe/positive water source	1,641	0.772	0.789	0.017	0.400	

*** p<0.01, ** p<0.05, * p<0.10
T = Treatment; C= Control

As improvement in the sanitation facilities were both observed in the treatment and control groups, the positive impact on the incidence of illnesses may be explained by other factors. These other factors include the hygiene practices of the household members especially the primary caretaker of the child, maternal health and nutrition, nutritional status of the child, and other practices related to the care of children such as breastfeeding, dietary practices, micronutrient supplementation – especially Vitamin A and Zinc - utilization of health services and interventions including deworming, growth monitoring, and health checkups (WHO 2010).

In the previous evaluations, the program has been noted to improve utilization of child health services for children 0 to 5 years old including vitamin A and iron supplementation, growth monitoring, and visits to health facilities. In a comprehensive review, Hossain et al. (2016) noted that nutrition-sensitive interventions, which include social safety nets, are more effective when paired with programs their study classified as nutrition-specific interventions such as dietary or micronutrient supplementation for mothers and children, breastfeeding promotion, and disease prevention and management. Assuming the findings of the previous evaluation were true to the experience of the treatment households, the reduction in the incidence of common illnesses as well as the improvement in underweight prevalence may have been influenced by the improvement of childcare practices and utilization of health care services of children.

Improvement in the child practices could be a result of Family Development Sessions (FDS) through its messages on proper health and sanitation practices, and health interventions available for children. Although the cash grants were reimbursed to the control group, the FDS sessions were assumed to have been offered to the treatment group since their registration to the program. Based on this, the treatment group were able to receive the FDS intervention two years earlier than the control, and thus have the advantage of having received more information on proper childcare practices than the control. This improvement in the beneficiary's behavior, however, cannot be validated since practices when the children were younger were not captured in the current data. At the same time, most of the key interventions like micronutrient supplementation and growth monitoring were offered and availed in previous years when the cohort children of interest were younger (i.e., 0 to 5 years old).

Aside from these findings, the study also found no impact on the incidence of vaccine preventable diseases. This is consistent with the persistent finding in the previous evaluations that the program does not result in increased proportion of children who received complete immunization by age one. Table 5.3 shows the proportion among the children in the who received immunization by type of vaccine and treatment assignment. Based on the data, lower proportion of children in the treatment group were immunized with BCG, DPT, Polio, and Hepatitis B. For other vaccines, no difference was noted between control and treatment.

Table 5.3. Immunization rates by type of vaccine and treatment assignment

Vaccine type	Total Obs.	Control Mean	Treatment Mean	Diff. (T-C)	T Test p value	
BCG/ Tuberculosis	1,612	0.972	0.941	-0.031	0.002	***
DPT/ Diphtheria and tetanus toxoid with pertussis (3 doses)	1,376	0.787	0.697	-0.090	0.000	***
Poliomyelitis (3 doses)	1,363	0.771	0.687	-0.083	0.001	***
Hepatitis B (3 doses)	1,371	0.665	0.590	-0.075	0.004	***
Measles	1,579	0.941	0.922	-0.019	0.128	
Mumps	1,470	0.706	0.707	0.000	0.985	
Rubella	1,479	0.703	0.703	-0.001	0.981	
MMR (Measles, Mumps, Rubella combination vaccine)	1,509	0.897	0.895	-0.001	0.936	
Full Immunization	1,334	0.290	0.301	0.010	0.683	

*** p<0.01, ** p<0.05, * p<0.10
T = Treatment; C= Control

Xie and Dow (2005) reported that vaccination rates among children is a factor of both the supply and demand sides. In the context of the program, this means that both access to vaccination services and attitudes toward vaccination are important drivers of immunization among children. From the Table 5.3, it must be noted that individual vaccination rates are high for both control and treatment. However, the rates for the availment of the complete array of vaccines – by age one – is very low. This may indicate lack of understanding among parents regarding the correct immunization schedule that should be received by their children.

- ***Timing of program inputs do not have impact on birth spacing intervals***

Based on the results, the provision of program inputs did not increase birth spacing intervals among women. This may be explained by the type of program inputs provided by the program. Although the program interventions such as the FDS and program conditions are expected to indirectly influence fertility behavior of beneficiaries, the program does not explicitly require mothers or women to avail of family planning commodities and interventions. This result may also confirm findings of the Regression Discontinuity study of the 3rd wave evaluation where women in Pantawid households have higher awareness levels and trial use of modern family planning methods but did not show sustained use of these methods.

A study by Bautista et. al. (2017) noted that reasons why the use of modern contraceptives was not sustained by Pantawid beneficiaries include fear of use, side effects, and bleeding associated with its use with more than half (53%) of women respondents citing these as reason. The study also found that factors affecting facility visits of women beneficiaries include having to worry about leaving their households and asking permission from their spouse. In addition, a high percentage of the women (43%) reported having been influenced by others – including their spouses – on their pregnancy decisions.

One explanation could be the indifferent or poorer utilization rates of maternal health care services among treatment households as shown above (Table 5.1). Note that aside from information on maternal and infant care, counselling on responsible parenthood and reproductive health are also provided during availment of maternal health care services. The lack of improvement in utilization rates of maternal services may therefore be related to stagnant levels of access to reproductive health services.

Another possibility is that the provision of grants to these households may have also allowed parents in the treatment households to be at ease in having children, instead of waiting a little bit longer. Nevertheless, it is important to note that high proportion of women in both the control and treatment groups achieved ideal birth spacing of at least 18 months. Average birth spacing interval was noted at 24 months or two years. This is a welcome observation as findings by Agudelo et. al (2006) showed that birth intervals greater than 18 months pose relatively lower risk for the mother and child's health.

It must be emphasized that analysis was performed using a small number of observations because of the criteria of at least two consecutive births or conception within the reference period. Results and comparison of estimates with other studies should therefore be examined cautiously. Further analysis on the program impact on birth spacing interval and fertility behavior should be pursued. It is also worth investigating whether length of program exposure affects birth intervals in treated households further into the future.

- ***Timing of program inputs have small impacts on age-appropriate educational attainment.***

Low proportions of children attending Kinder at age 5 may be explained by the fact that the K-12 has not been fully implemented during the time reference used (2009-2012). Full implementation of the requirement than children start kindergarten started only on 2012. In the first wave evaluation, the lack day care centers were consistently cited as the major reason for not enrolling in daycare or kindergarten on-time. In the estimation, access to a preschool in barangay has been controlled for.

Another common observation is that parents think children are too young to enter Kindergarten at age 5. From the data of the second evaluation, 1/3 of children aged 5 who were not enrolled in kindergarten or preschool were "too young" to be enrolled according to the respondents. A secondary reason is lack of financial capacity to send the children to school, followed by lack of supporting documents such as the child's birth certificate. In a more recent context, David et. al. (2018) also observed a proportion of 5-year-olds that are not enrolled in preschool or kinder; and the authors suggest that this is a result of parents being confused as to what months are used for the age cut-offs. Parents are therefore unsure whether their own child should already be enrolled in school or not.

The results on the cohort of children aged six during the reference period indicate positive program impacts on age of start of enrollment in grade 1 and delay in schooling. However, these results were not robust to all models that were estimated. The lack of strong impact on the education outcomes therefore need to be examined further.

Results showed that 3 out of 10 children enroll in the first grade by age six for both control and treatment. This is somewhat expected as the same proportion of children among 5 years old were delayed in enrollment in kinder. From these proportions, it can be inferred that little catching up happens for both treatment and control when delay in kinder has already occurred.

On the other hand, the lack of strong impact on delays in schooling and progression through grade levels may be a sign that the control group were able to catch up with the treatment group even if they were introduced later to the program. It is possible that the lead time of two years was not sufficient to induce a conspicuous gap between the treatment and control in terms of progression through schooling. The reimbursement of the 12-month worth of grants may have played a part in the catching up of the control group. Conversely, the amount of grants provided to the treatment group during the first two years of program participation may not be enough to push the treatment children ahead of the control. The effect of the cash grants may have been diluted because it was used to cover other expenses in the household, and/or split to cover education expenses of non-beneficiary children in the household. Further analysis on this matter may be done in future studies.

Despite the lack of strong impact on education outcomes, high completion rates in elementary were noted for both control and treatment. rom the results, 87 to 88 percent of children age 12 to 15 were able to complete elementary education as of data collection. According to DepEd/UNESCO, the average completion rate among the poorest quintile of the population is lower at 79 percent as of 2018.

The findings are consistent with previous evaluations and the RDD study in noting good performance indicators among elementary-level students. In these studies, it is suggested that performance indicators in elementary education are already at remarkably high levels, so measurement of program impact is difficult. In contrast, program impact has been repeatedly observed on education outcomes of older children as baseline rates tend to be lower. Unfortunately, lock-in effects for education outcomes of older children – that is, children age 12 to 14 in 2009 to 2012 – were not analyzed because most exceeded the age range covered in the survey of children.

6. Summary

The *Pantawid Pamilyang Pilipino Program* (*Pantawid Pamilya*) is a conditional cash transfer program initiated in the Philippines in 2008 through the Department of Social Welfare and Development. It currently stands as the core social protection strategy of the Philippine Government. The program serves as a social safety net for poor households, but its ultimate objective is to stop the intergenerational transmission of poverty through human capital investments.

To receive the cash grants, the program requires beneficiary households to comply with conditionalities on education and health. An amount of PHP 500 per month is provided to households compliant with health conditionalities, which includes attendance to Family Development Sessions (FDS); and PHP 300 and PHP 500 per month is provided to compliant elementary and high school students, respectively, for ten months per year. In 2017, households complying with health conditionalities also began receiving a rice subsidy of PHP 600 per month.

Two rounds impact evaluation of *Pantawid Pamilya* presented evidence of the program's general success in terms of its main objectives of keeping children healthy and in school (DSWD and WB 2014; DSWD 2014; DSWD 2015). Improvements in education outcomes such as enrollment and regular attendance were noted by the first two impact evaluations, particularly for ages with high risk of dropping out. The program was also found to result in increased access to maternal and child health services for beneficiaries. This was reflected in shifts in spending towards health and education. The program did not have the desired impact, however, on some child health indicators such as nutrition and immunization, child labor, and household consumption.

In conjunction with the second round of evaluation, a cohort study was performed using the original control and treatment sample of the first impact evaluation study (DSWD 2014). The use of a cohort approach was resorted to when it was found that the control group of the original RCT were reimbursed 12 months' worth of grants 18 months after the treatment group received *Pantawid Pamilya* benefits. This negated the planned analysis based on length of exposure using a panel of RCT treatment and control groups. This, however, allowed a study on the effect of time-critical provision of program benefits utilizing the 18-month gap in receipt of benefits between treatment and control groups. The 2014 cohort study noted positive lock-in effects on education outcomes, and child and maternal health, but also observed underwhelming and/or conflicting results in a few of the outcomes studied.

This RCT cohort study was also conducted as part of the 3rd wave impact evaluation. As in the 2014 cohort study, the objective is to analyze lock-in effects of program inputs on education and health outcomes of specific cohorts—the assumption being that time-critical inputs have a larger effect when provided during a specific period, than if provided outside that period. Children or mothers in treatment areas are presumed to have received program benefits during the critical period while children and mothers in the control areas are presumed to have received benefits beyond the critical time period.

The survey covered 2,265 households with children born between April 2009 and April 2013, from the original treatment and control barangays of the first impact evaluation. The birthday window was used with the intention of concentrating the sample observations to children born within the period when there was asymmetry in program participation and receipt of benefits between treatment areas and control areas. Data collection was conducted from November to December 2017.

The findings show that:

- ***Timely exposure to the program benefits during the first 1000 days of life result in lower prevalence of severe underweight, and prevalence of illness with diarrhea and fever***. The results of the study show that provision of program benefits during the first 1000-days of life results in lower incidence of severe underweight by 3 percentage points, as well as lower incidence of diarrhea (3 percentage points) and fever (4.5 percentage points) among children. Reduction in probability of low birthweight (by 7 percentage points) was observed in one of the estimation models, but impact was not consistently observed in other estimations. No impact was observed in other nutrition outcomes like stunting, wasting, and incidence of cough and vaccine preventable diseases. Lack of improvement in utilization rates of maternal health care services during pregnancy may explain underwhelming results in some outcomes.

- ***Birth intervals were not affected by receipt of program inputs during reference period.*** From the results, the study found no significant impact in the birth interval and proportion of women in the control and treatment groups that achieved the ideal birth spacing duration of at least 18 months. Nevertheless, average birth spacing interval for women in treatment and control groups were greater than ideal birth spacing and implies lower risk for child and maternal wellbeing for both groups.

- ***No strong program impact on education outcomes among children 5 or 6 years old from February 2009 to January 2012.*** Positive program impact was observed for age of start of schooling in first grade (grade 1) and number of years of delay in schooling. However, these results were not consistently observed in other estimations that control for confounding variables. The results indicate that the program benefits during the first two years may not have been sufficient to put the treated children ahead of the control in terms of education outcomes. The amount of grants, and the reimbursement of the 12-month worth of grants to the control may have diluted program impacts. No impact was observed in other outcome indicators such as start of schooling in kindergarten, number of grade levels accomplished, and completion rates in elementary. Nevertheless, completion rates in elementary for both treatment and control were higher than the national average among the poorest quintile. This indicates that beneficiary children, regardless of when they were introduced to the program, have satisfactory education outcomes in the elementary level.

7. Recommendations

Results of the study on child health outcomes underscore the importance of inputs during the first 1000 days of life. This warrant stricter monitoring of pregnant women and children in the program. Examination of utilization of maternal and child health care services, particularly immunization, confirm that there is need to improve uptake rates. This study recommends reinforcement of the current monitoring mechanisms of the program to ensure that beneficiaries can avail of the complete packages of interventions as originally intended.

One improvement that can be done is to ensure that all target beneficiaries are being constantly monitored by the program. In the past few years, the number of children 0 to 5 and pregnant women has tapered off because of inadequate updating of the program database to capture newly born children and succeeding pregnancies after program enrollment[3]. Per program implementation design, compliance monitoring is dependent on the updates on household composition to be filed by the beneficiary households. However, households do not have any incentive to file updates on newborns and new pregnancies as this would entail additional responsibilities in terms of health conditions but without additional amount in the cash grants. Program management must consider having a more active role updating of household information to make sure the pregnant and younger children are continuously monitored.

Aside from ensuring optimal supply conditions for delivery of health services in the community, DOH and LGU must also ensure correct and detailed monitoring of what beneficiaries are availing in health centers. Currently, the health facilities are only required to record whether beneficiaries are compliant or non-compliant to program conditions on health. This can be improved by collecting more details on the services availed by beneficiaries. This additional information can benefit both the Department of Health and the DSWD as program implementers. The DOH can use this to assess the supply – in terms of access and quality - and demand conditions of health services in the facilities for the overall improvement of the health delivery systems and contribute to achievement of public health goals in general. The DSWD on the other hand can use this to assess effectiveness and leakages in the program pathway of change in health outcomes and provide inputs to program design particularly the FDS.

The program should likewise take advantage of passage of the first-1000 days' legislation. Other agencies providing interventions toward the first 1000-days of life campaign should take maximize the use of the FDS as a platform in delivering key messages and promoting availment of services available

The small impacts on education at the primary level provide motivation for the program implementers to re-examine priority target beneficiaries of the education component of the program. From the results, high achievement rates in the primary level are observed in both treatment and control. As in the previous evaluations, this study recommends that the program consider concentrating efforts to older children who are more at risk of dropping out.

As regards the start of schooling, the Department of Education should establish measures to ensure that guidelines on the start of schooling should be uniformly implemented in all schools. Likewise, information drives should be done to let parents know the correct time for children to be enrolled in school. Clearing up the misconception on the start of schooling may lead to

[3] This is explained in more detail in the RDD report of the 3rd wave impact evaluation.

more children enrolling at the right age and experiencing fewer delays in educational attainment.

Lastly, future studies should also conduct a qualitative investigation of why households are unable to comply with health conditionalities. These should identify whether this is due to lack of supply or if households are experiencing other barriers in accessing these services.

8. Bibliography

Alexander, Karl L., Doris R. Entwisle, and Nader S. Kabbani. 2001. "The dropout process in life course perspective: Early risk factors at home and school." *Teacher College Record* 760-822. doi:10.1111/0161-4681.00134.

Amarante, Verónica, Marco Manacorda, Edward Miguel, and Andrea Vigorito. 2011. *Do Cash Transfers Improve Birth Outcomes? Evidence from Matched Vital Statistics, Social Security and Program Data.* NBER Working Paper No. 17690, National Bureau of Economic Research.

Ankroth, Anna J. 2015. *The Effecst of the Introduction of Tuition on College Enrollment in Germany: Results from a Natural Experiment with Special Reference to Students from Low Parental Education Backgrounds.* PhD Dissertation, Michigan: University of Michigan.

Arango, Maria, Stuart Evans, and Zaitun Quadri. 2016. *Education Reform in Chile: Designing a Fairer, Better Higher Education System.* New Jersey, USA: Woodrow Wilson School of Public & International Affairs, Princeton University.

Arriagada, Ana-Maria, Jonathan Perry, Laura B. Rawlings, Julieta M. Trias, and Melissa Zumaeta Aurazo. 2018. *Promoting Early Childhood Development through Combining Cash Transfer and Parenting Programs (English).* Washington, D.C.: World Bank Group. http://documents.worldbank.org/curated/en/489331538646764960/Promoting-Early-Childhood-Development-through-Combining-Cash-Transfer-and-Parenting-Programs.

Asuncion, Eric Jayson V., and Tereso S. Tullao, Jr. 2018. *Evaluation of Unified Student Financial Assistance System In Tertiary Education (UniFAST) in Addressing Capital Market Imperfection in the Philippines.* Working Paper Series 2018-02-049, Manila, Philippines: Angelo King Institute for Economic and Business Studies, De La Salle University.

Attanasio, Orazio, Luis Carlos Gómez, Patricia Heredia, and Vera-Hernández. 2005. *The short-term impact of a conditional cash subsidy on child health and nutrition in Colombia.* Institute for Fiscal Studies. Accessed December 10, 2018. https://www.ifs.org.uk/edepo/rs_fam03.pdf.

Baez, Javier E., and Adriana Camacho. 2011. *Assessing the long-term effects of conditional cash transfers on human capital : evidence from Colombia.* WPS5681, Washington, DC: World Bank. http://documents.worldbank.org/curated/en/150951468240891190/Assessing-the-long-term-effects-of-conditional-cash-transfers-on-human-capital-evidence-from-Colombia.

Balan, Jorge. 2014. *The Southern Cone of the Americas: Higher Education at a Crossroads.* Boston: The Boston College Center for International Higher Education.

Barber, Sarah L, and Paul J Gertler. 2008. "Empowering women to obtain high quality care: evidence from an evaluation of Mexico's conditional cash transfer programme." *Health Policy and Planning* 24 (1): 18-25. Accessed December 14, 2018. doi:doi:10.1093/heapol/czn039.

Barber, Sarah L., and Paul J. Gertler. 2008. "The impact of Mexico's conditional cash transfer programme, Oportunidades, on birthweight." *Tropical Medicine and International Health* 13 (11): 1405-1414. doi:10.1111/j.1365-3156.2008.02157.x.

Barham, Tania, and John A. Maluccio. 2009. "Eradicating diseases: The effect of conditional cash transfers on vaccination coverage in rural Nigeria." *Journal of Health Economics* 28: 611-621. doi:10.1016/j.jhealeco.2008.12.010.

Bastagli, Francesca, Jessica Hagen-Zanker, Luke Harman, Valentina Barca, Georgina Sturge, Tanja Schmidt, and Luca Pellerano. 2016. *Cash Transfers: What Does the Evidence Say? A Rigorous Review of Programme Impact and of the Role of Design and Implementation Features.* London: Overseas Development Institute.

Baum, Sandy, and Kathleen Payea. 2004. *The Benegits of Higher Education for Individuals and Society.* New York: The College Board.

Baumgartner, Hans J., and Viktor Steiner. 2004. *Student Aid, Repayment Obligations and Enrolment into Higher Education in Germany - Evidence from a 'Natural Experiment'.* Berlin, Germany: Free University of Berlin.

Behrman, Jere R., Susan W. Parker, and Petra E. Todd. 2010. "Do Conditional Cash Transfers for Schooling Generate Lasting Benefits? A Five-Year Followup of PROGRESA/Oportunidades." *The Journal of Human Resources* 46 (1): 93-122. doi:10.3368/jhr.46.1.93.

Behrman, Jere R., Susan W. Parker, and Petra E. Todd. 2005. *Long-Term Impacts of the Oportunidades Conditional Cash Transfer Program on Rural Youth in Mexico.* Goettingen: Ibero-America Institute for Economic Research.

Bhutta, Zulfiqar A, Jai K Das, Joy E Lawn, Rehana A Salam, Vinod K Paul, Jeeva M Sankar, Hannah Blencowe, Arjumand Rizvi, Victoria B Chou, and Neff Walker. 2014. *Can Available Interventions End Preventable Deaths in Mothers, Newborn Babies, and Stillbirths, and at What Cost?* Lancet, May 20. Accessed December 10, 2018. doi:http://dx.doi.org/10.1016/S0140-6736(14)607923.

Biglete, Amelia A. 2018. "CHED New Policies, Standards and Guideliens (PSGs)." *The 2018 AACCUP Annual Accreditors' Conference.* Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), Inc. Accessed March 7, 2019. http://www.aaccupqa.org.ph/images/2018AccreditorsConference/Presentations/AACCUPPresentationAsOfSept192018-DrAmyABiglete.pdf.

Black, Robert E, Lindsay H Allen, Zulfiqar A Bhutta, Laura E Caulfield, Mercedes de Onis, and Majid Ezzati. 2008. "Maternal and child undernutrition: global and regional exposures and health consequences." *Lancet.* doi:https://doi.org/10.1016/S0140-6736(07)61690-0.

Bucarey, Alonso. 2018. *Who Pays for Free College? Crowding Out on Campus.* Cambridge, Massachusetts: Department of Economcics, Massachuesetts Institute of Technology.

Buckner, Elizabeth. 2013. *Moroccan Universities Must Begin to Charge Tuition.* September 10. https://www.al-fanarmedia.org/2013/09/moroccan-universities-must-begin-to-charge-tuition/.

Cahyadi, Nur, Rema Hanna, Benjamin A Olken, Rizal Adi Prima, Elan Satriawan, and Ekki Syamsulhakim. 2018. "Cumulative Impacts of Conditional Cash Transfer Programs: Experimental Evidence from Indonesia." *Cambridge: National Bureau of Economic Research.* November. Accessed December 10, 2018. https://www.nber.org/papers/w24670.pdf.

Christian, Parul, Sun Eun Lee, Moira Donahue Angel, Shams Arifeen, Per Ashorn, Fernando Barros, Caroline HD Fall, et al. 2013. "Risk of childhood undernutrition related to small-for-gestational age and preterm birth in low- and middle-income countries." *International Journal of Epidemiology* 340–1355.

Commission on Audit. 2018. *Consolidated Annual Audit Report on the Commission on Higher Education* . Quezon City, Philippines: Commission on Audit.

Commission on Higher Education. 2018. *CHED on COA Report: Free Tuition 2017 reimbursemetns to SUCs almost complete.* Quezon City, NCR, August 21. Accessed November 25, 2018. https://ched.gov.ph/blog/2018/08/21/ched-on-coa-report-free-tuition-2017-reimbursements-to-sucs-almost-complete/.

Conchada, Mitzie Irene P., and Marites M. Tiongco. 2015. *A Review of the Accreditation System for Philippine Higher Education Institutions.* Discussion Paper Series No. 2015-30, Quezon City, Philippines: Philippine Institute for Development Studies.

Conde-Agudelo, Agustin, Anyeli Rosas-Bermúdez, and Ana Cecilia Kafury-Goeta. 2006. "Birth spacing and risk of adverse perinatal outcomes: a meta-analysis." *JAMA* 1809-1823. doi:10.1001/jama.295.15.1809.

De Gayardon, Ariane. 2018. "Income Contingent Loans: Not a Miracle Solution." *International Higher Education* 18-19. doi:http://dx.doi.org/10.6017/ihe.2018.93.10373.

de Groot, Richard, Tia Palermo, Sudhanshu Handa, Luigi Peter Ragno, and Amber Peterman. 2017. "Cash Transfers and Child Nutrition: Pathways and Impacts." *Development Policy Review* 35: 621-643. doi:10.1111/dpr.12255.

DeFranco, Emily A., S Ehrlich, and Louis J. Muglia. 2014. "Influence of interpregnancy interval on birth timing." *BJOG* 121: 1633-1641. doi:10.1111/1471-0528.12891.

Delisle, Jason, and Andres Bernasconi. 2018. *Lessons from Chile's Transition to Free College.* Evidence Speaks Reports, Vol. 2, #43, Washington, D.C.: Brookings Institution. Accessed December 14, 2018. https://www.brookings.edu/wp-content/uploads/2018/03/delisle-and-bernasconi-report.pdf.

Delisle, Jason, and Andres Bernasconi. 2018. *Lessons from Chile's Transition to Free College.* Evidence Speaks Reports, Vol. 2, No. 43, Washington, DC, USA: Brookings Institution.

Department for Education and Skills, Ireland. 2003. *The Future of Higher Education.* London: DfES.

Department of Budget and Management, Philippines. 2018. *2019 CHED budget 'rationalized' not gutted.* Manila, Philippines, August 15.

Department of Social Welfare and Development. 2018. *Pantawid Pamilyang Pilipino Program Implementation Status: 2nd Quarter of 2018.* Accessed December 11, 2018. https://pantawid.dswd.gov.ph/wp-content/uploads/2018/09/Pantawid-Pamilya-2nd-Quarter-Report-2018.pdf.

DSWD and World Bank. 2014. *Philippines conditional cash transfer program impact evaluation 2012.* Report Number 75533-PH, Washington DC: DSWD and World Bank.

DSWD and World Bank. 2014. *Philippines Conditional Cash Transfer Program Impact Evaluation 2012*. Report Number 75533-PH, Washington DC: DSWD and World Bank.

DSWD. 2015. "Impact of Time-Critical Household Investments in Pantawid Pamilyang Pilipino Program: Evaluating the Pantawid Pamilya Using RCT-Cohort Analysis."

DSWD. 2014. "Keeping Children Healthy and in School: Evaluating the Pantawid Pamilya Using Regression Discontinuity Design."

DSWD. 2018. "Pantawid Pamilyang Pilipino Program Implementation Status Report: 2nd Quarter of 2018."

European Commission. 2014. *European Funding Guide.* August 27. http://www.european-funding-guide.eu/articles/grants-and-loans/grants-and-loans-finland.

Feldman, Becca S., Alan M. Zaslavsky, Majid Ezzati, Karen E. Peterson, and Marc Mitchell. 2009. "Contraceptive Use, Birth Spacing, and Autonomy: An Analysis of the Oportunidades Program in Rural Mexico." *Studies in Family Planning* 51-62. https://doi.org/10.1111/j.1728-4465.2009.00186.x.

Fernald, Lia C. H., Paul J. Gertler, and Lynette M. Neufeld. 2008. "The Importance of Cash in Conditional Cash Transfer Programs for Child Health, Growth and Development:." *Lancet* 371 (9615): 828-837. doi:10.1016/S0140-6736(08)60382-7.

Fernandez Lamarra, Norberto. 2002. "La educacio´n superior en la Argentina [Higher education in Argentina]." Report prepared for IESALC. http://www.iesalc.unesco.org.ve/programas/nacionales/argentina/infnac_ar.pdf.

Garcia de Fanelli, Ana Maria. 2005. *Universidad, organizacion e incentivos: Desafios de la politica de financiamiento frente a la complejidad institucional [University, organization,and incentives: Challenges to funding policy from institutional complexity]*. Buenos Aires: OSDE-Miño y Dávila.

Gayardon, Ariane , and Andres Bernasconi. 2016. *Chilean Universities: Not So Tuition-free After All.* Massachusettes, USA: International Higher Education - The Boston College Center for International Higher Education, 23-25. doi:https://doi.org/10.6017/ihe.2016.86.9372 .

Gertler, Paul. 2004. "Do Conditional Cash Transfers Improve Child Health? A Randomized Experiment." *The American Economic Review* 336-341. Accessed October 6, 2014. http://www.jstor.org/stable/3592906.

Gertler, Paul J. , Sebastian Martinez, Patrick Premand, Laura B. Rawlings, and Christel M.J. Vermeersch. 2011. *Impact Evaluation in Practice*. Washington, DC, USA: World Bank.

Gertler, Paul, Sebastian Martinez, and Marta Rubio-Codina. 2012. "Investing Cash Transfers to Raise Long-term Living Standards." *American Economic Journal: Applied Economics* 4 (1): 164-192.

Greenaway, David, and Michelle Haynes. 2003. "Funding Higher Education in the UK: The Role of Fees and Loans." *The Economic Journal* (Blackwell Publishing) CXIII (485): F150-F166.

Habibi, Nader, and Fatma El-Hamidi. 2016. *Why are Egyptian Youth Burning Their University Diplomas? The Overeducation Crisis in Egypt.* Waltham, Massachusetts, USA: Crown Center for Middle East Studies - Brandeis University. Accessed April 2, 2019. https://www.brandeis.edu/crown/publications/meb/MEB102.pdf.

Horch, Dan. 2014. "As Demand for Education Rises in Brazil, For-Profit Colleges Fill the Gap." *The New York Times,* June 19. https://dealbook.nytimes.com/2014/06/19/as-demand-for-education-rises-in-brazil-for-profit-colleges-fill-the-gap/.

InfoFinland. 2019. *infoFinland.fi.* January 28. https://www.infofinland.fi/en/living-in-finland/education/financing-studies.

Jackson, Abby. 2015. "Brazil has tuition-free college - but it comes with a catch." *Business Insider,* June 25. Accessed March 27, 2019. https://www.businessinsider.com/brazil-has-tuition-free-college-but-it-only-serves-a-portion-of-its-citizens-2015-6.

Japan International Cooperation Agency. 2017. *Higher Education Sector Cooperation Planning Survey in Egypt.* Japan: Japan International Cooperation Agency; Asia SEED.

Kamyab, Shahrzad. 2015. "Flying Brains: A Challenge Facing Iran Today." *International Higher Education* (The Boston College Center for International Higher Education). doi:https://doi.org/10.6017/ihe.2007.47.7955 .

Kauder, Björn, and Niklas Potrafke. 2013. *Government ideology and tuition fee policy: Evidence from German states.* Ifo Working Paper No. 159, Munich, Germany: Ifo Institute-Leibniz Institute for Economic Research, University of Munich. Accessed April 15, 2019. https://www.cesifo-group.de/DocDL/IfoWorkingPaper-159.pdf.

Kehm, Barbara. 2014. "How Germany managed to abolish university tuition fees." *The Conversation.* October 13. https://theconversation.com/how-germany-managed-to-abolish-university-tuition-fees-32529.

Kroth, Anna J. 2015. *The Effects of the Introduction of Tuition on College Enrollment in Germany: Results from a Natural Experiment with Special Reference to Students from Low Parental Education Backgrounds.* Ann Arbor: University of Michigan.

Lagarde, Mylene, Andy Haines, and Natasha Palmer. 2009. "The impact of conditional cash transfers on health outcomes and use of health services in low and middle income countries (Review)." *Cochrane Database of Systematic Reviews* (John Wiley & Sons Ltd.) (4). Accessed December 8, 2018. doi:10.1002/14651858.CD008137.

Lagarde, Mylene, Andy Haines, and Natasha Palmer. 2009. "The impact of conditional cash transfers on health outcomes and use of health services in low and middle income countries (Review)." *Cochrane Database of Systematic Reviews* (John Wiley & Sons Ltd.) (4). doi:10.1002/14651858.CD008137.

Lahsini, Chaima. 2018. "Moroccan Government Wants to Put an End to Free Education." *Morocco World News,* January 3. https://www.moroccoworldnews.com/2018/01/237595/moroccan-government-free-education/.

Lan, William, and Richard Lanthier. 2003. "Changes in Students' Academic Performance and Perceptions of School and Self Before Dropping Out of Schools." *Journal of Education for Students Placed at Risk* 309-332.

Lauer, Charlotte. 2002. *Enrolments in higher education: do economic incentives matter?* New York City: MCB UP Ltd. doi:10.1108/00400910210432068.

Lavado, Pablo, and José Gallegos. 2005. "The dynamics of the schooling drop-out in Peru: A framework using duration models." *Centro de Investigación de la Universidad del Pacífico* (Centro de Investigación de la Universidad del Pacífico).

Lazrak, Mohammed, and Yahya Yechouti. 2017. "Issues in Moroccan Higher Education." *International Journal of English Language & Translation Studies* 86-93. Accessed April 2, 2019. http://www.eltsjournal.org/archive/value5%20issue2/12-5-2-17.pdf.

Maluccio, John, and Rafael Flores. 2005. *mpact Evaluation of a Conditional Cash Transfer Program: The Nicaraguan Red de Protección Social.* Washington, DC: International Food Policy Research Institute.

Manley, James, Seth Gitter, and Vanya Slavchevska. 2013. "How Effective are Cash Transfer Programmes at Improving Nutritional Status?" *World Development* (Elsevier Ltd.) 48: 133-155. Accessed December 8, 2018. doi:https://doi.org/10.1016/j.worlddev.2013.03.010.

Marcucci, Pamela N., and D. Bruce Johnstone. 2007. "Tuition fee policies in a comparative perspective: Theoretical and political rationales." *Journal of Higher Education Policy and Management* (Routledge) XXIX (1): 25-40. doi:10.1080/13600800600980015.

Marcucci, Pamela N., and D. Bruce Johnstone. 2007. "Tuition fee policies in a comparative perspective: Theoretical and political rationales." *Journal of Higher Education Policy and Management* XXIX (1): 25-40. doi:10.1080/13600800600980015.

Memo Middle East Monitor. 2017. *Millions lost as one fifth of educated Moroccans leave country.* September 17. https://www.middleeastmonitor.com/20170912-millions-lost-as-one-fifth-of-educated-moroccans-leave-country/.

Ministry of Education, New Zealand. 2017. December 4. https://www.education.govt.nz/news/details-of-fees-free-tertiary-education-and-training-for-2018-announced/.

Mohseni-Cheraghlou, Amin. 2017. "Update from Iran: Iran's Over-Education Crises." *The World Bank.* October 6. http://blogs.worldbank.org/arabvoices/iran-education-crises.

Molina-Millan, Teresa, Tania Barham, Karen Macours, John Maluccio, and Marco Stampini. 2016. *Long-Term Impacts of Conditional Cash Transfers in Latin America: Review of the Evidence.* IDB Working Paper Series: 732, Inter-American Development Bank.

Mollis, Marcela. 2002. *Higher Education Transition in Argentina.* Massachusetts, USA: Center for International Higher Education, Campion Hall, Boston College. doi:https://doi.org/10.6017/ihe.2002.26.6960.

Morris, Saul S., Rafael Flores, Pedro Olinto, and Juan Manuel Medina. 2004. "Monetary incentives in primary health care and effects on use and coverage of preventive health care interventions in rural Honduras: cluster randomised trial." *Lancet* 364 (3450): 2030-2037. doi:10.1016/S0140-6736(04)17515-6.

National Research Council. 2011. *Understanding Dropouts: Statistics, Strategies, and High Stakes Testing.* Washington DC: The National Academies Press.

National Research Council. 2001. *Understanding Dropouts: Statistics, Strategies, and High-Stakes Testing.* Washington, DC: The National Academies Press. doi:https://doi.org/10.17226/10166.

Neidhöfer, Guido, and Miguel Niño-Zarazúa. 2017. *The Long(er)-term Impacts of Chile Solidario on Human Capital and Labour Income.* Working Paper, United Nations University World Institute for Development Economics Research.

Nyaradi, Anett, Jianghong Li, Siobhan Hickling, Jonathan Foster, and Wendy Oddy. 2013. "The role of nutrition in children's neurocognitive development, from pregnancy through childhood." *Frontiers in Human Neuroscience.* doi:10.3389/fnhum.2013.00097.

OECD. 2005. "Education Policy Analysis 2004." In *Education Policy Analysis 2004*, by OECD, 57-72. Paris: OECD.

OECD. 2015. *Education Policy Outlook Brazil.* Paris: OECD.

OECD. 2016. "Germany." In *Education at a Glance 2016: OECD Indicators*, by OECD. Paris: OECD Publishing. doi:https://doi.org/10.1787/eag-2016-56-en.

Oltermann, Philip. 2019. "Germany axed tuition fees - but is it working out? Critics of Britain's education revolution cite the Berlin model." *The Observer Germany*, June 4. Accessed April 3, 2019. https://www.theguardian.com/world/2016/jun/04/tuition-fees-germany-higher-education.

Orbeta, Aniceto C. 2015. *Impact of Time-Critical Household Investments in Pantawid Pamilyang Pilipino Program: Evaluating the Pantawid Pamilya Using RCT-Cohort Analysis.* World Bank.

Orbeta, Jr. , Aniceto C., and Vicente B. Paqueo. 2017. *Who benefits and loses from an untargeted tuition subsidy for students in SUCs?* Policy Notes No. 2017-03, Quezon City : Philippine Institute for Development Studies. Accessed November 11, 2018. https://dirp4.pids.gov.ph/websitecms/CDN/PUBLICATIONS/pidspn1703.pdf.

Paqueo, Vicente, Aniceto Orbeta, Tarcisio Castaneda, and Chris Spohr. 2013. "After Five Years of Pantawid, What Next." *Philippine Institute for Development Studies Discussion Paper 2013-41.*

Parker, Susan, and Tom Vogl. 2018. *Do Conditional Cash Transfers Improve Economic Outcomes in the Next Generation? Evidence from Mexico.* NBER Working Paper No. 24303, National Bureau of Economic Research, Inc.

Pereira da Silva, Thomas. 2018. *High and Persistent Skilled Unemployment in Morcco: Explaining it by Skills Mismatch.* Rabat, Morocco: Policy Center for the New South - OCP Policy Center.

2016. "President's Veto Message: Fiscal Year 2017." *Official Gazette.* Republic of the Philippines, December 29.

Rafferty, Adrian E., and Michael Hout. 1993. "Maximally Maintained Inequality: Expansion, Reform, and Opportunity in Irish Education." *Sociology of Education* LXVI (1): 41-62. http://www.jstor.org/stable/2112784 .

Rashid, A., Park, T., Macneal, K., Iannotti, L., & Ross, W. 2018. "Maternal Diet and Morbidity Factors Associated with Low Birth Weight in Haiti: A Case-Control Study." *Health equity* 139-144.

Republic Act No. 10687. 2015. "Unified Student Financial Assistance System for Tertiary Education (UniFAST) Act." Quezon City: Congress of the Philippines, October 15.

Republic Act No. 10931. 2017. "Universal Access to Quality Tertiary Education Act." Metro Manila: Congress of the Philippines, August 3.

Rozada, Martin Gonzalez, and Alicia Menendez. 2002. "Public university in Argentina: subsidizing the rich?" *Economics of Education Review* (Elsevier Science Ltd.) 341-351.

Sawahel, Wagdy. 2018. *Mixed responses to university registration fee proposal.* January 19. https://www.universityworldnews.com/post.php?story=20180119090249920.

—. 2018. "Mixed responses to university registration fee proposal." *University World News*, January 19. https://www.universityworldnews.com/post.php?story=20180119090249920.

Schugurensky, Daniel. 2002. *Students ignite democratic university reform in Cordoba, Argentina 1918.* August 14. http://schugurensky.faculty.asu.edu/moments/1918cordoba.html.

Skoufias, Emmanuel, Susan Parker, Jere Behrman, and Carola Pessino. 2001. "Conditional Cash Transfers and Their Impact on Child Work and Schooling: Evidence from the PROGRESA Program in Mexico." *Economía* 2 (1): 45-96. http://www.jstor.org/stable/20065413.

Steiner, Viktor, and Katharina Wrohlich. 2008. *Financial Student Aid and Enrollment into Higher Education: New Evidence from Germany.* Discussion Paper 805, Berlin: DIW Berlin. https://www.diw.de/documents/publikationen/73/diw_01.c.87572.de/dp805.pdf.

Todd, Jessica E., Paul Winters, and Guy Stecklov. 2012. "Evaluating the impact of conditional cash transfer programs on fertility: the case of the Red de Protección Social in Nicaragua." *Journal of Population Economics* 267-290. doi:10.1007/s00148-010-0337-5.

Tomacruz, Sofia. 2018. "DBM clarifies lower budget for student aid." *Rappler News.* August 16. https://www.rappler.com/nation/209692-dbm-clarification-budget-financial-assistance-for-students.

USAID. 2015. *The 1000-Day Window of Opportunity: Technical Guidance Brief.* Technical Guidance Brief, Washington D.C.: United States Agency for International Development.

Uy, Danica M. 2017. "Economic team rejects free tuition in state schools." *Business World Online*, February 10. Accessed November 11, 2019.

http://www.bworldonline.com/content.php?section=Economy&title=economic-team-rejects-free-tuition-in-state-schools&id=140425.

WHO. 2014. *Global Nutrition Targets 2025: Stunting policy brief.* WHO.

Wolter, Andrä. 2004. "From State Control to Competition: German Higher Education Transformed." *The Canadian Journal of Higher Education* XXXIV (3): 73-104.

World Health Organization. 2013. *Essential Nutrition Actions: Improving maternal, newborn, infant, and young child health and nutrition.* Geneva: World Health Organization.

9. Appendices

Appendix 1. Sample distribution by barangay

Region	Province	Municipality	Barangay	No. of Households
VII	Negros Oriental	Basay	Actin	30
VII	Negros Oriental	Basay	Bal-Os	30
VII	Negros Oriental	Basay	Bongalonan	30
VII	Negros Oriental	Basay	Cabalayongan	6
VII	Negros Oriental	Basay	Cabatuanan	4
VII	Negros Oriental	Basay	Linantayan	12
VII	Negros Oriental	Basay	Maglinao	30
VII	Negros Oriental	Basay	Nagbo-Alao	30
VII	Negros Oriental	Basay	Olandao	12
VII	Negros Oriental	Basay	Poblacion	30
VII	Negros Oriental	Jimalalud	Aglahug	15
VII	Negros Oriental	Jimalalud	Agutayon	14
VII	Negros Oriental	Jimalalud	Apanangon	24
VII	Negros Oriental	Jimalalud	Bae	14
VII	Negros Oriental	Jimalalud	Bala-As	5
VII	Negros Oriental	Jimalalud	Bangcal	24
VII	Negros Oriental	Jimalalud	Banog	13
VII	Negros Oriental	Jimalalud	Buto	29
VII	Negros Oriental	Jimalalud	Cabang	13
VII	Negros Oriental	Jimalalud	Camandayon	20
VII	Negros Oriental	Jimalalud	Cangharay	23
VII	Negros Oriental	Jimalalud	Canlahao	16
VII	Negros Oriental	Jimalalud	Dayoyo	22
VII	Negros Oriental	Jimalalud	Eli	30
VII	Negros Oriental	Jimalalud	Lacaon	30
VII	Negros Oriental	Jimalalud	Mahanlud	22
VII	Negros Oriental	Jimalalud	Malabago	14
VII	Negros Oriental	Jimalalud	Mambaid	8
VII	Negros Oriental	Jimalalud	Mongpong	24
VII	Negros Oriental	Jimalalud	Owacan	5
VII	Negros Oriental	Jimalalud	Pacuan	22
VII	Negros Oriental	Jimalalud	Panglaya-An	27
VII	Negros Oriental	Jimalalud	North Poblacion	15
VII	Negros Oriental	Jimalalud	South Poblacion	10
VII	Negros Oriental	Jimalalud	Polopantao	14
VII	Negros Oriental	Jimalalud	Sampiniton	24
VII	Negros Oriental	Jimalalud	Talamban	7
VII	Negros Oriental	Jimalalud	Tamao	12
X	Lanao Del Norte	Lala	Abaga	18
X	Lanao Del Norte	Lala	Andil	9
X	Lanao Del Norte	Lala	Matampay Bucana	12
X	Lanao Del Norte	Lala	Darumawang Bucana	30
X	Lanao Del Norte	Lala	Cabasagan	30
X	Lanao Del Norte	Lala	Camalan	30

Region	Province	Municipality	Barangay	No. of Households
X	Lanao Del Norte	Lala	Darumawang Ilaya	30
X	Lanao Del Norte	Lala	El Salvador	19
X	Lanao Del Norte	Lala	Gumagamot	30
X	Lanao Del Norte	Lala	Lala Proper (Pob.)	30
X	Lanao Del Norte	Lala	Lanipao	30
X	Lanao Del Norte	Lala	Magpatao	13
X	Lanao Del Norte	Lala	Maranding	37
X	Lanao Del Norte	Lala	Matampay Ilaya	13
X	Lanao Del Norte	Lala	Pacita	30
X	Lanao Del Norte	Lala	Pendolonan	14
X	Lanao Del Norte	Lala	Pinoyak	30
X	Lanao Del Norte	Lala	Raw-An	30
X	Lanao Del Norte	Lala	Rebe	30
X	Lanao Del Norte	Lala	San Isidro Lower	16
X	Lanao Del Norte	Lala	San Isidro Upper	30
X	Lanao Del Norte	Lala	San Manuel	9
X	Lanao Del Norte	Lala	Santa Cruz Lower	16
X	Lanao Del Norte	Lala	Santa Cruz Upper	20
X	Lanao Del Norte	Lala	Simpak	25
X	Lanao Del Norte	Lala	Tenazas	30
X	Lanao Del Norte	Lala	Tuna-An	15
X	Lanao Del Norte	Salvador	Barandia	6
X	Lanao Del Norte	Salvador	Bulacon	8
X	Lanao Del Norte	Salvador	Buntong	6
X	Lanao Del Norte	Salvador	Calimodan	11
X	Lanao Del Norte	Salvador	Camp Iii	10
X	Lanao Del Norte	Salvador	Curva-Miagao	9
X	Lanao Del Norte	Salvador	Daligdigan	11
X	Lanao Del Norte	Salvador	Kilala	3
X	Lanao Del Norte	Salvador	Mabatao	10
X	Lanao Del Norte	Salvador	Madaya	5
X	Lanao Del Norte	Salvador	Mamaanon	10
X	Lanao Del Norte	Salvador	Mapantao	6
X	Lanao Del Norte	Salvador	Mindalano	7
X	Lanao Del Norte	Salvador	Padianan	9
X	Lanao Del Norte	Salvador	Pagalongan	7
X	Lanao Del Norte	Salvador	Pagayawan	5
X	Lanao Del Norte	Salvador	Panaliwad-On	8
X	Lanao Del Norte	Salvador	Pangantapan	7
X	Lanao Del Norte	Salvador	Pansor	4
X	Lanao Del Norte	Salvador	Patidon	8
X	Lanao Del Norte	Salvador	Pawak	1
X	Lanao Del Norte	Salvador	Poblacion	17
X	Lanao Del Norte	Salvador	Saumay	2
X	Lanao Del Norte	Salvador	Sudlon	10
X	Lanao Del Norte	Salvador	Inasagan	12
CAR	Mountain Province	Paracelis	Anonat	30
CAR	Mountain Province	Paracelis	Bacarni	25

Region	Province	Municipality	Barangay	No. of Households
CAR	Mountain Province	Paracelis	Bananao	18
CAR	Mountain Province	Paracelis	Bantay	29
CAR	Mountain Province	Paracelis	Butigue	15
CAR	Mountain Province	Paracelis	Bunot	22
CAR	Mountain Province	Paracelis	Buringal	22
CAR	Mountain Province	Paracelis	Palitod	30
CAR	Mountain Province	Paracelis	Poblacion	29
CAR	Mountain Province	Sadanga	Anabel	19
CAR	Mountain Province	Sadanga	Belwang	18
CAR	Mountain Province	Sadanga	Betwagan	30
CAR	Mountain Province	Sadanga	Bekigan	13
CAR	Mountain Province	Sadanga	Poblacion	20
CAR	Mountain Province	Sadanga	Sacasacan	14
CAR	Mountain Province	Sadanga	Saclit	23
CAR	Mountain Province	Sadanga	Demang	13
IV-B	Occidental Mindoro	Paluan	Alipaoy	14
IV-B	Occidental Mindoro	Paluan	Harrison	30
IV-B	Occidental Mindoro	Paluan	Lumangbayan	6
IV-B	Occidental Mindoro	Paluan	Mananao	29
IV-B	Occidental Mindoro	Paluan	Marikit	20
IV-B	Occidental Mindoro	Paluan	Mapalad Pob. (Bgy 1)	17
IV-B	Occidental Mindoro	Paluan	Handang Tumulong Pob. (Bgy 2)	3
IV-B	Occidental Mindoro	Paluan	Silahis Ng Pag-Asa Pob. (Bgy 3)	3
IV-B	Occidental Mindoro	Paluan	Pag-Asa Ng Bayan Pob. (Bgy 4)	4
IV-B	Occidental Mindoro	Paluan	Bagong Silang Pob. (Bgy 5)	2
IV-B	Occidental Mindoro	Paluan	San Jose Pob. (Bgy 6)	10
IV-B	Occidental Mindoro	Paluan	Tubili	25
IV-B	Occidental Mindoro	Santa Cruz	Alacaak	11
IV-B	Occidental Mindoro	Santa Cruz	Barahan	29
IV-B	Occidental Mindoro	Santa Cruz	Casague	21
IV-B	Occidental Mindoro	Santa Cruz	Dayap	11
IV-B	Occidental Mindoro	Santa Cruz	Lumangbayan	26
IV-B	Occidental Mindoro	Santa Cruz	Mulawin	17
IV-B	Occidental Mindoro	Santa Cruz	Pinagturilan (San Pedro)	30
IV-B	Occidental Mindoro	Santa Cruz	Poblacion I (Barangay 1)	8
IV-B	Occidental Mindoro	Santa Cruz	San Vicente	15
IV-B	Occidental Mindoro	Santa Cruz	Poblacion Ii (Barangay 2)	11
IV-B	Occidental Mindoro	Santa Cruz	Kurtinganan	25

Appendix 2. Distribution of the sample households by estimated receipt of first grant

First appearance in the payroll	Estimated receipt of first grant	Number of households		
		Control Areas	Treatment Areas	Total
Aug 2008	Sep 2008		1	1
Oct 2008	Nov 2008		1	1
Nov 2008	Dec 2008	1		1
Jan 2009	Feb 2009	20	833	853
May 2009	Jun 2009		2	2
Apr 2011	May 2011	1		1
Jul 2011	Aug 2011	4	1	5
Nov 2011	Dec 2011	1		1
Jan 2011	Feb 2012	570	19	589
Jan 2012	Feb 2012	1	7	8
Mar 2012	Apr 2012	10	1	11
May 2012	Jun 2012	1		1
Jul 2012	Aug 2012	52		52
Sep 2012	Oct 2012	122	3	125
Nov 2012	Dec 2012	22	9	31
Jan 2013	Feb 2013	33	2	35
May 2013	Jun 2013	5	3	8
Jun 2013	Jul 2013	1		1
Jan 2014	Feb 2014	12	4	16
May 2014	Jun 2014	127	115	242
Jul 2014	Aug 2014	1		1
Sep 2014	Oct 2014	9	8	17
Nov 2014	Dec 2014	4	1	5
Jan 2015	Feb 2015	49	3	52
Mar 2015	Apr 2015		3	3
Jun 2015	Jul 2015		1	1
Aug 2015	Sep 2015		1	1
Oct 2015	Nov 2015	51	26	77
Dec 2015	Jan 2016	10	11	21
Feb 2016	Mar 2016	2	2	4
Apr 2016	May 2016	10	9	19
Jun 2016	Jul 2016	4	1	5
Oct 2016	Nov 2016		1	1
Dec 2017	Jan 2018	4	1	5
No data/ Never registered in the program		60	9	69
TOTAL		**1,187**	**1,078**	**2,265**

*Note: Estimated receipt of grant is computed by adding two months to the first appearance in the payroll