Assessing the Differential Impact of "Juntos" Conditional Cash Transfer on Indigenous Peoples

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Abstract

The evaluation literature has recorded numerous success stories related to conditional cash transfer programs on human development outcomes. Yet there are still concerns about the impact on specific populations, such as indigenous populations, which due to geographical or cultural isolation might not be benefiting as much as the average participant. This paper examines the impact of the conditional cash transfer, Juntos, on health behaviors as well as educational and anthropometric outcomes for indigenous populations using Propensity Score Weighting estimation techniques. It focuses on Peru a country which has a large indigenous population and on transition points, where cash transfer programs have been documented to have the largest impacts. It finds that bad outcomes, such as decreasing attendance, failing the school year, and dropping out from school, are higher for 12-14 years old indigenous boys who participated in Juntos. The visibility of the impact only in transition points is due to the high opportunity cost of transitioning from primary to secondary school for indigenous children. This cost not only includes higher commuting costs but also costly learning adjustments. In contrast, the health behaviors impacts found are positive and driven by indigenous boys' results. As with most CCT programs in Latin America participating in Juntos increases considerably the frequency of routine contacts between children and health services. Yet the results for anthropometric outcomes are not that conclusive, as hemoglobin levels increase, height-for-age Z-score stays unchanged and weight-for-length Z-scores decrease for indigenous children.

Keywords: Conditional cash transfer; child health; education; ethnicity; Peru.

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I. Introduction

In 2005 Peru started *Juntos*, a conditional cash transfer program targeted at children under the age of 14. Similar to its counterparts all over the developing world, *Juntos* aims to improve human capital by increasing access to basic services and diminish social exclusion. The program provides a monthly cash transfer of S./ 100 (about US$37) to eligible households that fulfill the stated requirements. This is a lump-sum payment unrelated to the number of children in the household (Perova and Vakis 2009, 2011).

Juntos has been expanding steadily since 2005 and reached 638 districts by 2009. These districts were chosen based on the following criteria: (1) unsatisfied basic needs (2) malnutrition rates, (3) exposure to political violence, (4) existence of extreme poverty and (5) poverty level (Sánchez and Jaramillo 2012). In addition, within the selected districts, households were chosen based on poverty measures.

The evaluation literature has recorded numerous success stories related to conditional cash transfer programs and educational outcomes (Maluccio and Flores 2004; Schultz 2004; Attanasio, Fitzsimons, and Gomez 2005; Behrman Sengupta, and Todd 2005; Behrman, Parker, and Todd 2006; Todd and Wolpin 2006; de Janvry et al. 2006; Schady and Araujo 2006). Yet there are still concerns about the impact on specific populations that, due to geographical or cultural isolation, might not be benefiting as much as the average participant. Specifically, indigenous populations might have lower coverage and impact. Peru is a country with a sizable indigenous population (around 29 percent of the population is of indigenous descent; this comprises almost eight-and-a-half million people [Albó et al. 2009]). Given the size of the indigenous population, a limited impact on this subsection of the population is of high importance. Yet the current non-experimental impact evaluations of the Juntos program (Perova and Vakis [2009, 2011]) have not explore heterogeneous impacts by ethnicity.

This paper will contribute to the existing literature by assessing the hypothesis of differentiated impacts of *Juntos* on the indigenous population. Specifically, this study analyzes the impact of *Juntos* on a set of educational and health outcomes (for both indigenous and non-indigenous children) which could be impacted by the conditionalities imposed by the program.

The first impact evaluations studies of *Juntos* developed by Perova and Vakis (2009, 2011) used the Peruvian Living Standards Measurement Study Survey, known as the National Household Survey (ENAHO). Hence this paper also uses that survey in order to follow their analysis. This will allow this study to accurately contrast its result with the existing evidence. However, the 2009 ENAHO survey is quite limited in terms of the outcome variables it contains. This study improves on the existing evidence by, in addition, analyzing the 2009 Peruvian Demographic and Health Survey (DHS) which contains many more child health markers (e.g., hemoglobin levels, anthropometric measures, vaccination rates) and education outcome variables (e.g., repetition rates and drop-out rates) not included in the ENAHO survey that allow us to look into specific conditionalities built into the *Juntos* program. This second dataset was also chosen since it contains a more precise question about participation in *Juntos* than the ENAHO survey. More importantly, it allows this study to directly identify if the mother of the children benefiting from *Juntos* is considered indigenous or not. This information allows this paper to perform heterogeneous impacts by ethnicity.

For each household survey used, different education and health outcomes will be analyzed. For the 2009 ENAHO, the education outcomes chosen include the probability of being enrolled in school and the probability of attending school regularly. For the 2009 DHS, the education outcomes chosen include the probability of attending school, of failing the school year, of repeating the school year, of dropping out of school and the progression rate in school. Given the results of previous studies (Perova and Vakis 2009; Schultz 2004), the impact of the program will be analyzed at transition points, where CCTs have been documented to have the largest impact in terms of ensuring that children begin and finish primary school. In addition, to take into consideration differential gender issues, these impacts will be analyzed separately for boys and girls.

For the 2009 ENAHO, the health behaviors chosen include if a consultation about iron supplements took place, if the child got vaccinated in the last 3 months, if the child attended growth controls, and finally, if the child received medical attention when sick. For the 2009 DHS, the anthropometric outcomes chosen include hemoglobin levels (g/dl - 1 decimal) for children younger than 6 years old, if the child was anemic, the child's height-for-age Z-score and his/hers weight-for-length/height Z-score, while the health behaviors chosen include if the child attended growth controls, and the probability that the child received the vaccines listed in the program agreement: BCG vaccine, DPT vaccine, polio 2 vaccine, and measles vaccine.

This analysis is divided into six sections. This introduction is followed by a description of the program conditionalities and eligibility conditions. Section 3 discusses the methodology employed. The data used in this study is presented in section 4, while section 5 presents the results both for education and health outcomes. The study concludes with a discussion of the findings.

2. *Juntos* Description

2.1 Program Conditionalities

The Program must deliver 100 Nuevos Soles monthly to selected households with children 14 years old or younger and/or with a pregnant woman that fulfill all of the following conditionalities[2]:

- They are required to bring their children less than 5 years of age to regular nutrition and health controls that would provide them with porridge, iron tablets (for children 2 or younger), growth controls and a complete series of vaccinations against measles , tuberculosis (BCG vaccine), whooping cough and tetanus (DPT vaccine) and polio.
- Pregnant women are required to seek prenatal care.
- They are required to enroll their children 6 to14 years old in school and to ensure their attendance for at least 85 percent of the time.
- They are required to register their children so that they obtain their identification documentation.

[2] Source: Peruvian Ministry of Economics and Finance. 2008. Technical Note about *Juntos* Program. National Directorate of Public Budget –Evaluation Team.

2.2 Program Eligibility Conditions

The selection of beneficiary households is done in three stages: the selection of eligible districts, the selection of eligible households inside those districts, and finally, a community-level validation process. The districts were chosen based on the following criteria: (1) unsatisfied basic needs, (2) malnutrition rates, (3) exposure to political violence, (4) existence of extreme poverty, and (5) poverty level (Sánchez and Jaramillo 2012). Once these districts were selected, the households were chosen, based on poverty measures. Specifically, a proxy means formula was used to determine households' eligibility. The variables used to construct this index were the following:

1. The percentage of illiterate women in the household
2. The percentage of children younger than 18 in the household that attend school regularly
3. Access to industrial sources of fuel (such as gas, petroleum and kerosene)
4. The number of household artifacts missing in the household
5. Possession of electric service, as well as water and sewage in the dwelling
6. Type of building material used in walls, floors and roofs.

Using these variables, a logistic model was estimated to determine the probability of being considered poor or not (Sánchez and Jaramillo 2012).

3. Methods

3.1 Propensity Score Methodology

In order to estimate the causal impact of participating in *Juntos* it is necessary to compare the outcomes of beneficiaries to what beneficiaries' outcomes would have been if they had not been part of the program. Since this is not feasible an artificial counterfactual – a control group of children who did not receive the transfer but that are otherwise similar to the beneficiaries – is constructed. This will allow us to estimate the average treatment effect on the treated (ATT) of participating in *Juntos*. The problems is that in non-experimental studies assignment of children to the beneficiary and non-beneficiary groups is not random, which means that confounding factors could bias the impact of the treatment (Becker and Ichino 2002). In order to tackle that issue, the methodology chosen for this study is the Propensity Score Weighting estimation technique. This methodology combines both regression and propensity score methods and will allow us to obtain unbiased estimates under the assumption of unconfoundedness (Imbens and Wooldridge 2009).

The Propensity Score methodology was introduced in 1983 by Rosenbaum and Rubin. This methodology compares the outcomes of beneficiaries and non-beneficiaries of a program using observable characteristics. It does so by estimating each individual's propensity to receive a binary treatment which is a function of these observable characteristics. Using the propensity score methodology allows us to create reliable estimates of the impact of the treatment, since it controls for observable confounding factors (Becker and Ichino 2002; Dehejia and Wahba

2002; Abadie et al. 2004). The probabilities obtained are then used to pair beneficiaries with non-beneficiaries or to weight the variables of beneficiary and non-beneficiary children. This weighting is done in order to assure the distribution of covariates is equivalent between both groups (Hirano,Imbens, and Ridder 2003, Imbens 2004).The weights are inversely proportional to the distance between the propensity scores of beneficiaries and non-beneficiaries. In this particular case the weights used are the following:

$$\omega_{ih=}PS_h\left(\frac{TREAT_h}{PS_h}+\frac{1-TREAT_h}{1-PS_h}\right),$$

where PS_h is a household's estimated propensity score for household *h*;$TREAT$ is an indicator that equals one if household receives *Juntos* cash transfer.

In order for the propensity score methodology to yield unbiased estimates, three conditions must be fulfilled: (1) children with the same propensity score need to have the same distribution of observable characteristics regardless of being beneficiaries or not (known as the balancing hypothesis), (2) the outcomes of non-beneficiaries and beneficiaries should be in average equivalent, after controlling for observable variables (known as unconfoundedness), and (3) the propensity score between beneficiaries and non-beneficiaries should intersect in a joint space of characteristics called the common support (Rosenbaum and Rubin 1983; Becker and Ichino 2002). Weighting should be done exclusively for the beneficiaries who are found inside this space.

It must be noted that the second assumption is sometimes very hard to fulfill, since it postulates that there are no unobserved characteristics correlated with both the outcome of interest and the probability of belonging to the beneficiary group. If this is the case, the impacts calculated would not be casual. To ensure that the beneficiaries and the non-beneficiaries are comparable and that may bias that could arise from unobserved characteristics is minimized only observations inside the common support are used for the analysis.

Once the propensity score and the weights are calculated, the next step is to weight all observations and create a balance between treated and control individuals. Then one can estimate the following equation by weighted least-squares, with the weights previously described:

$$Y_{ih}=\alpha+\beta_1 TREAT_h+\beta_2 NONINDIG_h+\beta_3 TREAT_h*NONINDIG_h+\gamma X_{ih}+\varepsilon_{ih},$$

where Y_{ih} is the education or health outcome of interest for child i from household h; $TREAT$ is an indicator that equals one if household participates in *Juntos*; $NONINDIG$ is an indicator that equals one if household is not indigenous; and X is the vector of household, district, and regional characteristics used for the estimation of the propensity score plus controls for the age and gender of the child. β_1 estimates the impact of receiving *Juntos* for indigenous children and $\beta_1+\beta_3$ estimates the impact of receiving *Juntos* for non-indigenous children. Thus β_3 is the differential impact with respect to not being indigenous.

The advantage of incorporating regression analysis on the matched subsample is that it helps to eliminate any remaining bias and to improve precision (Imbens 2004). Moreover, interaction terms can be incorporated into the regression to estimate the differential impact of *Juntos* with respect to not being indigenous. An additional advantage of using the Propensity

Score Weighting estimation technique is that by combining regression and propensity score methods, it attains estimates that can be more robust to the possible misspecification found in parametric models (Imbens and Wooldridge 2009). This added robustness is obtained since combining regression and weighting removes the correlation between omitted covariates while simultaneously reducing the correlation between the omitted and included variables (Imbens and Wooldridge 2009).

Finally, it must be noted that following Hirano, Imbens, and Ridder (2003), the weights were normalized in order to add up to 1 in every sample that was used for estimation.

3.2 Propensity Score Calculation

In order to proceed with this methodology, it is first necessary to construct a model that estimates the probability of participating in the program conditional on observable covariates. The analysis was restricted to households with information about program participation and children 14 years old or younger. All non-beneficiaries that lived in a district that received *Juntos* were dropped from the sample as well as households that belonged to the 5th top income quintile. This is to ensure that the weights for the control group are constructed using the information of individuals that would have become beneficiaries if the program would have arrived to their districts. To deal with the assumption of unconfoundedness, the covariates used to estimate the propensity score replicate as closely as possible the eligibility rule designed by the program *Juntos*.

The variables included in this estimation of the propensity score include all the criteria used by the *Juntos* program to select participating districts. Furthermore the district-level data used come mostly from the 2007 Census, hence providing pre-treatment information. Specifically, the estimation includes the following district- (or regional-) level information:

1. The percentage of households with high economic dependence (this is an unsatisfied basic need) – Source: the 2007 Census
2. The district-level chronic malnutrition rate for children 6-9 – Source: the 2005 School Census
3. The death headcount in the region due to terrorism divided by the total population in the district and, to possibly capture a nonlinear relationship, the square of this variable – Source: the Final Report of the Commission of Truth and Reconciliation
4. The percentage of the population as well as the total number of people living in extreme poverty in the district - Source: the 2007 Census
5. The district poverty gap (the difference between the average spending of households in extreme poverty and the poverty line) - Source: the 2008 *Juntos* Census

To construct the algorithm used to estimate the proxy-means formula that determined households' eligibility, the following variables from both the DHS and the ENAHO were selected:

1. The percentage of illiterate women in the household
2. The percentage of children younger than 18 in the household that attend school regularly

3. Access to industrial sources of fuel (such as gas, petroleum, and kerosene)
4. The number of household artifacts missing in the household
5. Possession of electric service, as well as water and sewage in the dwelling
6. Type of building material used in walls, floors, and roofs.
7. A dummy that defines the household as poor or not poor

Most of the household-level variables used in the proxy means formula are pretty much time-invariant or at least not going to change much due to a monthly income increase of 100 Nuevos Soles (the value of the cash transfer). Indeed, according to Roopnaraine et al. (2013), the cash transfer is mostly invested in food, clothing, school, and cleaning supplies. The only variable in this algorithm that is susceptible to change is the percentage of children 17 years old or younger in the household who attend school. Using these variables, a logistic model was estimated to determine the probability of being considered poor or not (Sánchez and Jaramillo 2012). This probability was included as an independent variable in the calculation of the propensity score. Following Behrman, Parker, and Todd (2009), I include additional household-level characteristics (to the ones specified by the *Juntos* program) that could influence eligibility. These variables were included when using both the DHS and the ENAHO datasets:

1. Age of head of household
2. Sex of head of household
3. Number of household members
4. Number of children 5 and under in the household

Finally, two additional variables were considered for the estimations using the DHS data: (1) mother's age in years[3] and (2) type of place of residence - urban vs. rural.

Table 1 shows the regression results of estimating the propensity score using both the ENAHO and the DHS datasets.

The region of common support for the data included a vast number of nonparticipants with near-zero propensity scores. Hence it was trimmed to the range [0.001, 0.999]. Only the observations in this interval were used to analyze the outcomes. The balancing property is tested and approved, respectively, for each dataset.

[3] Only available in that dataset.

Figures 1and **2** show the propensity score density for both *Juntos* beneficiaries and non-beneficiaries for both datasets. The density is skewed to the right for non-recipient households while it is pretty much uniform for the households who are benefiting from the program, with a small hump at the right side of the distribution. Despite the skewedness of the non-recipient distribution, there is still an important overlap in the propensity score distributions for both datasets.

Finally, as shown in **Table 2** and **Table 3,** after applying the weights to the control group, the covariates are mostly balanced across the propensity distributions of both datasets. Even in the cases were statistically significant differences persist across samples the actual means are relatively close together and that most of the initial gap has been overcome. For the ENAHO data set the only exception is the violence variable, for which a considerable gap between the two groups persists. Yet for the two other variables with statistically significant differences (% of households with high economic dependence and district chronic malnutrition rate) after applying the weights over half of the gap has been overcome (with the control now having worse outcomes). For the DHS data set, after applying the weights, only four statistically significant differences in covariates persist (at the 5% level or lower): the extreme poverty headcount, the extreme poverty percentage, the district poverty gap and the probability to determine household eligibility. Yet all are smaller than 15% of the treatment covariate value and the two latter ones are even lesser than 10%.

4. Data

The two main data sources used for the two distinctive analysis performed in this study are the 2009 National Household Survey (ENAHO) and the 2009 Demographic and Health Survey (DHS). The 2009 ENAHO is an annual survey that contains information on household consumption and expenditure patterns, household assets, education, and health outcomes as well as the utilization of health services by household members. The 2009 DHS is a national survey designed to collect information on housing and household characteristics, education, maternal health and child health, nutrition, family planning, and gender. Both these datasets are nationally representative and contain information on beneficiaries and non-beneficiaries of *Juntos*. They provide information on ethnicity identifiers and CCT participation; however, the DHS allows the researcher to more precisely identify these two variables.

The 2009 ENAHO consists of 22,640 households and the DHS of 26,988 households and 24,212 eligible women. The analysis was restricted to households with information about program participation and children between 6 months and 14 years of age. The sample was furthermore restricted to the 4 lowest income quantiles. The resulting sample consisted of 21,337 children (7,282 children younger than 6 and 14,055 children between 6 and 14 years old) in the ENAHO dataset and of 13,308 children (7,815 children younger than 6 and 5,493 children between 6 and 14 years old) in the DHS dataset. Yet the sample used for the analysis was drastically reduced after performing the propensity score calculation. The number of observations left in the ENAHO dataset, after including only observations in the common support that fell in the range selected, was 1,977 children, while in the DHS, it was 10,712 children.

The supplementary sources of data used are the 2007 Peruvian Census, the 2008 *Juntos* database, the 2005 Height and Weight School Census, and the Final Report of the Commission of Truth and Reconciliation. The 2007 Census provides socioeconomic pre-treatment information representative at the district level. This includes per capita expenditure levels, proportion of the population with at least two unsatisfied basic needs, malnutrition rates, characteristics of the dwelling[4], and education level of women prior to the program expansion.

The 2008 *Juntos* database provides identifiers for all *Juntos* beneficiary districts as well as district poverty gap measurements. The 2005 Height and Weight School Census contains information on chronic malnutrition rates for children 6 to 9 years old. Finally, the Final Report of the Commission of Truth and Reconciliation provides information on exposure to violence in the different political regions. All these sets of variables were used to choose the eligible districts, since they coincide with the selection criteria employed by *Juntos*.

4.1 Ethnicity and Program Identifiers

Children are identified as indigenous using native language of either the household head (in the case of the ENAHO dataset) or the mother of the child (in the case of the DHS dataset). The languages associated with being of indigenous descent are either quechua, aymara, or another indigenous language (as specified in the survey). Language is a consistent identifier of ethnicity across different country datasets and hence it is very useful for comparison purposes. Using this definition the sample sin each dataset can be divided between indigenous and non-indigenous groups, as shown in **Table 4**.

As **Table 4** shows, almost 42 percent of the children in the ENAHO sample can be considered as indigenous using this definition, while over 37 percent fall in this category according to the DHS sample. In a similar way, according to the ENAHO dataset, a child is identified as benefiting from *Juntos* if a member in the nuclear household[5] is currently receiving this cash transfer. For the DHS dataset, a child is identified as benefiting from *Juntos* if his/her mother is currently receiving this cash transfer. **Table 5** shows that over 32 percent of children in the ENAHO sample (or 26 percent according to the DHS) are receiving this benefit. However, this number masks great differences across indigenous and non-indigenous populations. Indigenous children account for a greater proportion of *Juntos* beneficiaries, with over 52 percent (48 percent for DHS) receiving the transfer, compared to 18 percent (14 percent for DHS) of non-indigenous children.

5. Results

5.1 Descriptive Statistics for Education Outcomes

The set of education outcomes chosen for analysis was selected to be comparable to the education outcomes analyzed by Perova and Vakis (2011). Furthermore, given the availability in the DHS of additional outcomes related to grade progression and school success, I also include

[4]Type of water source and hygienic services.

[5] Sometimes there is more than one nuclear family inside a household and this definition accounts for that fact.

these in the analysis (repetition, failing, and drop-out rates[6]). Grade progression is calculated as the ratio of the number of grades completed to the number of grades that should have been completed given age.

Table 6 indicates that there exist drastic differences between indigenous and non-indigenous children. Specifically, indigenous children are more likely to repeat and fail their current grade as well as to progress in school more slowly; however, they have slightly higher attendance rates and lower drop-out rates. A remarkable difference between the two datasets is the average probability of attending school. According to the ENAHO dataset, this is much lower for both indigenous and non-indigenous children. In contrast, the DHS shows probabilities close to one. One explanation for this drastic divergence is the way the question is asked. For the DHS, the question is probably asked in front of the mother since this is a survey whose main respondents are women 14-49 years of age. In contrast, in the ENAHO survey, the child is probably asked by himself or at least in front of his mother, with a lower probability.

5.2 Impact of *Juntos* on Education Outcomes

Table 7 shows the impact of *Juntos* on the following education outcomes: enrollment and attendance (previously analyzed by Perova and Vakis [2011]), and progression rates, repetition, failing, and dropping out status. The coefficient in front of treatment (or "Household receives *Juntos*") represents the impact for indigenous children, while the sum of the coefficient in front of treatment and the coefficient in front of the interaction term represents the impact for non-indigenous children of participating in the program. According to the ENAHO survey, *Juntos* has no statistically significant effects on enrollment for either indigenous or non-indigenous children. However, participating in *Juntos* leads to decreases in attendance rates for indigenous children. This reduction is much larger according to the ENAHO survey, in comparison to the DHS data which shows a negative but very small statistically significant impact of *Juntos* participation on attendance of indigenous children. There is no differential effect of these outcomes for non-indigenous children. Moreover, benefiting from *Juntos* decreases the progression rate for indigenous children, but it seems to have almost no effect on non-indigenous children. In addition, *Juntos* participation leads to significant increases in repetition rates, yet very small rises in the probability of dropping out of school. There is no statistically significant differential impact for non-indigenous children for repetition rates. Yet for drop-out rates the effect is overall negative, meaning that for non-indigenous children participating in *Juntos* actually slightly decrease the probability of dropping out of school. The results on enrollment are in line with the main findings of Perova and Vakis (2011), who using an instrumental variables (IV) technique found no statistically significant impact of *Juntos* on enrollment, yet they drastically contrast with their findings of a positive impact of *Juntos* on attendance.

Given the probable existence of large differences in education outcomes across age and gender, I conduct an additional analysis on the sample disaggregated by age and gender. For

[6] I define repetition rates using the number of children that repeated the previous school year; failing rates are estimated using the number of children who failed the previous school year (children that dropped out are not included) and I construct drop-out rates using the number of children that left school either the current year or in previous years.

education outcomes, the sample is divided by gender and the following age groups: 6-7 years, 8-9 years, 10-11 years, and 12-14 years. The choice of age groups follows Perova and Vakis' (2009) as well as Schultz's (2004) analyses. They found that impacts of conditional cash transfer programs can be found at transition points (e.g., the beginning of primary school and the transition from primary to secondary school) in contexts with high initial enrollment and attendance. This is true for the Peruvian case where, according to the DHS, over 96 percent of children attend school regularly. Hence, for the outcomes referred to enrollment and attendance, the age groups analyzed are the children 6-7 and 12-14 years old.

As **Table 8** shows, according to the ENAHO survey *Juntos* has no statistically significant effects on enrollment or attendance for either age group or gender (which confirms Perova and Vakis (2011) main results related to enrollment). This is true for both indigenous and non-indigenous children. The only exception is for older non-indigenous boys from whom there exists a positive differential impact on attendance of participating in *Juntos.* In contrast, according to the DHS sample, indigenous children 12-14 years old attendance rates are negatively affected by participating in *Juntos*. There is no impact for the younger cohort. Yet, for non-indigenous male children aged 12-14, the overall effect is actually positive. The results for attendance are being driven by the older cohort. It is not surprising to find results for attendance that are much smaller (or even negative) than the ones found Perova and Vakis (2011). Perova and Vakis (2011) did not include in either of their estimations techniques (IV or PSM) a control for ethnicity. As we can see in the results for the older cohort in **Table 8** being non-indigenous has a negative correlation with attendance. Similarly, as established by the descriptive statistics in **Table 5** being non-indigenous is negatively correlated with *Juntos* participation. Hence Perova and Vakis' (2011) computations are overestimating the impact of *Juntos* on attendance. This study is able to control for that positive bias by introducing controls for ethnicity.

Table 9 shows that participating in *Juntos* has a negative impact on indigenous children progression rates starting at age 8 and peaking at age 10-11. Boys' outcomes are driving the results for all age groups. The impact for non-indigenous children is close to zero for all ages, with non-indigenous boys having a small overall positive impact of participating in *Juntos*.

When performing the estimations for the subsamples by age and gender, the results for the probability of having repeated or failed the current grade the previous school year and the probability of dropping out of school are only shown for children 8-14 years old, since the sample size for children either repeating or dropping out of school between 6 and 7 years of age is really small. These results are shown in **Table 10**. **Table 10** reveals that *Juntos* significantly increases repetition rates of indigenous children that are 8-9 years old, due to an increase in repetition by girls (of 9 percentage points). The impact for non-indigenous children of the same age group is close to zero. The results for failing rates are very similar. *Juntos* significantly increases failing rates of indigenous children that are 8-9 years old. Yet, this time, the differential effect for non-indigenous children of the same age group is actually negative, and these results are being driven by non-indigenous boys. In contrast, for indigenous children that are 12-14 years old, there is a positive impact of *Juntos* on both repetition and failing rates, which is being driven by boys' outcomes. Indigenous boys belonging to the older cohort that participated in *Juntos* have around a 10 percentage point higher likelihood of both repeating

and failing the previous school year. This impact almost completely disappears for non-indigenous boys 12-14 years old.

Finally, **Table 10** shows how participation in *Juntos* impacts dropping out rates. *Juntos* only significantly increases dropping out rates of indigenous children that are 12-14 years old. The magnitude of the impact (around 6 percentage points) is similar between indigenous boys and girls of the older cohort. The differential effect for non-indigenous children of the same age group is negative and actually larger. Results suggest that non-indigenous children participating in *Juntos* are less likely to drop out school than their indigenous pairs. This is specially the case for non-indigenous boys who actually see their drop-out rates decrease overall by 7 percentage points when they participate in Juntos.

According to the results shown in **Tables 8 - 10** statistically significant impacts of *Juntos* are certainly concentrated in transition points (for children 12-14). Furthermore, these impacts are particularly important for boys. Bad outcomes, such as decreasing attendance, failing the school year, repeating the school year, and dropping out from school, are higher for 12-14 years old indigenous boys who participated in *Juntos*.

There are several explanations for the visibility of the impact only in transition points. First, the conditional cash transfer constitutes only a modest 15 percent of average household monthly consumption (Perova and Vakis 2009). Second, the enrollment and attendance rates are already extremely high. As a consequence, the program will have an effect only when the opportunity costs are higher, i.e., when the family has to decide if it is a better investment to let the child drop out before entering secondary school. Furthermore, these results are consistent with a context where attendance to secondary school is much more costly. This is especially true for indigenous populations who live in rural areas where secondary schools can be much more difficult to access than primary schools, due to their distance from the community. Greater distances imply longer commuting times (and, hence, less time to help with work at home) or increasing transportation costs. Parents might be encouraging their children to repeat the last year of primary school in order to still be able to attend the local primary school, receive the conditional cash transfer, and avoid the additional transportation costs. This hypothesis is supported by the statistics shown in **Table 11**. **Table 11** shows the progression rate by CCT participation status for indigenous and non-indigenous children. The biggest difference between the indigenous children that participated in *Juntos* and the ones that did not starts for boys aged 10 to 11. Boys between 10 and 11 years old that benefit from *Juntos* are progressing much slower than their counterparts in any other group and this difference is highly statistically significant. This is not the case for non-indigenous boys.

An explanation for this breach is difficulty of access to secondary schools for indigenous children. According to the Peruvian Ministry of Education, the ratio of primary to secondary schools for each region participating in *Juntos* is above 3. These statistics are probably much more dramatic in rural areas, where most indigenous populations reside.

Another reason transitioning from primary to secondary schools might be particularly challenging for indigenous children is related to the language used by the teacher at school. According to Roopnaraine et al. (2013), in primary schools located in indigenous communities, teaching can take place in Spanish or in the local indigenous language. However, in most secondary schools, teaching is always done in Spanish. Moreover, the high repetition and falling rates for older children could be explained by teachers' behaviors in indigenous communities,

as expressed by Roopnaraine et al. (2013). According to these authors, teachers are not very demanding with students in the first years of primary school. It is in the transition from primary to secondary school that teachers increase their requirements. As a consequence, it is very common for children in indigenous communities to repeat the last years of primary school (when children are around 12 years old).

Roopnaraine et al. (2013), mention on their qualitative study of the impact of Juntos on indigenous communities that there exist a lot of informal conditionalities imposed on the indigenous beneficiary families that are not usually present in non-indigenous contexts. These conditionalities impose an additional workload on the mothers of the beneficiary children who then to be able to cope with these new duties transfer some of the housekeeping and child caring responsibilities to their children (specially the older ones). This additional workload on the children can diminish their study time and help explain their worse school outcomes.

5.3 Descriptive Statistics for Health Behaviors and Anthropometric Outcomes

The set of health behaviors variables chosen is strictly related to the program conditionalities. Growth controls are mandatory in the program. Moreover, the program requires that mothers pick up fortified porridges; hence, anthropometric measurements could be directly impacted by participation in *Juntos*. Height is widely considered to be the best indicator of nutritional conditions and disease environment of childhood (Schultz 2010).To perform our analysis, we computed Z-scores for child's height-for-age, where the Z-score is defined as the difference between the child's height and the mean height of the same-aged international reference population, divided by the standard deviation of the reference population. Values of height-for-age Z-score below -2 are indicators of chronic malnutrition or stunting that reflects accumulated past growth failure. Similarly, weight-for-length/height Z-scores are calculated using the difference between the child's weight and the mean weight of the same-length international reference population, divided by the standard deviation of the reference population. Moderate acute protein-energy malnutrition is defined as having a weight-for-height z-score of -3.0 to less than -2.0.

Furthermore, since the program requires mothers to pick up iron tablets from health centers, improvements in hemoglobin and anemia levels could be considered a direct outcome from the program. Finally, the vaccines examined are the ones listed in the program agreement as the minimum requirements by the beneficiaries. I chose, in particular, DPT 2 and Polio 2 (and not other vaccines of the sequence), since these are given to children 4 months of age. Hence, it is safe to assume that children 6 months and older (such as the ones included in this analysis) would have already received this vaccine.

Table 12 indicates that there exist drastic differences between indigenous and non-indigenous children. Indigenous children appear to have a higher probability of attending growth controls, of seeking medical attention when the child is sick, and of receiving polio 2 vaccines. In terms of their anthropometric outcomes, indigenous children's hemoglobin levels (adjusted by altitude), on average, are lower than those for non-indigenous children and indigenous children suffer more often from anemia. Finally, indigenous children have worse height-for-age Z-scores, but better weight-for-length/height Z-scores.

5.4 Impact of *Juntos* on Health Services Used

Similarly as for education outcomes, it is highly probable that there are differences in health behaviors and anthropometric outcomes across age and gender. Hence, as before, I first conduct the analysis on an aggregate sample and then on the sample disaggregated by age and gender. It is well documented in the literature the critical importance of the first two years of life as a window of opportunity for growth promotion (Shrimpton et al. 2001, Black et al. 2013) hence the first group is composed of children 6-24months old. The second group is comprised of older children (25-59months old). Likewise as with education outcomes we also divide the sample by gender.

Table 13 shows the impact of *Juntos* on the use of health services for children 6 months to 5 years old in the case of the 2009 ENAHO and for children 6 to 59 months in the case of the 2009 DHS (where data of age in months are available for older children). The outcomes analyzed are as follows: if the child got vaccinated in the last 3 months, the probability that the child received one of the vaccines that *Juntos* requires (BCG, DPT and Polio) [7] the probability that the child attended growth controls, the probability that a consultation about iron supplements took place and if the child received medical attention when sick[8]. The program requires mothers to pick up iron tablets from health centers for children 2 years old and younger; hence, there is only information available for this age group. Just as before, the coefficient in front of treatment (or "Household receives *Juntos*") represents the impact for indigenous children, while the summation of the coefficient in front of treatment and the coefficient in front of the interaction term represents the impact for non-indigenous children. Across some indicators, there are significant impacts for indigenous children. Participating in *Juntos* increases the probability of getting the DPT 2 and the Polio 2 vaccines and of going to a growth control. There also exist differential impacts with respect to being non-indigenous. Non-indigenous children have a lower probability of attending growth controls and of receiving DPT 2 vaccines, yet the overall effect is still positive for them. There are no statistical significant impacts for the probability of getting vaccinated and of attending iron consultations for either group. Finally, the probability of seeking medical attention, conditional on being sick, decreases for indigenous children participating in *Juntos*. There also exist differential impacts with respect to being non-indigenous. Non-indigenous children participating in *Juntos* have a higher probability of seeking medical attention when sick, which, overall, is positive.

The results found are consistent with Perova and Vakis (2011) for the case of growth controls, vaccines and the probability of seeking medical care when sick. Both the magnitude of the coefficients for growth controls and vaccines as well as the level of significance is close to the ones found both in the main estimations (using IV). Yet the coefficient related to seeking care when sick presented here is much smaller than Perova and Vakis' (2011) estimate. As we can see in **Table 13** being non-indigenous has a negative correlation with the probability of seeking medical care when sick. Given that being non-indigenous is also negatively correlated with *Juntos* participation, by not including controls for ethnicity Perova and Vakis' (2011)

[7] I excluded from the coming tables the results for the measles vaccines since there is no statistically significant impact of the program on the probability of getting the measles vaccines for any age group or gender for either the indigenous or the non-indigenous children.

[8] This last item was not part of the official conditionalities imposed in the program.

overestimated the impact of *Juntos* on seeking health care when facing illness. This positive bias explains the difference in the coefficients.

Both the ENAHO and DHS surveys can be disaggregated by age and sex of child. **Table 14** shows that the trends found for the whole sample for each of the outcomes are the same for both subsamples by age and gender. Furthermore, by disaggregating the sample we are able to capture effects in the use of health services we could not capture before (such as use of any vaccinations and receiving iron supplementation). Indigenous children are being benefited by the *Juntos* program in terms of more vaccinations and growth controls. The general vaccination results are being driven mostly by the age group of 3-5 years old, although there is also an important effect for young indigenous boys. Similarly, there is a statistically significant differential impact for younger non-indigenous boys that participate in *Juntos,* who appear to have, in most cases, a lower probability of getting vaccinated in comparison to indigenous boys. For the younger cohort, there is also a positive differential impact for non-indigenous girls.

There is no statistically significant impact of the program on the probability of getting the BCG vaccine for either indigenous or non-indigenous boys in the older cohort. Yet older indigenous girls appear to experience a positive impact. In the younger cohort, indigenous boys have a higher probability of receiving this vaccine, while non-indigenous boys have a negative differential effect, although overall they still benefit from participating in the program. The probability of getting the DPT 2 vaccine is higher for indigenous beneficiaries of *Juntos* in both age groups. This result seems to be driven by girls in the younger cohort and by boys in the older one. There exists a negative statistically significant differential effect for non-indigenous children of both age groups, with an overall small positive impact. The probability of receiving the Polio 2 vaccine increases only for indigenous boys benefiting from *Juntos*. There only exists a negative statistically significant differential effect of *Juntos* for non-indigenous older boys, which again still benefit from the program just not as much as indigenous boys. In general indigenous children seem to be benefiting much more of vaccination programs by participating in Juntos than their non-indigenous counterparts. When differential impacts by age group, gender and ethnic origin are not taken into account this impact cannot be captured. When this disaggregation takes place, a trend emerges were indigenous boys participating in *Juntos* seem to benefit much more from vaccinations than any other group.

There are statistically significant and positive impacts of participating in *Juntos* on attending growth controls for all age groups and for both genders of indigenous children, yet the results are being driven mostly by girls. There appears to be a negative differential impact for non-indigenous children, but overall even for non-indigenous children the impact is positive. Juntos beneficiaries have a higher probability of attending growth controls than non-beneficiaries. In addition, participating in Juntos increases the probability of seeking an iron supplement consultation only for indigenous boys. There is a further positive differential impact for non-indigenous boys. Finally, the probability of seeking medical attention when sick is reduced for indigenous *Juntos* participants of both age groups, although the results are driven by girls, while boys actually have a higher probability of being treated when sick. There is a positive differential impact for non-indigenous children in the younger cohort and specifically for girls in the older cohort. The overall impact for these groups is actually positive with medical attention increasing for non-indigenous *Juntos* participants.

The results found are in line with the finding in the qualitative study performed by Roopnaraine et al. (2013) looking at the impact of Juntos on indigenous communities. The authors found that in indigenous communities beneficiary mothers tend to have a very positive attitude towards the health services they are required to seek according to the official conditionalities of the program (vaccines, growth controls and iron supplementation). Indeed they affirm to seek these services as required. Yet, also as discussed by Roopnaraine et al. (2013), there exist informal conditionalities imposed exclusively on indigenous beneficiary families. The additional workload these conditionalities impose on beneficiary mothers could limit their time availability and reduce their ability to seek medical care when their children are sick. Hence the negative impact of *Juntos* participation is observed exclusively on the indigenous mothers.

5.5 Impact of *Juntos* on Anthropometric Outcomes

Tables 15 shows the impact of *Juntos* on the following anthropometric outcomes: the child's height-for-age Z-score and his/hers weight-for-length/height Z-score, as well as the child's hemoglobin level (g/dl - 1 decimal – adjusted by altitude) and the probability that the child is anemic. It should be noted that the only age group analyzed for the Z-score variables is 6-24 months, since this is the key age group for this type of analysis. Under the age of two, malnutrition can be life-threatening. Furthermore, it can weaken a child's immune system and render him or her more vulnerable to common illnesses such as acuter respiratory infections and diarrhea. Finally as Black et al. (2013) state, nutritional status in the first 24 months of life is highly correlated with childhood malnutrition and obesity as well as with adulthood health status.

As mentioned earlier, since the program requires mothers to pick up iron tablets from health centers for children 2 years old and younger, improvements in hemoglobin levels could be considered a direct outcome from the program. Very few studies have analyzed the impact of conditional cash transfers on hemoglobin levels, and the few that have done so have done it exclusively for Mexico (Neufeld et al. 2004; Rivera et al. 2004). As can be seen from **Table 15**, there is a positive and statistically significant impact of participating in *Juntos* on the hemoglobin outcome of indigenous children. There are no differential impacts for non-indigenous beneficiaries for this outcome. The only other statistically significant impact is the effect on indigenous children weight-for-length/height Z-score. Participating in *Juntos* decreases this indicator for indigenous children. The differential impact for non-indigenous children is positive, but still the overall effect of participating in *Juntos* appears to be slightly negative. There is no impact at all of *Juntos* participation on either the height –for-age Z-score or the probability of suffering from anemia.

Since the program is designed so that mothers with children only up to 2 years old receive iron supplements, one would expect to find especially large impacts of *Juntos* on the hemoglobin level of the younger cohort. However, **Table 16** shows the strongest results are found for children aged 25-59 months old. Both, indigenous boys' and girls' hemoglobin level in the older cohort, increase with *Juntos* participation. There is only a small and negative

statistically significant differential impact for non-indigenous older girls, yet the overall impact is still positive. .

For the younger cohort of indigenous children, the results are puzzling. There is a positive and statistically significant impact of *Juntos* on hemoglobin levels for indigenous boys; however, the impact for indigenous girls is negative. There is a statistically significant and positive differential impact for non-indigenous girls in the younger cohort that generates an overall positive impact of program participation on hemoglobin levels. Also the overall impact for non-indigenous children in the younger cohort is positive.

A possible explanation for the larger effects in the older cohort could be found in Adato et al. (2004). The authors analyze a conditional cash transfer program in Nicaragua (*Red de Protección Social*) and find that mothers did not always give the iron supplements to their younger children. Younger children complained about the taste of the supplement as well as of stomach aches due to it. Consequently, the mothers ended up giving the iron supplement to their older children, who were more compliant. Interestingly enough, when looking at the probability of suffering from anemia, participating in *Juntos* increases the odds for indigenous children in the younger cohort, with no statistically significant impact for the older cohort. This result is being driven exclusively by younger girls (who according to the previous results had lower hemoglobin levels due to program participation). Similarly, there is negative differential impact for non-indigenous girls in the younger cohort who are benefiting from *Juntos*. Overall, the impact is close to zero for this group. In the older cohort, there appears to be a positive differential effect for non-indigenous boys, but this detrimental impact is much smaller than for young indigenous children. In contrast, participating in Juntos has no statistically significant impact on an indigenous child height-for-age Z-score, regardless of gender. The same is true for non-indigenous children. Finally, the negative impact of Juntos participation on an indigenous child weight-for-length/height Z-score appears to be driven mostly by boys' outcomes, although it is also present for girls. There is a positive differential impact for non-indigenous boys, which almost cancels out the negative impact of participation.

The results found in this section related to height-for-age Z-score as well as weight-for-length/height Z-score can be explained using the finding from Roopnaraine et al. (2013) qualitative study. This study found that indigenous mothers participating in Juntos were being subject of additional non-formal conditionalities which involved among other responsibilities additional monetary contributions to the school. There is a sense of reciprocity among the beneficiaries and the state which implies that these are subject to additional expenses. These increase expenditures could come at the cost of other types of spending, such as food items that would have otherwise increase more given the cash transfer received. Even if the beneficiary families could be increasing their expenditure in food items, it might not be doing so in a magnitude large enough to affect the children's height-for-age Z-score.

The negative impact experienced by the weight-for-length/height Z-scores of indigenous children could be related to a substitution effect generated by the increase in income due to the cash transfer. This is what has been called the nutrition transition in the developing world (Popkin et al. 2012, Popkin et al. 2002). The nutrition transition typically begins with an increase in the consumption of vegetable fats and caloric sweeteners rather than of meat and milk (Popkin 2004). Indigenous mothers could be substituting traditional food items that are more nutritious (such as quinoa which is very high in proteins) for others that are considered luxury

goods such as edible oils and sugary treats. This theory is corroborated by the findings of Perova and Vakis (2009), who showed that participation in *Juntos* had a positive and statistically significant impact on the consumption of butter, oils and sugar (among other food groups) but not on meat, milk, cheese or egg consumption.

This decrease in protein intake would have an impact only on weight-for-length/height Z-scores, but would not affect height-for-age Z-score since higher protein intake increases the former but does not affect the latter (Koletzko et al. 2009). This pattern of substitution away from traditional protein sources to less nutritious options is not such a big issue for non-indigenous populations since their diets rely more on protein sources that are considered luxury goods (such as meats) and whose consumption would not decrease by the increase in the consumption of food items such as sugary treats.

6. Discussion

The results on educational outcomes found in this study are consistent with previous research that states that in countries with high enrollment and attendance rates, conditional cash transfers will have statistically significant impacts only at transition points (Perova and Vakis 2009; Schultz 2004), specifically in the 12-14 age group.

Indigenous children 12-14 years old attendance rates are negatively affected by participating in *Juntos*. There is no impact for the younger cohort. Yet, for non-indigenous male children aged 12-14, the overall effect is actually positive (7 percentage points). This magnitude is very similar to the coefficients found for other CCT programs in Latin America. Macours and Vakis (2008) in Nicaragua found an increase in attendance of 6.6 percentage points for children 7-15 years old, Galasso (2006) measured an impact of 7.5 percentage points for children 6-15 years old, Schultz (2004) estimated an effect of 8.7 percentage points for children in Grade 6 while Attanasio, Fitzsimmons and Gomez (2005) found an impact of 5.6 percentage points for children 14-17 years old. It is not surprising to find results for attendance that are much smaller (or even negative) than the ones found by Perova and Vakis (2011) since they did not include in either of their estimations techniques a control for ethnicity. This omission biased results upwards overestimating the impact of *Juntos* on attendance. Yet, this study is consistent with Perova and Vakis (2011) findings in relation to enrollment. This study finds almost no impact for both indigenous and non-indigenous children participating in *Juntos* for this outcome.

Yet, participating in *Juntos* has a negative impact on indigenous children progression rates especially at age 10-11. Boys' outcomes are driving the results for all age groups. Compared to the group average, grade progression decreased by 27 percent for indigenous boys 10-11 years old. The impact for non-indigenous children is close to zero for all ages, with non-indigenous boys having a small overall positive impact of participating in *Juntos* (less than a 2 percent increase compared to the group average).

Moreover, indigenous boys belonging to the older cohort that participated in *Juntos* have around a 10 percentage point increase in both the probability of repeating and failing the previous school year, while this impact almost disappears for non-indigenous older boys. This translates into a 122 percent increase in repetition rates for indigenous boys 12-14 years old, when compared to the group average. Similarly, compared to the group average, failing rates increased by 113 percent for indigenous boys 12-14 years old. Finally, dropping out rates of

indigenous children that are 12-14 years old (both boys and girls) increase by 6 percentage points yet the differential effect for non-indigenous children of the same age group is negative and actually larger. Non-indigenous boys participating in *Juntos* are 7 percentage points less likely to drop out school than non-participants. This is the largest effect of *Juntos* on both indigenous and non-indigenous education outcomes. It represents a 350 percent surge in dropping-out rates for indigenous boys 12-14 years old, and reduction of almost 88 percent for non-indigenous boys 12-14 years of age, when compared to their respective group averages.

This study has established that bad outcomes, such as decreasing attendance, failing the school year, repeating the school year, and dropping out from school, are higher for 12-14 years old indigenous boys who participated in *Juntos*. The visibility of the impact only in transition points is due to the high opportunity cost of transitioning from primary to secondary school for indigenous children. This cost not only includes higher commuting costs (which might encourage children to repeat the last year of primary school) but also costly learning adjustments (going from learning in their native language to solely learning in Spanish and tougher teacher demands (Roopnaraine et al. 2013)). Furthermore, the presence of informal conditionalities could shift some of the household workload to the children who could then diminish their study time (Roopnaraine et al. 2013). The only other study that has looked at repetition and drop-out rates is Behrman, Sengupta, and Todd (2005). Using Progresa's data, the authors found that during the transition from primary to secondary school there is an increase in repetition rates but a reduction in dropout rates. The authors conclude that children that who would have otherwise drop out after finishing primary school are staying in school due to the transfer but may have difficulties progressing.

In contrast, the health impacts found are, in general, positive. Participating in *Juntos* increases the probability that indigenous children will get the DPT 2, the Polio 2 and the BCG vaccines and that they will go to a growth control. The effect is reduced for non-indigenous children, but it is still positive. For example, compared to the group average, the probability of getting the DPT 2 vaccine increased by 14 percent for indigenous children 25-59 months old, while the increase for non-indigenous children of the same cohort was barely 3 percent. For the case of growth controls and vaccines, the results found are consistent with Perova and Vakis (2011) in terms of the magnitude of the coefficients and their level of significance. General vaccination results are being driven mostly by the age group of 3-5 years old, although there is also an important effect for young indigenous boys. There is a statistically significant differential impact for younger non-indigenous boys that participate in *Juntos,* who appear to have, a still positive but lower probability of getting vaccinated in comparison to indigenous boys. This trend is repeated across the specific set of vaccinations where strong positive impacts are registered for indigenous boys (both in the younger and older cohort) as well as smaller negative differential impacts for non-indigenous boys. Similarly, participating in *Juntos* increases the probability of seeking an iron supplement consultation only for indigenous boys, but not for girls. Indigenous boys younger than 2 years old see their probability of receiving iron supplements increased dramatically by 140 percent. Attending growth controls is the only health behavior that does not show a marked male preference. Participating in *Juntos* increases the probability of attending growth controls for both age groups and genders of indigenous children (by around 38 percentage points for the older group). As with other health services analyzed there is negative differential impact for non-indigenous children, yet they

overall enjoy a positive impact (around 24 percentage points for older cohort). Both these magnitudes are very similar to the coefficient found by Attanasio et al. (2005) in Colombia for the same age group (children 2- 4 years old). These authors measured an increase of 33.2 percentage points on the probability of a child being taken to a growth and development monitoring after taken part in Familias en Accion. Furthermore, compared to the group average, the probability of attending a growth control (according to the DHS) increased by 61 percent for indigenous children 25- 59 months old and by around 46 percent for non-indigenous older children. As with most CCT programs in Latin America participating in *Juntos* increases considerably the frequency of routing contacts between children and health services (Morris 2010).

Indigenous children participating in *Juntos* appear to have a lower probability of seeking medical attention when sick (with results driven by girls), while non-indigenous beneficiary children have an overall positive probability. The decrease for indigenous children is of around 47 percent of the group average, while the increase for non-indigenous children is about 19 percent. The results are consistent in sign, but not in magnitude with Perova and Vakis (2011) since by omitting ethnicity they overestimated the impact of *Juntos* on seeking health care when facing illness. As mentioned previously the additional workload imposed by informal conditionalities could limit a mother's time availability and reduce her ability to seek medical care when her children are sick.

There is a positive and statistically significant, yet small impact of participating in *Juntos* on the hemoglobin outcome of indigenous children, with the older children experiencing the largest impact (around 5 percent increase compared to the group average). Yet participating in *Juntos* increases the odds for indigenous children solely in the younger cohort of suffering from anemia. These results could be driven by the fact that mothers end up giving the supplements to their older children (Adato et al. (2004)). Finally, participating in *Juntos* decreases weight-for-length/height Z-score for indigenous children (in particular for boys who experienced a decrease of 96 percent, when compared to their respective group average). The differential impact for non-indigenous children is positive, but still the overall effect of participating in *Juntos* appears to be slightly negative (a decrease equivalent to 9 percent of the weight-for-length/height Z-score of non-indigenous boys). In contrast, participating in Juntos has no statistically significant impact on a child height-for-age Z-score, regardless of ethnicity or gender. This is a very standard result in the literature, since most authors have not found an impact of CCT in Latin America in this indicator (Morris, Olinto et al. (2004) in Brazil, Paxson and Schady (2008) in Ecuador, as well as Macours, Schady and Vakis (2008) in Nicaragua). Due to the additional expenses beneficiary mothers are incurring to satisfy informal conditionalities they might not be able to increase their food consumption enough to affect the children's height-for-age Z-score. Finally, if indigenous mothers are substituting traditional food items that are more nutritious and higher in proteins for edible oils and sugary treats they could be negatively impacting their children's weight-for-length/height Z-scores (Popkin 2004, Koletzko et al. 2009).

For the indigenous children, there seems to be a gender bias with positive results in health behaviors being driven in many cases by boys. A possible explanation is the type of conditionality applied for *Juntos* cash transfer. The money is received as a lump-sum payment, regardless of the number of children in the household. Hence, it is possible that the mother is

only making the child she considers a better investment fulfill the requirements to get the transfer. In the Peruvian case, boys might be prioritized over girls. This result reinforces previous findings by Ilahi (2001), who states that in Peru, changes in household welfare have an impact on girls' schooling and work much more than boys'.

This study is the first attempt to look into the impact of the *Juntos* program on indigenous' populations. It builds on previous efforts (Perova and Vakis 2009, 2011) by using a different dataset (2009 DHS) that has a much richer set of education and anthropometric outcomes, which can shed light on the way this cash transfer is affecting household behavior. This research paper reveals that indigenous children in Peru are actively benefiting from *Juntos* primarily in terms of improved health behaviors (and, in addition, in terms of their hemoglobin levels). Most important, these improvements are larger than for the non-indigenous population. Hence, the initial hypothesis that predicted smaller impacts due to geographical, cultural, and political isolation could be discarded. Yet, when educational outcomes are analyzed, unexpected and negative effects are found exclusively for the indigenous population. Indigenous older boys that benefit from *Juntos* have higher repetition and failing rates than the average population. These results could be in part a consequence of perverse incentives generated by the requirements of the program that demand attendance, but do not mention satisfactory grade progression as a prerequisite to enjoy the cash transfer.

To conclude, it should be acknowledged that the Propensity Score Weighing methodology used in this study has certain limitations. In the first place, it is not possible to control for the permanence period in the program. Hence, we cannot determine if the effect of participation is bigger as the time of permanence increases. In the same way, children who have recently entered the program cannot be ruled out of the analysis. Second, the mechanisms through which the conditional cash transfer is affecting the outcomes cannot be determined. Finally and most notably, the unconfoundedness assumption cannot be directly tested. This means that there could be some systematic differences in unobserved characteristics between beneficiary and non-beneficiaries that could have an impact on the outcomes analyzed (Smith and Todd 2005).Future research should focus on implementing new identification strategies that could overcome these limitations.

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Tables

Table 1 Propensity score calculation

	Data source	
Dependent Variable: Poverty status	**ENAHO 2009**	**DHS 2009**
Death in the region due to terrorism / total population in the district	0.53	0.43
	(0.15)***	(0.07)***
Violence intensity squared	-0.08	-0.04
	(0.03)**	(0.01)***
Percent of households with high economic dependence	0.06	0.05
	(0.01)***	(0.01)***
Extreme Poverty headcount	0.00	0.00
	(0.00)	(0.00)**
Extreme poverty %	-0.01	0.00
	(0.01)	(0.01)
District Chronic malnutrition rate	7.18	5.62
	(0.55)***	(0.36)***
District Poverty Gap	6.33	1.51
	(2.11)***	(1.35)
Probability to determine household eligibility	1.22	0.09
	(0.26)***	(0.11)
Number of household members	0.08	0.02
	(0.03)***	(0.02)
Number of children 5 and under	-0.17	0.02
	(0.07)**	(0.05)
Household head is male	-0.13	-0.19
	(0.14)	(0.09)**
Age of head of household	-0.01	-0.01
	(0.00)**	(0.00)***
Mother's age in years		0.02
		(0.00)***
Type of place of residence		-0.02
		(0.08)
Constant	-5.92	-4.26
	(0.37)***	(0.23)***
Pseudo R2	0.75	0.57
N	3,985	5,585

Source: ENAHO 2009 and DHS 2009, 2007 Census, 2008 *Juntos* Census, 2005 School Census and Final Report of the Commission of Truth and Reconciliation.

Notes: Standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations include district-level indicators.

Table 2 P-Tests of means for covariates used in the calculation of the Propensity Score for the 2009 ENAHO

	Before applying weights			After applying weights		
	Control	**Treatment**	**P-value**	**Control**	**Treatment**	**P-value**
Death in the region due to terrorism / total population in the district	0.07	0.42	0.00***	0.12	0.42	0.00***
Violence intensity squared	0.13	1.05	0.00***	0.29	1.05	0.00***
Percent of households with high economic dependence	6.02	21.08	0.00***	28.27	21.08	0.00***
Extreme Poverty headcount	4,138	6,176	0.00***	5,199	6,176	0.39
Extreme poverty %	11.35	48.73	0.00***	48.90	48.73	0.95
District Chronic malnutrition rate	0.18	0.49	0.00***	0.62	0.49	0.00***
District Poverty Gap	0.12	0.35	0.00***	0.34	0.35	0.56
Probability to determine household eligibility	0.41	0.74	0.00***	0.78	0.74	0.29
Number of household members	4.99	5.81	0.00***	5.95	5.81	0.86
Number of children 5 and under	0.68	0.84	0.00***	0.85	0.84	0.95
Household head is male	0.79	0.87	0.00***	0.86	0.87	0.91
Age of head of household	42.38	41.55	0.10	47.36	41.55	0.21

Source: ENAHO 2009, 2007 Census, 2008 *Juntos* Census, 2005 School Census and Final Report of the Commission of Truth and Reconciliation.

Notes: Standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 3 P-Tests of means for covariates used in the calculation of the Propensity Score for the 2009 DHS

	Before applying weights			After applying weights		
	Control	Treatment	P-value	Control	Treatment	P-value
Death in the region due to terrorism / total population in the district	0.09	0.55	0.00***	0.54	0.56	0.86
Violence intensity squared	0.36	2.11	0.00***	1.87	2.13	0.62
Percent of households with high economic dependence	6.75	18.73	0.00***	18.03	18.96	0.32
Extreme Poverty headcount	3,964	5,914	0.00***	5,180	5,971	0.01**
Extreme poverty %	12.96	43.86	0.00***	38.15	44.43	0.00***
District Chronic malnutrition rate	0.20	0.45	0.00***	0.46	0.46	0.97
District Poverty Gap	0.13	0.32	0.00***	0.29	0.32	0.00***
Probability to determine household eligibility	0.58	0.94	0.00***	0.91	0.95	0.01**
Number of household members	5.42	5.68	0.00***	5.52	5.67	0.48
Number of children 5 and under	1.38	1.54	0.00***	1.51	1.54	0.81
Household head is male	0.85	0.90	0.00***	0.92	0.90	0.54
Age of head of household	39.67	37.48	0.00***	37.73	37.48	0.81
Mother's age in years	28.36	31.38	0.00***	31.05	31.45	0.65
Type of place of residence	0.62	0.11	0.00***	0.14	0.10	0.08*

Source: DHS 2009, 2007 Census, 2008 *Juntos* Census, 2005 School Census and Final Report of the Commission of Truth and Reconciliation.
Notes: Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01.

Table 4 Children 6 months to 14 years, by ethnicity identification and data source

	ENAHO		DHS	
Data source	**N**	**Percent**	**N**	**Percent**
Non-indigenous	1,155	58.42	6,741	62.93
Indigenous	822	41.58	3,971	37.07
Total	1,977	100.00	10,712	100.00

Source: ENAHO 2009 and DHS 2009.

Table 5 *Juntos* recipient children, by indigenous identification and data source

	Non-Indigenous		Indigenous		Total	
	N	**Percent**	**N**	**Percent**	**N**	**Percent**
ENAHO						
Not a *Juntos* recipient	944	81.73	390	47.54	1,334	67.48
Juntos recipient	211	18.27	432	52.55	643	32.52
Total	1,155	100.00	822	100.00	1,977	100.00
DHS						
Not a *Juntos* recipient	5,801	86.06	2,045	51.50	7,846	73.24
Juntos recipient	940	13.94	1,926	48.50	2,866	26.76
Total	6,741	100.00	3,971	100.00	10,712	100.00

Source: ENAHO 2009 and DHS 2009.

Table 6 Descriptive statistics for education outcomes, by indigenous status and data source

	ENAHO					DHS				
	Non-indigenous		Indigenous			Non-indigenous		Indigenous		
Source	N	Mean	N	Mean	P-value	N	Mean	N	Mean	P-value
Education outcomes (children 6-14 years)										
Child enrolled in school	745	0.84	580	0.84	0.82					
Child attended school	745	0.78	580	0.79	0.77	2652	0.96	1888	0.98	0.00***
Progression						2288	0.90	1626	0.83	0.00***
Repeated grade						2258	0.06	1579	0.08	0.01**
Failed last year						2252	0.06	1603	0.08	0.02**
Dropped out						2258	0.03	1579	0.01	0.00***

Source: ENAHO 2009 and DHS 2009.

Notes: P-values are reported from t-test on the equality of means for each variable. *p < .10; ** p < .05; *** p < .01.

Table 7 CCT and education outcomes (children 6-14 years)

	Enrollment	Attendance		Progression	Repetition	Failed	Dropped out
Source	ENAHO	ENAHO	DHS	DHS	DHS	DHS	DHS
Household receives *Juntos*	-0.09	-0.16	-0.01	-0.12	0.05	0.04	0.01
	(0.06)	(0.06)***	(0.01)***	(0.03)***	(0.02)*	(0.02)	(0.01)***
Non Indigenous	0.03	-0.01	-0.04	-0.01	-0.00	-0.00	0.04
	(0.06)	(0.06)	(0.01)***	(0.02)	(0.02)	(0.02)	(0.01)***
Household receives *Juntos*	-0.03	0.07	0.02	0.10	-0.04	-0.04	-0.02
x Non Indigenous	(0.08)	(0.08)	(0.01)	(0.03)***	(0.03)	(0.03)	(0.01)*
R^2	0.45	0.49	0.03	0.14	0.03	0.04	0.05
N	1,325	1,325	4,540	3,914	3,837	3,855	3,837

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include the following individual-level covariates: indicator for sex and indicators for age-in-years. Child is defined as indigenous in the ENAHO survey if the household head's mother tongue is indigenous. Child is defined as indigenous in the DHS survey if the mother speaks the native language.

Table 8 CCT and enrollment and attendance

	ENAHO						DHS		
Data source	**Enrollment**			**Attendance**			**Attendance**		
Outcome	**All**	**Females**	**Males**	**All**	**Females**	**Males**	**All**	**Females**	**Males**
Age 6-7									
Household receives *Juntos*	-0.02	-0.13	0.11	-0.01	-0.13	0.02	-0.01	-0.02	0.00
	(0.10)	(0.12)	(0.16)	(0.09)	(0.12)	(0.15)	(0.01)	(0.02)	(0.02)
Non-indigenous	0.22	0.30	0.02	0.21	0.28	0.02	-0.03	-0.02	-0.03
	(0.13)*	(0.15)*	(0.14)	(0.12)*	(0.15)*	(0.13)	(0.02)	(0.02)	(0.04)
Household receives *Juntos x*	-0.17	-0.14	-0.04	-0.19	-0.13	-0.06	0.01	0.00	0.02
Non Indigenous	(0.16)	(0.19)	(0.21)	(0.15)	(0.19)	(0.20)	(0.03)	(0.04)	(0.04)
Age 12-14									
Household receives *Juntos*	-0.05	0.05	0.04	-0.11	0.04	-0.13	-0.06	-0.06	-0.07
	(0.07)	(0.07)	(0.11)	(0.07)	(0.08)	(0.11)	(0.02)***	(0.03)**	(0.03)**
Non Indigenous	-0.01	-0.02	0.12	-0.08	0.02	-0.10	-0.12	-0.09	-0.16
	(0.12)	(0.15)	(0.16)	(0.12)	(0.16)	(0.17)	(0.03)***	(0.03)***	(0.05)***
Household receives *Juntos x*	0.12	-0.13	0.12	0.16	-0.21	0.35	0.09	0.05	0.14
Non Indigenous	(0.12)	(0.15)	(0.19)	(0.13)	(0.16)	(0.19)*	(0.04)**	(0.05)	(0.07)**

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include indicators for age. First column also includes indicator for whether or not child is male. Child is defined as indigenous in the ENAHO survey if the household head's mother tongue is indigenous. Child is defined as indigenous in the DHS survey if the mother speaks the native language.

Table 9 CCT and grade progression

	All	Females	Males
Age 6-7			
Household receives *Juntos*	-0.07	-0.09	-0.04
	(0.09)	(0.14)	(0.14)
Non Indigenous	0.15	0.31	0.09
	(0.10)	(0.16)*	(0.14)
Household receives *Juntos x* Non-indigenous	0.03	-0.08	0.09
	(0.15)	(0.22)	(0.20)
Age 8-9			
Household receives *Juntos*	-0.10	-0.04	-0.14
	(0.04)**	(0.05)	(0.07)**
Non Indigenous	-0.05	0.07	-0.15
	(0.04)	(0.06)	(0.06)**
Household receives *Juntos x* Non-indigenous	0.08	-0.06	0.22
	(0.06)	(0.08)	(0.08)***
Age 10-11			
Household receives *Juntos*	-0.16	-0.08	-0.21
	(0.03)***	(0.04)**	(0.05)***
Non Indigenous	-0.04	0.03	-0.08
	(0.04)	(0.05)	(0.05)
Household receives *Juntos x* Non-indigenous	0.13	0.07	0.17
	(0.04)***	(0.06)	(0.06)***
Age 12-14			
Household receives *Juntos*	-0.07	-0.03	-0.10
	(0.03)***	(0.04)	(0.03)***
Non Indigenous	0.01	0.03	-0.02
	(0.03)	(0.04)	(0.04)
Household receives *Juntos x* Non-indigenous	0.05	0.03	0.08
	(0.04)	(0.05)	(0.05)

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include indicators for age. First column also includes indicator for whether or not child is male. Child is defined as indigenous if the household head's mother tongue is indigenous.

Table 10 CCT and repetition, failing, and dropping-out rates

	Repetition			Failing			Dropping out		
Outcome	**All**	**Females**	**Males**	**All**	**Females**	**Males**	**All**	**Females**	**Males**
Age 8-9									
Household receives *Juntos*	0.09	0.09	0.08	0.07	0.06	0.06	0.00	0.00	0.01
	(0.03)***	(0.04)**	(0.05)	(0.02)***	(0.04)	(0.04)	(0.00)	(0.00)	(0.01)
Non Indigenous	0.03	0.03	0.00	0.04	0.01	0.05	0.01	0.01	0.02
	(0.03)	(0.04)	(0.05)	(0.03)	(0.04)	(0.04)	(0.01)	(0.01)	(0.01)
Household receives *Juntos x* Non-indigenous	-0.06	-0.08	-0.04	-0.08	-0.04	-0.11	-0.01	-0.01	-0.01
	(0.04)	(0.06)	(0.07)	(0.04)**	(0.05)	(0.06)*	(0.01)	(0.01)	(0.02)
Age 10-11									
Household receives *Juntos*	-0.01	0.04	0.00	-0.03	0.00	-0.01	-0.00	-0.00	-0.00
	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.06)	(0.00)	(0.01)	(0.00)
Non Indigenous	-0.01	-0.04	0.04	-0.02	-0.05	0.03	0.01	0.01	0.00
	(0.04)	(0.06)	(0.05)	(0.04)	(0.06)	(0.05)	(0.01)	(0.01)	(0.01)
Household receives *Juntos x* Non-indigenous	0.02	-0.00	-0.02	0.02	0.01	-0.01	0.01	0.01	0.02
	(0.06)	(0.07)	(0.08)	(0.06)	(0.08)	(0.08)	(0.01)	(0.02)	(0.02)
Age 12-14									
Household receives *Juntos*	0.08	0.05	0.11	0.08	0.05	0.09	0.06	0.06	0.07
	(0.03)***	(0.04)	(0.04)***	(0.03)***	(0.04)	(0.03)***	(0.02)***	(0.03)**	(0.03)***
Non Indigenous	-0.02	-0.02	-0.01	-0.01	-0.02	-0.01	0.12	0.09	0.16
	(0.03)	(0.05)	(0.03)	(0.03)	(0.05)	(0.03)	(0.03)***	(0.03)***	(0.05)***
Household receives *Juntos x* Non-indigenous	-0.08	-0.07	-0.10	-0.10	-0.07	-0.11	-0.09	-0.05	-0.14
	(0.04)**	(0.06)	(0.05)**	(0.04)***	(0.06)	(0.05)**	(0.04)**	(0.05)	(0.07)**

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include indicators for age. First column also includes indicator for whether or not child is male. Child is defined as indigenous if the mother speaks a native language.

Table 11 Progression rate, by CCT participation status and ethnicity– DHS data

	All			Boys			Girls		
Variable	Mean for treatment group	Mean for control group	Diff	Mean for treatment group	Mean for control group	Diff	Mean for treatment group	Mean for control group	Diff
Non-indigenous									
Age 8-9	0.85	0.92	-0.07**	0.86	0.90	-0.04	0.83	0.94	-0.11**
Age 10-11	0.86	0.90	-0.04*	0.85	0.89	-0.04	0.86	0.91	-0.05
Age 12-14	0.82	0.89	-0.07***	0.82	0.87	-0.05*	0.82	0.90	-0.08***
Indigenous									
Age 8-9	0.82	0.91	-0.09***	0.83	0.95	-0.12**	0.79	0.88	-0.09*
Age 10-11	0.78	0.87	-0.09***	0.77	0.87	-0.10***	0.78	0.86	-0.08**
Age 12-14	0.79	0.86	-0.07***	0.79	0.84	-0.05*	0.80	0.88	-0.08***

Source: DHS 2009. Only observations used in the propensity score matching estimation are included.

Notes: Levels of significance to the right of each calculated difference come from P-values reported from t-test on the equality of means for each variable.
*p < .10; ** p < .05; *** p < .01.

Table 12 Descriptive statistics for health variables, by indigenous status and data source: Children 6-59 months

	ENAHO					DHS				
	Non-indigenous		Indigenous			Non-indigenous		Indigenous		
Data source	**N**	**Mean**	**N**	**Mean**	**P-value**	**N**	**Mean**	**N**	**Mean**	**P-value**
Use of health services										
Vaccinated in the last 3 months	293	0.27	183	0.32	0.31					
BCG vaccine						3379	0.92	1732	0.91	0.24
DPT 2 vaccine						3310	0.88	1683	0.84	0.00***
Polio 2 vaccine						3312	0.83	1704	0.83	0.52
Attended growth controls	293	0.57	183	0.77	0.00***	3394	0.64	1735	0.69	0.00***
Consulted about iron supplement	142	0.28	81	0.33	0.42					
Medical attention for sick child	293	0.63	183	0.76	0.04**					
Anthropometric outcomes										
Hemoglobin level (in g/dl - 1 decimal)						3043	112	1559	109	0.00***
Suffered from anemia						3043	0.38	1559	0.48	0.00***
Height for age Z-score						1195	-1.29	505	-1.79	0.00***
Weight-for-length/-height Z-score						1194	0.38	505	0.43	0.39

Source: ENAHO 2009 and DHS 2009.

Notes: P-values are reported from t-test on the equality of means for each variable. *p < .10; ** p < .05; *** p < .01.

Table 13 CCT and use of health services

	Vaccinations							
	Any vaccination	BCG	DPT2	Polio2	Growth monitoring		Consultation about iron supplement	Seeks medical care conditional on illness
Source	**ENAHO**	**DHS**	**DHS**	**DHS**	**ENAHO**	**DHS**	**ENAHO**	**ENAHO**
Household receives *Juntos*	0.03	0.07	0.13	0.15	0.52	0.34	0.30	-0.36
	(0.10)	(0.05)	(0.05)**	(0.06)**	(0.11)***	(0.06)***	(0.19)	(0.15)**
Non-indigenous	-0.18	0.05	0.11	0.02	0.12	0.13	-0.07	-0.58
	(0.15)	(0.03)*	(0.04)***	(0.07)	(0.14)	(0.04)***	(0.24)	(0.19)***
Household receives *Juntos x*	0.09	-0.05	-0.10	-0.06	-0.02	-0.15	0.10	0.48
Non-indigenous	(0.16)	(0.04)	(0.04)**	(0.07)	(0.15)	(0.06)***	(0.27)	(0.21)**
R^2	0.54	0.06	0.09	0.06	0.78	0.24	0.40	0.48
N	476	5,111	4,993	5,016	476	5,129	223	254

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include the following individual-level covariates: indicator for sex and indicators for age.Child is defined as indigenous in the ENAHO survey if the household head's mother tongue is indigenous. Child is defined as indigenous in the DHS survey if the mother speaks the native language.

Table 14 CCT and use of health services, by age groups and gender

	Children 6-24 months			Children 25-59 months		
	All	**Females**	**Males**	**All**	**Females**	**Males**
Vaccines (ENAHO)						
Household receives *Juntos*	-0.04	-0.19	0.85	0.30	0.22	0.05
	(0.17)	(0.20)	(0.21)***	(0.09)***	(0.16)	(0.10)
Non-indigenous	-0.08	-0.20	0.48	-0.04	-0.29	0.04
	(0.23)	(0.32)	(0.25)*	(0.12)	(0.21)	(0.16)
Juntos x Non-indigenous	0.09	0.58	-0.59	-0.15	0.07	-0.14
	(0.26)	(0.31)*	(0.26)**	(0.15)	(0.28)	(0.18)
BCG (DHS)						
Household receives *Juntos*	0.11	-0.03	0.31	0.07	0.19	-0.03
	(0.07)*	(0.04)	(0.11)***	(0.06)	(0.11)*	(0.02)
Non-indigenous	0.08	-0.07	0.28	0.04	0.08	0.01
	(0.06)	(0.06)	(0.09)***	(0.03)	(0.06)	(0.03)
Juntos x Non-indigenous	-0.01	0.08	-0.19	-0.06	-0.13	-0.02
	(0.07)	(0.08)	(0.11)*	(0.04)	(0.08)	(0.04)
DPT 2 (DHS)						
Household receives *Juntos*	0.17	0.28	0.07	0.12	0.10	0.15
	(0.07)**	(0.07)***	(0.05)	(0.06)**	(0.08)	(0.08)*
Non-indigenous	0.11	0.17	0.08	0.11	0.16	0.07
	(0.05)**	(0.07)**	(0.05)	(0.04)***	(0.06)***	(0.06)
Juntos x Non-indigenous	-0.11	-0.20	-0.04	-0.09	-0.11	-0.08
	(0.07)	(0.10)**	(0.08)	(0.05)*	(0.07)*	(0.07)
Polio 2 (DHS)						
Household receives *Juntos*	0.06	0.04	0.18	0.19	0.09	0.28
	(0.07)	(0.07)	(0.08)**	(0.07)***	(0.08)	(0.09)***
Non-indigenous	-0.12	-0.00	-0.05	0.10	0.07	0.12
	(0.13)	(0.08)	(0.12)	(0.05)**	(0.05)	(0.07)*
Juntos x Non-indigenous	0.03	-0.09	-0.08	-0.09	-0.04	-0.14
	(0.13)	(0.10)	(0.12)	(0.06)	(0.06)	(0.08)*
Growth controls (ENAHO)						
Household receives *Juntos*	0.55	0.57	0.04	0.65	0.91	0.20
	(0.12)***	(0.10)***	(0.14)	(0.07)***	(0.08)***	(0.09)**
Non-indigenous	0.08	0.06	-0.13	0.22	0.39	-0.09
	(0.18)	(0.23)	(0.16)	(0.15)	(0.21)*	(0.17)
Juntos x Non-indigenous	0.03	0.05	0.16	-0.17	-0.34	0.16
	(0.21)	(0.25)	(0.17)	(0.16)	(0.19)*	(0.18)
Growth controls (DHS)						
Household receives *Juntos*	0.18	0.30	0.05	0.38	0.43	0.34
	(0.06)***	(0.06)***	(0.05)	(0.07)***	(0.10)***	(0.09)***
Non-indigenous	0.07	0.10	0.05	0.12	0.08	0.15
	(0.04)	(0.07)	(0.05)	(0.05)**	(0.07)	(0.07)**
Juntos x Non-indigenous	-0.09	-0.22	0.08	-0.14	-0.12	-0.15
	(0.06)	(0.08)**	(0.06)	(0.06)**	(0.08)	(0.09)*
Iron supplement (ENAHO)						

	Children 6-24 months			Children 25-59 months		
	All	Females	Males	All	Females	Males
Household receives *Juntos*	0.30	0.40	0.44			
	(0.19)	(0.28)	(0.18)**			
Non-indigenous	-0.07	0.20	-0.25			
	(0.24)	(0.31)	(0.18)			
Juntos x Non-indigenous	0.10	-0.35	0.36			
	(0.27)	(0.36)	(0.21)*			
Medical attention (ENAHO)						
Household receives Juntos	-0.51	-0.18	0.87	-0.10	-0.22	0.57
	(0.20)**	(0.09)**	(0.33)**	(0.21)	(0.16)	(0.25)**
Non-indigenous	-0.64	0.06	-0.21	-0.48	-0.70	-0.19
	(0.32)**	(0.22)	(0.25)	(0.28)*	(0.32)**	(0.23)
Juntos x Non-indigenous	0.65	-0.20	-0.10	0.32	0.76	-0.22
	(0.34)*	(0.23)	(0.33)	(0.32)	(0.40)*	(0.35)

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include indicators for age. First column also includes indicator for whether or not child is male. Child is defined as indigenous in the ENAHO survey if the household head's mother tongue is indigenous. Child is defined as indigenous in the DHS survey if the mother speaks the native language.

Table 15 CCT and anthropometry

	HAZ	WHZ	Hemoglobin status	Anemic
Source	**DHS**	**DHS**	**DHS**	**DHS**
Household receives *Juntos*	0.01	-0.58	4.14	-0.01
	(0.17)	(0.11)***	(1.69)**	(0.07)
Non-indigenous	0.19	-0.05	-2.20	-0.03
	(0.16)	(0.12)	(1.16)*	(0.07)
Household receives *Juntos* x Non-indigenous	-0.19	0.47	0.87	0.02
	(0.20)	(0.16)***	(1.63)	(0.08)
R^2	0.21	0.17	0.27	0.12
N	1,700	1,699	4,602	4,602

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include the following individual-level covariates: indicator for sex and indicators for age. Child is defined as indigenous in the DHS survey if the mother speaks the native language.

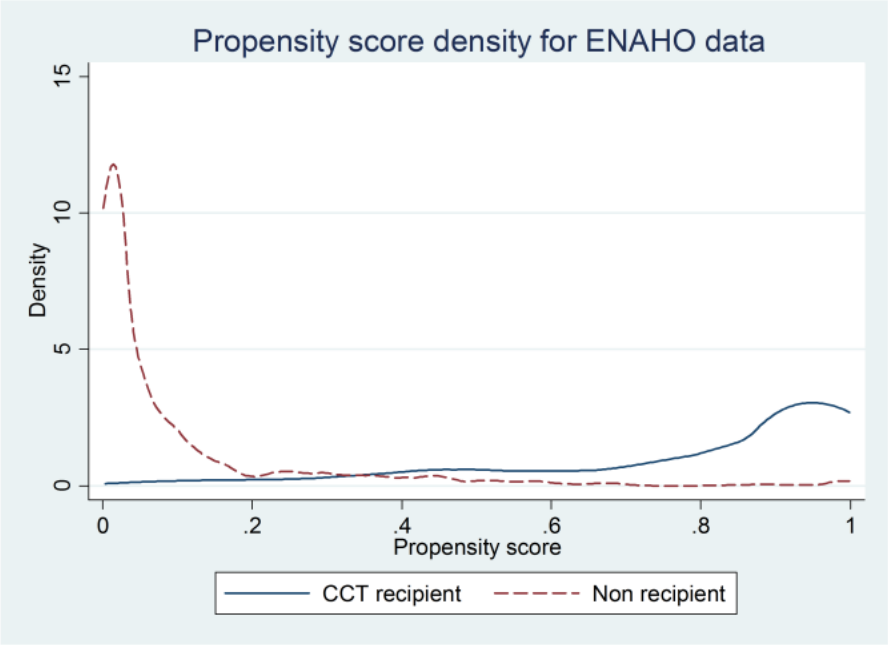
Table 16 CCT and anthropometry, by age groups and gender

	Children 6-24 months			Children 25-59 months		
	All	**Females**	**Males**	**All**	**Females**	**Males**
Hemoglobin level (DHS)						
Household receives *Juntos*	-1.12	-6.88	6.07	6.00	7.47	5.40
	(2.12)	(2.39)***	(2.91)**	(1.77)***	(2.42)***	(2.44)**
Non-indigenous	-3.89	-8.62	1.58	-1.01	0.45	-2.38
	(1.66)**	(2.54)***	(2.27)	(1.35)	(1.88)	(1.87)
Juntos x Non-indigenous	5.99	12.65	-2.26	-1.49	-4.22	0.47
	(2.60)**	(3.25)***	(3.65)	(1.82)	(2.50)*	(2.54)
Anemic (DHS)						
Household receives *Juntos*	0.23	0.36	0.02	-0.08	-0.15	-0.07
	(0.07)***	(0.08)***	(0.10)	(0.08)	(0.11)	(0.09)
Non-indigenous	0.12	0.17	-0.05	-0.13	-0.08	-0.19
	(0.07)*	(0.09)**	(0.08)	(0.05)**	(0.07)	(0.07)***
Juntos x Non-indigenous	-0.21	-0.36	0.07	0.12	0.13	0.16
	(0.09)**	(0.12)***	(0.12)	(0.07)*	(0.10)	(0.09)*
Height-for-age Z-score (DHS)						
Household receives *Juntos*	0.01	0.02	0.06			
	(0.17)	(0.13)	(0.26)			
Non-indigenous	0.19	0.07	0.20			
	(0.16)	(0.18)	(0.24)			
Juntos x Non-indigenous	-0.19	-0.14	-0.21			
	(0.20)	(0.22)	(0.31)			
Weight-for-length Z-score (DHS)						
Household receives *Juntos*	-0.58	-0.30	-0.78			
	(0.11)***	(0.11)***	(0.15)***			
Non-indigenous	-0.05	-0.15	0.02			
	(0.12)	(0.13)	(0.16)			
Juntos x Non-indigenous	0.47	0.22	0.74			
	(0.16)***	(0.19)	(0.24)***			

Notes: Robust standard errors in parentheses. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.All estimations control for household- and district-level covariates used in the propensity score and include indicators for age. First column also includes indicator for whether or not child is male. Child is defined as indigenous if the mother speaks the native language.

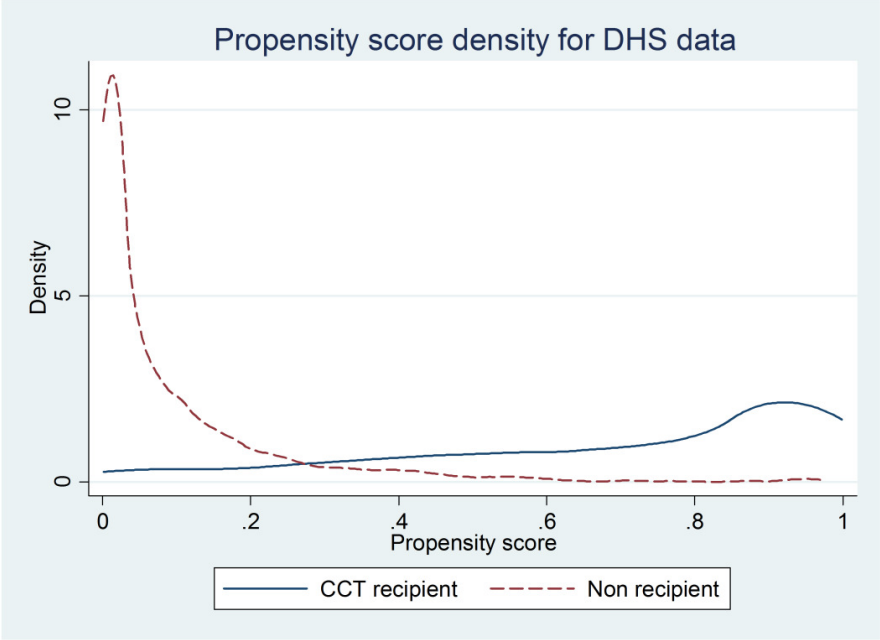
Figures

Figure 1 Kernel densities of the propensity score for the ENAHO dataset, by recipient status



Source: ENAHO 2009, 2007 Census, 2008 *Juntos* Census, 2005 School Census and Final Report of the Commission of Truth and Reconciliation.

Figure 2 Kernel densities of the propensity score for the DHS dataset, by recipient status



Source: DHS 2009, 2007 Census, 2008 *Juntos* Census, 2005 School Census and Final Report of the Commission of Truth and Reconciliation.