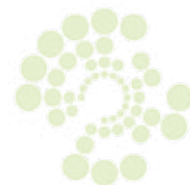


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# MEASURING THE IMPACT OF BOLSA FAMILIA PROGRAM BASED ON DATA FROM HEALTH AND NUTRITION DAYS (BRAZIL)

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# MEASURING THE IMPACT OF BOLSA FAMILIA PROGRAM BASED ON DATA FROM HEALTH AND NUTRITION DAYS (BRAZIL)

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# MEASURING THE IMPACT OF BOLSA FAMILIA PROGRAM BASED ON DATA FROM HEALTH AND NUTRITION DAYS (BRAZIL)

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## SUMMARY

The Brazilian Family Benefit Program (Bolsa Família Program, or PBF) reached the target of 11.2 million families in 2006, making it the largest conditional cash transfer program in the world. The country's Health and Nutrition Days (HND) are a strategy that exploits the window of opportunity provided by vaccination campaigns to estimate the prevalence of anthropometric deficits in children from zero to five years old. This article aims to verify the effect of the PBF program on children's anthropometric indicators – their height/age, weight/age and weight/height – based on data collected during HNDs.

Four HNDs were included: two in 2005, in the semi-arid region and agrarian reform settlements and two in 2006, in Quilombola communities and Amazonas state. Once the data had been combined and thoroughly checked, the final integrated database comprised 22,375 zero to five year olds with complete data. The variables under study, namely their birth weight, birth certificate, family head education level, family head gender, access to piped water and electricity, height for age, weight for age and weight for height, were converted into binary variables (categories: appropriate and inappropriate) for regression analysis. The significance level was set at  $p < 0.05$ . Notably, there was low or moderate variability between the studied groups as regards most variables except for the education level of the family head. Concerning access to the PBF, a double standard was observed, whereby there was around 39% coverage for families from the semi-arid region and Amazonas, but nearly 50% coverage for families from settlements and Quilombolas. The odds ratio indicated that children whose family received the PBF benefit were 26% more likely to have an appropriate height/age than those from non-beneficiary families, and that the same difference also applied to weight/age. The only other factor that had a positive effect on anthropometric indicators was birth weight. There were no significant findings concerning weight/height deficit. The findings indicate a protective effect of PBF and the need to provide beneficiary families with greater access to the goods and services which interact with improved nutrition, to ensure a sustainable increase in health levels.

## INTRODUCTION

The methods employed to combat hunger and food insecurity are closely related to the fight against poverty. Historically, Brazil has tended towards the emergency distribution of foods for immediate consumption (e.g. basic food basket, school meals, milk and cooking oil). At the end of the twentieth century, a consensus was reached that society should be organized in such a way as to ensure a universal minimum income as the right of every citizen (Almeida 2000, Suplicy 2002).

Considering the high concentration of income and wealth in Brazil, the guarantee of a minimum income has become an important strategy in the fight against poverty. According to Senna et al, *"Brazil's minimum income programs propose to promote a linkage with other social policies and programs, creating the possibility that, in theory, the typical fragmentation of the country's social policies will be overcome, making it easier to adopt intersectoral actions"* (Senna et al. 2007).

Some authors point out that direct cash transfers help diminish administrative costs and reduce the likelihood of fraud and the misappropriation of resources. In addition, this type of strategy allows beneficiaries to choose which products to buy, which is not the case with classic food distribution models (Lavinias, 2000).

In Brazil, the adoption of this strategy is recent and has raised a series of expectations as regards both the possibility of ensuring that beneficiaries receive their rights as citizens and the opportunity it gives to break down the harmful status quo by drawing a clear dividing line between social policies and political patronage.

From 2001 to 2003, several cash transfer programs were created in Brazil, such as the National School Allowance Program (Brazil 2001a), the Food Allowance Program (Brazil 2001b) and the National Program for Access to Food - Food Card (Brazil 2003). In late 2003 and early 2004, these programs were brought together under the umbrella of Bolsa Familia Program (PBF) (Brazil 2004). In January 2004, the Ministry of Social Development and the Fight against Hunger (MDS) were created with the mission of implementing the national policy of food and nutrition security and coordinating, supervising, monitoring and evaluating the operation of cash transfer programs.

The objectives of the PBF are based on the latest findings and experiences in social intervention projects. As such, it is hoped that it will provide a clear alternative to existing social policy in the country. The Program has unified the procedures for managing and implementing federal government cash transfers and is devised as a strategy for strengthening and coordinating policies to fight poverty. The program seeks to emancipate beneficiary families by associating cash transfer with the usage of health and education services through conditionalities (Silva 2007).

The Program reached the target of 11.2 million families a month in 2006. Its objectives are: i) to combat hunger and promote food and nutrition security by granting a financial benefit which, until 2007, ranged from R\$15.00 (US\$ 6.67) to R\$ 95.00 (US\$ 42.22) a month<sup>1</sup>, depending on the socio-demographic characteristics of the household in question, particularly the number of preschool children and schoolchildren; ii) to promote access to the existing network of public services, especially health, education and social services, making eligibility to receive the financial benefit conditional on the usage of these services; and iii) to promote interdisciplinarity, complementarity and synergy among the government's social actions. In 2007, US\$ 303 million was invested in the Family Benefit Program each month, summing US\$ 3.7 billion in the year. It is the largest cash transfer program in the world.

In the health sector, which is the focus of this study, the conditionalities emphasize monitoring children's growth through anthropometric indicators, as well as vaccinations, prenatal care and other basic healthcare. The program promotes the link between access to different basic social rights in the realms of health, nutrition, education and welfare by the provision of family benefits. Most recent studies of this program have focused on the extent to which it has helped reduce poverty and inequality and provide access to education and health services (Oliveira et al 2007, Soares et al 2006). Few studies have explored the impact the Program has had on reducing malnutrition (Conde et al 2007) and food insecurity (IBASE 2008, Segall-Corrêa et al 2008).

One comprehensive initiative to describe the nutritional status of children in vulnerable populations is the Health and Nutrition Day (HND). This is a strategy that exploits the window of opportunity offered by vaccination campaigns to estimate the prevalence of anthropometric deficits in children

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<sup>1</sup> US\$ 1 = R\$ 2.25

from zero to five years of age. These campaigns offer a unique opportunity, not only because of their ability to mobilize the population, but also because they both make use of the same structure. By combining two such major initiatives, greater efficiency can be achieved in a context where resources are limited and greater accountability of public funds is required (Santos et al 2008a).

Five HNDs have so far been conducted. Surveys of children from the semi-arid region (the largest and most densely populated area of poverty in Latin America) and northeastern agrarian reform settlements were done in 2005. The surveys of *Quilombola* communities (isolated rural communities of descendents of slaves) and Amazonas state were performed in 2006. A similar study for the North region occurred in 2007. Data from the last HND are not yet available.

Nutritional status has long been recognized as an important indicator for assessing people's health, nutrition and living conditions. It is especially relevant when it comes to the nutritional status of under-fives, a group that is known to be more vulnerable to adverse living conditions and social inequality.

This article aims to describe the nutritional status of children from families enrolled in the Bolsa Familia program and to ascertain the effect of the program on the anthropometric indicators of height/age, weight/age and weight/height among children from zero to five years of age from vulnerable population groups in Brazil.

## METHODS

The four studies employed a cross-sectional design and investigated children under five years of age that were vaccinated during the 2005 and 2006 National Immunization Days. The area under study included all the 1,133 municipalities in the semi-arid region, following a recent classification by the Ministry of National Integration. There are around 26 million people living in this area, including 2.3 million children of up to five years of age. The sample was designed to obtain independent estimates for each of the nine states in the region.

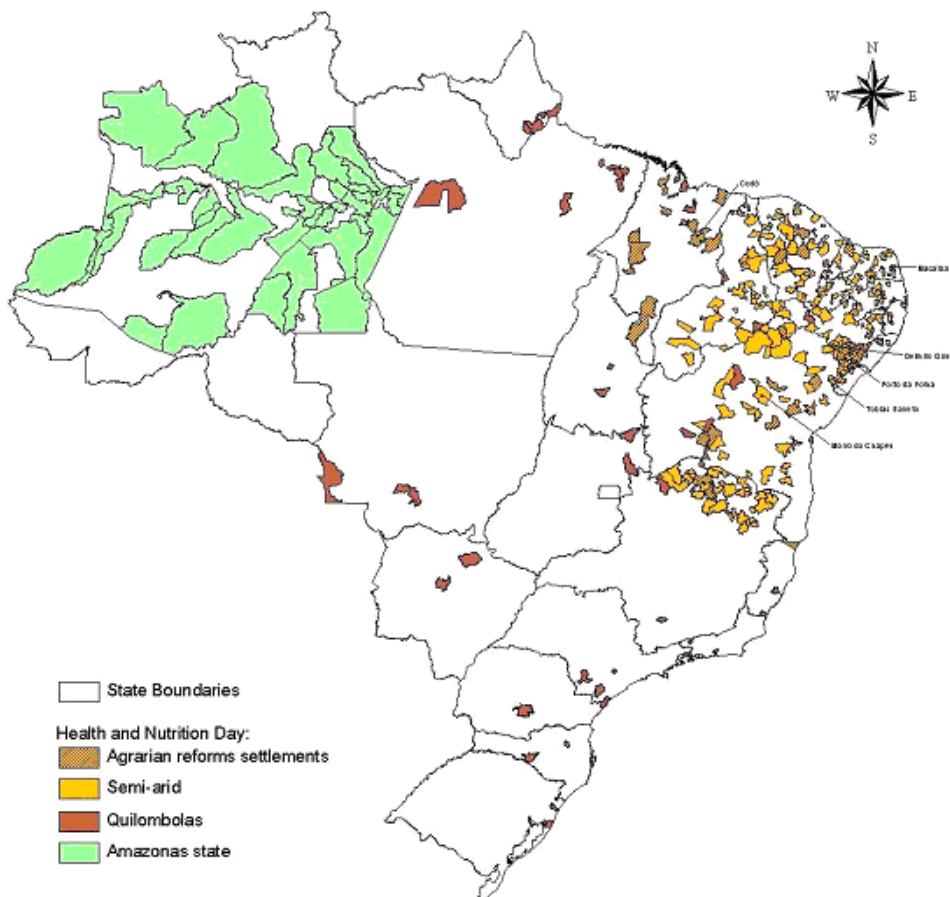
The primary sampling unit was the municipality, and 30 were drawn per state, except in Alagoas and Sergipe, where all the municipalities in the semiarid region were included (38 and 29, respectively). The selection process resulted in a total of 277 municipalities from the nine states. In each municipality, two vaccination sites were drawn (secondary sampling units) in such a way as to ensure that rural and urban areas were represented. At each site, children were systematically selected from the queue at calculated intervals based on vaccination coverage from the previous year. The selection process therefore involved three stages, with the allotments proportional to the number of children in each primary unit. This selection process gave rise to a sample of 17,586 children studied, but once the data cleaning and plausibility analysis had been performed, the databank was reduced to 16,239 children with valid information (7.6% loss) (Santos et al 2007).

The agrarian reform settlements under study were all 3,329 settlements in the Northeast region and northern Minas Gerais state registered with the National Institute of Colonization and Agrarian Reform (INCRA) in June 2005. According to this list, these settlements included 213,878 families, with about 102,000 zero to five year olds (target population). The sample of municipalities and settlements was selected with probability proportional to the number of residents per state. The sample encompassed 75 settlements in 40 municipalities from ten states (nine states from the Northeast plus northern Minas Gerais). During the fieldwork, the researchers randomly selected

children at the vaccination sites for weighing, but in many settlements there was no need, because there were fewer children in the sample than expected. The process resulted in a sample of 1,342 children aged between zero and five.

The Quilombola Health and Nutrition Day sample was designed to obtain estimates on a nationwide level, not representative per state. The primary sampling unit was the Quilombola community. The cluster sample design involved two stages. At the first stage, communities were selected to be included in the study and then, at the second stage, all the families with children of the target age group were investigated. Given the high cost involved in a study of this kind, it was decided to investigate 60 communities. They were selected so as to assure a distribution respecting the proportionality which existed in the cadastre. Thus, in all those states where there were up to five communities, two were selected, with the exception of Paraná, which had only one Quilombola community. In those states with five to ten communities, four were drawn and if there were more than ten (Bahia, Maranhão and Pará), seven communities were selected. Under the circumstances, this was the best way encountered of obtaining a self-weighted sample. The result was a probabilistic sample of 2,941 children from zero to five years of age (Santos et al 2008b).

In the state of Amazonas, two samples were studied: one from the capital, Manaus, where about 50% of the state's population live, and the other from the rest of the state, which included 42 municipalities. However, in this analysis, only the sample of 2,405 children from the 42 municipalities was included in order to make the studies more comparable, since in the other three surveys the state capitals were not covered. Figure 1 illustrates the municipalities sampled during the four HNDs included in this study. The six municipalities with names written on the map were coincidentally sampled in three of the HNDs: semi-arid region, settlements and Quilombolas.



**Figure 1** - Municipalities selected for the Health and Nutrition Days. Brazil 2005 - 2006



For the data collection stage, the party responsible for the child's daily care answered questions from a brief, pre-tested questionnaire. This covered topics such as the schooling of the head of the household, access to goods and basic social benefits, number of meals per day, growth monitoring, symptoms of diseases prevalent in childhood (acute respiratory infections and diarrhea), breastfeeding practices and prenatal care, among others.

Two professionals took the anthropometric measurements of weight and height, one of whom was responsible only for weighing the child and the other for reading the length (up to 24 months old) or height (over this age). Measurements were taken in duplicate for each child and annotated on the questionnaire. Wooden rulers marked from 10 to 99 cm with graduations in millimeters (Carci brand) were used to measure the children's length. Microtoise stadiometers with frontal reading were used for height measurements (SECA model 206), ranging from 0 to 2 meters with graduation in millimeters, or a metal stadiometer (AlturaExata brand), ranging from 0 to 2.13 meters and graduation in millimeters. For the weight measurements, pediatric scales (16kg capacity with 10g graduations) and adult scales (150kg capacity with 100g graduations) that already existed at the health centers were used. To improve the accuracy, all the scales were previously checked and those found to be faulty were replaced.

The fieldwork was supervised by state and national coordinators as well as a group of multipliers in order to guarantee quality control. In addition, some states supervised the data collection at all or some of the vaccination sites by assigning health professionals and/or students specially trained in nutrition assessment.

The consistency of the data was analyzed by calculating the differences between the two anthropometric measurements taken. Height measurements were considered inaccurate if there was an absolute difference greater than 1 cm, while any two weights with an absolute difference greater than 0.2 kg were considered imprecise. The more acceptable number within the pair of imprecise measures was decided on by polynomial regression to attain the best expression of the average of the pair.

Anthro 2006 software was employed to calculate the nutritional indicators, according to the World Health Organization standard reference, WHO-2006. The anthropometric indices were expressed as standard deviations (Z scores) for the reference population and analyzed as to their "biological plausibility", procedures which are recommended by the WHO (WHO 1995). The children's nutritional status was classified according to international criteria recommended by the WHO. Children with an index whose standard deviation was less than twice the median of the reference population were considered as having a nutritional deficit for the index under analysis. Children with a weight/height index whose standard deviation was more than twice the median of the reference population were considered to have excess weight for height.

The protocol for the HNDs was approved by the Ethics Committees of the National School of Public Health/FIOCRUZ and the National Amazonian Research Institute (INPA). The party responsible for the child was given a prior explanation about the survey and signed a Statement of Free and Informed Consent. After the anthropometric examination, the weight was recorded on the Child Card and the parent or guardian was informed of their nutritional status. Children diagnosed with nutritional deficiency (weight/age < 3rd percentile) were referred to the nearest health unit and were also identified by a more detailed form to help monitoring by municipal social workers. Table 1 briefly shows where and when each HND took place, the states and municipalities surveyed, the number of children under age five sampled and the total population in that age group used as a reference for the sampling design.

After the four surveys' databases had been combined and thoroughly checked, the final integrated databank comprised 22,375 children from zero to five years old with complete data. The breakdown of this sample by group was: 16,030 from semi-arid areas; 1,342 from settlements; 2,728 from Quilombola communities and 2,275 from Amazonas state. Frequencies were calculated in order to describe the social and demographic characteristics, and the Chi square test was used, with correction for continuity, where appropriate, with a significance level of  $p < 0.05$ .

**TABLE 1. DESCRIPTION AND SCOPE OF HEALTH AND NUTRITION DAYS. BRAZIL 2005 - 2006**

POPULATION/ REGION	DATE OR PERIOD	SAMPLED STATES/ STATES IN REGION	SAMPLED MUNICIPALITIES/ MUNICIPALITIES IN THE REGION	NO. 0-5 YEAR OLD CHILDREN SAMPLED	ESTIMATED 0 TO 5 YEAR OLD REFERENCE POPULATION
Semi-arid/ North-east region	20 August 2005	9 / 9	277 / 1.133	16.239	2.300.000
Rural settlement/ Northeast region and MG	Aug - Sep 2005	10 / 10	40 / 1.877	1.342	230.000
Quilombolas/ National	Aug - Sep 2006	22 / 27	60 / 5.564	2.941	90.000
Amazon state/ North region	27 August 2006	1 / 7	43 / 62	Manaus   1.875 Interior   2.405	454.000

Source: Santos et al 2008a

The analysis of the effects of Bolsa Família Program on the beneficiaries' anthropometric status was made by means of logistic regression to estimate the odds ratio for prevalence among the groups that receive and do not receive the benefit. Six different control variables were used: birth weight, possession of the child's birth certificate, schooling of the family head, gender of the family head, access to piped water and access to electricity. The confidence intervals at 95% were calculated. These variables were included in the model as a proxy for the families' socioeconomic status and household environmental conditions. Due to the lack of sample weights for the Quilombola and Amazonas studies, the data were treated as if they were a random sample drawn from an infinite population.

The variables under study, namely child's birth weight, birth certificate, schooling of the head of family, gender of the head of family, piped water, electricity, height for age, weight for age and weight for height, were converted into binary variables with two categories: appropriate and inappropriate.

The demographic and social characteristics were analyzed using SPSS, whereas SAS was the software of choice for the regression analysis.

## RESULTS AND DISCUSSION

Table 2 shows the social and demographic characteristics of the children studied in the four HNDs. Notably, there is low variability between the groups studied as regards the child's sex, possession of a vaccination card and normal birth weight. The differences found in the age groups were caused by the different sampling structures planned for each HND and do not reflect any demographic differences in these populations. A greater proportion of the children from settlements and

Amazonas state did not have birth certificates compared to the other groups, which is a common problem in rural and isolated areas.

Large differences were observed between the groups according to the schooling of the family head. The mode was 1 to 4 years of schooling for the population in the semi-arid region, settlements and Quilombola communities, while it was higher for the families from Amazonas state.

The groups of families studied could be split into two distinct groups as concerns their access to the PBF program. The first group contained families from the semi-arid region and Amazonas state, of whom around 39% received the benefit. Meanwhile, almost 50% of the families from settlements and Quilombola communities were beneficiaries of the program. Similar patterns were identified for access to electricity and public water supply. This reflects both the greater focus of the Bolsa Família Program on rural areas at the time of the HNDs and the historical housing infrastructure deficits in these areas.

**TABLE 2. SOCIAL AND DEMOGRAPHIC CHARACTERISTICS OF CHILDREN INCLUDED IN HEALTH AND NUTRITION DAYS, ACCORDING TO SPECIFIC POPULATION. BRAZIL 2005 - 2006**

CHARACTERISTIC	SEMI-ARID (N=16,030)	SETTLEMENTS (N=1,342)	QUILOMBOLAS (N=2,728)	AMAZONAS (N=2,275)	TOTAL (N=22,375)
<b>Child sex</b>					
Male	48.7	47.4	50.3	47.6	48.7
Female	51.3	52.6	49.7	52.4	51.3
<b>Age group</b>					
0 - 11 months	45.4	30.0	20.7	23.7	39.3
12 - 35 months	30.1	36.4	40.5	45.2	33.2
36 - 60 months	24.6	33.6	38.8	31.2	27.5
<b>Birth Certificate</b>					
Yes	93.1	87.5	94.0	90.1	92.6
No	6.9	12.5	6.0	9.9	7.4
<b>Birth Weight</b>					
Normal	93.2	91.8	92.1	91.4	92.8
Below 2.5 kg	6.8	8.2	7.9	8.6	7.2
<b>Child vaccination card</b>					
Yes, in hands	97.9	94.8	95.9	97.7	97.5
Yes, did not show	1.7	4.3	3.7	2.2	2.2
No	0.3	0.9	0.4	0.1	0.3
<b>Family head schooling</b>					
No schooling	16.1	24.2	16.3	8.9	15.9
1 - 4 years	36.2	50.8	47.2	26.6	37.5
5 - 8 years	26.2	18.9	24.7	31.1	26.1
9 or more years	21.4	5.8	11.8	33.4	20.6
<b>Family is enrolled in Bolsa Família</b>					
Yes	38.8	47.2	51.6	39.1	40.9
No	61.2	52.8	48.4	60.9	59.1
<b>Household with energy supply</b>					
Yes	92.6	73.8	79.6	89.3	89.6
No	7.4	26.2	20.4	10.7	10.4
<b>Household with water supply</b>					
Yes	68.9	13.3	28.3	59.7	59.7
No	31.1	86.7	71.7	40.3	40.3

There were no major differences between the children who had benefited from the program and those who had not in terms of gender, weight at birth and possession of a vaccination card (Table 3). However, there were moderate differences when it came to the children's age group, whether they had a birth certificate and whether their household had access to electricity and a water supply. There were major differences between the two groups when it came to the education level of the family head, which indicated good program targeting.

**TABLE 3. SOCIAL AND DEMOGRAPHIC CHARACTERISTICS OF CHILDREN INCLUDED IN HEALTH AND NUTRITION DAYS, ACCORDING TO BOLSA FAMÍLIA PROGRAM ENROLLMENT. BRAZIL 2005 - 2006**

CHARACTERISTIC	ENROLLED IN PBF (N=9,152)	NOT ENROLLED IN PBF (N=13,223)	P-VALUE
<b>Child sex</b>			
Male	48.4	49.0	0.385
Female	51.6	51.0	
<b>Age group</b>			
0 - 11 months	31.3	44.8	
12 - 35 months	33.5	33.1	0.000
36 - 60 months	35.3	22.1	
<b>Birth Certificate</b>			
Yes	93.8	91.7	0.000
No	6.2	8.3	
<b>Birth Weight</b>			
Normal	93.0	92.7	0.554
Below 2.5 kg	7.0	7.3	
<b>Child vaccination card</b>			
Yes, in hands	97.7	97.4	
Yes, did not show	2.0	2.3	0.227
No	0.3	0.4	
<b>Family head schooling</b>			
No schooling	20.4	12.8	
1 – 4 years	45.0	32.3	0.000
5 – 8 years	23.3	28.0	
9 or more years	11.3	26.9	
<b>Household with energy supply</b>			
Yes	87.9	90.7	0.000
No	12.1	9.3	
<b>Household with water supply</b>			
Yes	57.1	61.5	0.000
No	42.9	38.5	

Table 4 shows the results of the regression analyses controlled for a set of six social and economic variables. There are consistent indications of a lower occurrence of inadequate height/age and weight/age in the comparison between PBF beneficiaries and non beneficiaries. The odds ratio indicates that a zero- to five-year-old child whose family received this benefit had a 26% higher chance of having an appropriate height/age and an appropriate weight/age than non-beneficiaries.

TABLE 4. ODDS RATIOS ON ANTHROPOMETRIC INDICATORS IN ZERO TO FIVE YEAR OLD CHILDREN, ACCORDING TO A LOGISTIC MODEL. BRAZIL 2005 - 2006

<b>HEIGHT FOR AGE DEFICIT</b>	<b>POINT ESTIMATE</b>	<b>95% CI (WALD)</b>	<b>P-VALUE</b>	<b>SIGNIFICANT</b>
Beneficiaries X non beneficiaries	1.260	[1.156-1.377]	<0.001	Yes
Birth Weight	3.512	[3.114-3.960]	<0.001	Yes
Birth certificate	0.820	[0.706-0.953]	0.009	Yes
Family head schooling	0.719	[0.657-0.786]	<0.001	Yes
Family head sex	0.955	[0.868-1.053]	0.343	NS
Household electricity	0.771	[0.680-0.874]	<0.001	Yes
Household water supply	0.898	[0.823-0.980]	0.015	Yes
<b>WEIGHT FOR AGE DEFICIT</b>	<b>POINT ESTIMATE</b>	<b>95% CI (WALD)</b>	<b>P-VALUE</b>	<b>SIGNIFICANT</b>
Beneficiaries X non beneficiaries	1.257	[1.097-1.440]	0.001	Yes
Birth Weight	4.550	[3.870-5.349]	<0.001	Yes
Birth certificate	0.703	[0.563-0.876]	0.002	Yes
Family head schooling	0.705	[0.610-0.814]	<0.001	Yes
Family head sex	0.878	[0.757-1.019]	0.087	NS
Household electricity	0.647	[0.539-0.777]	<0.001	Yes
Household water supply	0.881	[0.767-1.011]	0.072	NS
<b>WEIGHT FOR HEIGHT DEFICIT<sup>1</sup></b>	<b>POINT ESTIMATE</b>	<b>95% CI (WALD)</b>	<b>P-VALUE</b>	<b>SIGNIFICANT</b>
Beneficiaries X non beneficiaries	0.960	[0.807-1.141]	0.643	NS
Birth Weight	2.231	[1.757-2.833]	<0.001	Yes

<sup>1</sup>All other variables were not significant

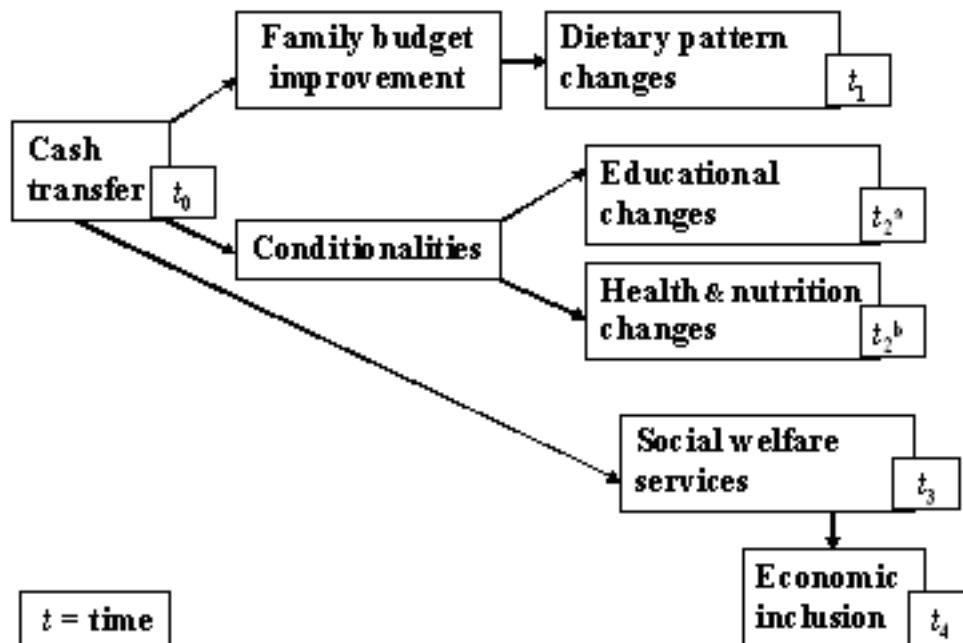
The only other variable, apart from the PBF program, that increased the likelihood of adequate anthropometric indicators was birth weight. The odds ratio showed that children whose weight at birth was normal were 3.5 and 4.5 times more likely to show an appropriate height/age and weight/age, respectively, than children with a low birth weight. The other variables tested showed small but significant adverse effects on the likelihood of nutritional adequacy. The sex of the family head had no significant effect on any anthropometric indicator tested, nor did access to a public water supply significantly affect the weight/age deficits.

The PBF program was not found to have any effect on the weight/height deficit. The only variable with a significant odds ratio for this indicator showed that a zero to five year old with an appropriate birth weight is 2.2 times more likely to have an appropriate weight/height than one with a low birth weight.

Cross-sectional studies have inherent limitations. For instance, they fail to determine the length of exposure to the benefit among the studied population or any bias caused by families who receive

financial benefits other than the PBF cash transfer. However, data presented here suggest that the PBF interacts with the basic living conditions of beneficiary families, leading to the improved nutritional status of the children enrolled in the program when compared to non-beneficiaries.

Figure 2 shows the different timeframe over which the program may impact on families. The first impact is precisely the change in dietary patterns ( $t_1$ ). The budget improvement produced by the cash transferred allows beneficiary families to spend more on food. There is empirical evidence that this actually happens.



**Figure 2.** Time frame for potential impacts of Bolsa Família Program

The baseline study for the Bolsa Família Program found that enrolled families have higher expenditure than non-beneficiary families, and when it comes to food, they spend US\$172 more per year than non-beneficiary families (Oliveira et al 2007). More evidence was derived by analyzing data on food security from the National Household Sampling Survey - PNAD 2004. The results showed that the average US\$30 transferred by the Bolsa Família Program in 2004, raised the likelihood of having food secure families by 52% (Segall-Corrêa, 2008).

In another survey commissioned by the Ministry of Social Development, Brandão et al. (2007) observed that beneficiary families aspire to eating more healthy foods, such as vegetables and fruits. This aspiration could indeed constitute an improvement in the beneficiary families' diet. However, companies that manufacture low nutritional value foods have already repositioned themselves in the market, targeting this "new consumer" class. This could hamper a healthy change in the eating habits of households receiving the benefit.

Reference  $t_2^a$  relates to access to primary education, since this service has wide coverage in the country. Reference  $t_2^b$  can only be achieved later, because the coverage of basic health care services is somewhat limited, while the network of social welfare services (SUAS) is even more restricted.

Access to this is therefore still limited, which means that such services tend to be used later than the previous ones ( $t_3$ ). In Figure 2, the impact on economic inclusion brought about by the PBF tends to take place last of all because of the complexity of the problem and inadequacy of the policies designed to tackle this issue.

## CONCLUSIONS

The Bolsa Familia Program seeks to change the behavior and attitudes of vulnerable families by granting financial benefits which are conditional on their greater utilization of health and education services. The benefit may have an immediate impact on the attainment of minimum social rights related to food, clothing, transport and consumption of other goods and lower value services. The conditionalities can operate as inducements for potential beneficiaries to make use of public health, education and social services.

The priority given to purchasing food for children may be related both to the conditionalities and to changes in family attitudes as they have fewer children. This drop in the birth rate has been observed across the whole country and in all social groups. If there is a change in attitude, it could be that families are seeking to ensure the future of their family unit, providing more food for the fewer young people in it.

The increased utilization of public social services goes hand in hand with the provision of such services. Thus, the capacity of the PBF Program to serve as an inducement is limited by the country's capability to meet the demand for social policies. Public services in Brazil are generally available in the following decreasing order: basic education, basic health care, welfare services and activities geared towards economic inclusion.

The findings indicate the need to provide beneficiary families with greater access to those goods and services which interact with improved nutrition, to ensure an increase in health levels. Also, if the effectiveness of the program is to be ensured, the Brazilian government must provide more and better basic education, health services, welfare services and initiatives for inclusion in the labor market.

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