

# Conditional Cash Transfers and Voting Behavior in Brazil

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## Abstract

This paper studies the effects of the *Bolsa Família* (BF), a large Conditional Cash Transfer program in Brazil, on voting behavior. Using administrative data on beneficiaries and on where they vote, we explore random variation of the proportion of BF beneficiaries at the polling booth level, which generally has less than 400 registered voters. The results indicate that cash transfer affects the most basic form of political participation in a democracy (i.e., voting) and reduces inequalities in civic participation based on social status. Regarding the presidential elections, we find that the BF program affected positively both turnout and support for the incumbent party, which expanded the program over more than a decade. Even though the program is federal, local politicians were able to gain political benefits from the program because of partisanship. Finally, we observe that the program increased the advantage of incumbency for governors while incumbent mayors were negatively affected. In this paper, we discuss some of the potential mechanisms behind these results.

*Keywords:* *Bolsa Família*, voting behaviour, Conditional Cash Transfers.

*JEL Classification:* O10, D72, P16

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# 1 Introduction

Over the past two decades, Conditional Cash Transfers (CCT) have become the main strategy for poverty reduction and social protection in the world, especially in developing countries. The characteristics of CCT programs differ among countries, but they usually have the dual objectives of decreasing poverty in the short-run and suppressing inter-generational transmission of poverty in the long-run. Numerous studies have explored the effects of CCTs programs on a variety of outcomes. In a report published by the World Bank (2009), covering a range of low and middle-income countries, the authors conclude that CCTs programs have been successful in both reducing current poverty and encouraging parents to invest in the health and education of their children.

Despite the extensive literature on the effects of CCTs programs, political economy issues are often overlooked in these studies. Theoretically, CCTs can affect the political behavior of voters and politicians through several channels<sup>1</sup>. However, only recently empirical evidence has emerged on this topic and there is considerably less research available on comprehension of political economy aspects of CCTs. In order to dialogue with the current literature and fill existing gaps, we explore the largest CCT program in the world, the *Bolsa Família* (BF) program. Since its establishment in 2003<sup>2</sup>, the BF program has experienced substantial expansion and almost quadrupled the number of households enrolled in just over a decade. Currently, it reaches nearly 14 million households, or equivalently around 50 million people (a quarter of the total population of the country).

There are two primary aspects that make causality between CCT programs and voting outcomes empirically challenging. First, in most countries (including Brazil), the individual vote is secret and, hence, unobserved. To understand how CCT programs affect the individual voting behavior, the literature has traditionally used aggregated data and self-reported survey data. Furthermore, the usual lack of randomized rollout of CCT programs, and the potentially strategic allocation for political purposes, create a major obstacle to reliable results. Therefore, the

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<sup>1</sup>For instance, pocketbook voting theories present mechanisms through which a voter would reward or punish political leaders for receiving a cash transfer. Alternatively, partisanship could also be useful as a shortcut when more information about candidates is not very clear or even available. Citizens may get signals from CCT programs choices and use them to infer the competence of politicians and their preferences for redistribution. Politicians could strategically allocate benefits in order to raise political support. Alternative hypotheses include voting as a result of reciprocity, fear of losing benefits or social interactions.

<sup>2</sup>President Lula's government re-launched the program by integrating four existing CCT programs and created the Ministry of Social Development in order to consolidate the central beneficiary database. Soares (2012) summarizes previous studies and evidences that the BF program has achieved its main objectives by improving the quality of life for poor people without creating significant negative externalities, at the cost of around 0.4% of GDP.

results may be confounded by unobserved characteristics potentially correlated with both voting outcomes and enrolment in the program. We overcome these issues by matching three sources of administrative data (detailed later).

We construct a unique panel dataset at the polling booth level. This is the most disaggregated level available and each polling booth generally contains fewer than 400 registered voters. After calculating the proportion of BF beneficiaries at the polling booth level we match this data with data on voter characteristics and voting outcomes for three elections<sup>3</sup>: two general elections (2010 and 2014) for president and governors and the municipal elections of 2012<sup>4</sup>. In addition, we have information on the BF program since its inception until 2014, which allows us to explore its impacts dynamically. To the best of our knowledge, this is the first paper to do that.

The empirical strategy in this paper uses the polling place identifier to circumvent the endogenous relationship between voting outcomes and the enrolment in the program. In Brazil, voters are registered to vote at a polling place geographically close to their homes. Moreover, given the polling place, voters are sequentially assigned across polling booths in order to ensure randomness and mainly the balance in the number of voters per booth. Using fixed effects of polling place, we have a treatment variation as good as randomized, since we control for neighbourhood socio-economic characteristics and exploit the variation in the coverage of the program across polling booths within the same polling place.

This paper presents three sets of results. First, regarding presidential elections, the BF program has positively affected the support for the incumbent party, which was responsible for expanding the program over more than one decade. This electoral bonus comes not only from voter mobilization but also from voters shifting their preferences toward the incumbent. The shifting effect was considerably greater in the election of 2014, when the incumbent's margin of victory was lower and the credit for the BF program was more claimed politically in comparison to 2010. This result indicates that the fear of losing benefits may influence voters' behavior. Exploring information on the time of entry and exit of the beneficiaries, we find evidence consistent with pocketbook voting theories, given that receiving the benefits at the moment of the election matters in terms of support for the incumbent party and the beneficiaries who have lost their benefits tend to punish it. The results also are coherent with voting based on reciprocity, since the advantage for the incumbent party comes mostly from those who entered into the pro-

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<sup>3</sup>Voter characteristics dataset has information on marital status, age, educational level and gender. The second dataset has detailed information about the result of the election such as registered voters, turnout, absent, votes for each candidate (party), invalid votes, etc.

<sup>4</sup>The big picture can be seen in the diagram presented in the Figure 1, containing the time-line of important events for this research: BF program, elections and data/information availability.

gram during the PT's governments, instead of coming from those who have participated to the program since its beginning.

Second, we find that a cash transfer from the government affects the most basic form of political participation in a democracy – voting. While voting is compulsory in Brazil, but not for all citizens, we investigate heterogeneous effects based on the percentage of voters in each polling booth who are not required to vote, i.e., illiterate citizens and those aged 16 to 17 or older than 70. The results show that the program had relatively greater impact on turnout in environments that had higher fraction of voters not-required to vote, especially when the reason for that was the literacy criterion.

Lastly, we use state and municipal elections to explore the effects of the BF program in terms of partisanship and incumbency advantage. The opportunity of other politicians to claim credit for the BF program is limited, given that it has been marketed as a federal program. However, local politicians can be politically benefited by being affiliated with a specific political party (PT in this case). We find that candidates affiliated with PT (but not incumbent) had an advantage in terms of vote due to the BF program in both state and municipal level, but this advantage was not as great as in presidential elections. This indicates that partisanship explains part, but not all, of the electoral bonus in presidential election. For incumbent candidates (but not affiliated to the PT), we observe that the program increased the advantage of incumbency for governors while incumbent mayors were negatively affected. However, incumbent mayors were rewarded politically when the Secretariat of Social Assistance (responsible for registering potential beneficiaries) and the Mayor's office were located at the same building, suggesting that they might claim credit for the program.

This paper contributes to a growing set of studies in Political Economy and Development Economics, providing a comprehensive picture in which cash transfers affect political behavior in different levels of government, both national and local. We extend the literature by introducing rich sources of data and a novel empirical strategy. Specifically, this research dialogues with at least three groups of recent studies.

First, we explore the effect of CCT programs on national politics through presidential elections, which is generally the level at which the program is implemented. Manacorda et al. (2011) estimate the effect of a large Uruguayan cash transfer program by exploring a discontinuity in program assignment and find that households beneficiaries are more likely to support the current government that implemented the program, even after the program ends. They use survey data and self-expressed support for the incumbent government and, unlike our paper, it is not possible

to translate the gains of self-expressed support in terms of actual votes. De La O (2013) uses the randomized component<sup>5</sup> of *Progresa* in Mexico to estimate the intent-to-treat of early versus late assignment to treatment. The paper shows that the CCT program increases both turnout rate and incumbent vote share, but the opposition parties' votes were unaffected. The author states that the electoral bonus for the incumbent may be explained by a mobilizing rather than persuasive mechanism against the opponent. Her conclusion is not unequivocal because the paper uses aggregated data and finds only a net effect of more people turning out and voters shifting their preferences toward the incumbent. In this paper, we introduce a simple way to decompose the total effect on incumbent vote share between mobilizing and shifting effect.

Zucco (2013) also studies the Brazilian BF program by analyzing municipal-level electoral results and survey data with matching techniques<sup>6</sup>. He finds that the BF program is associated with an improvement in the incumbent candidate's performance for presidency in the elections of 2002 and 2010. As these effects have been reaped by incumbents from different parties, the paper concludes that there is no evidence of party identification. In contrast, we find evidence of partisanship in vote determination, given that both governor and mayoral candidates have gained a bonus in terms of vote share because of their affiliation with the president's party. Baez et al. (2012), based on the Colombian program *Familias en Acción*, find a positive effect on both political participation and preference for the official party that implemented and expanded the program. The paper explores variation in program enrollment across voting booths, which makes it closely related to our paper in terms of data structure. However, voting is not compulsory in Colombia, where even the registration to vote is not required<sup>7</sup>, introducing a sample selection bias. Moreover, while the authors restrict the analysis to urban areas and only include adults 25-46 years old at the time of the presidential election, our analysis considers the results of the elections as a whole. Most importantly, we have information on both program coverage and electoral results for more than one election (including state and municipal elections), which allows us to explore an important temporal variation in the program's effect as well as to control for time invariant characteristics at the polling booth level.

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<sup>5</sup>The randomization of the Mexican program occurred across villages, while election results are not reported at the village level. Thus, the paper restricts the analysis to the smallest unit of outcome measure for which the census, the program, and electoral data roughly coincide (precinct). Moreover, the party which instituted the program already had high support in areas that received the transfers.

<sup>6</sup>Although matching methods are the most prominent approach to reduce causal inference problems and mitigate the influence of pre-existing differences, perfect balance does not necessarily ensure causal inference. If some noise in the measurement of variables used for matching correlates with both program enrollment and electoral outcomes, then estimates would be biased

<sup>7</sup>While Brazil, where vote is mandatory, has a turnout rate around 80%, usually in Colombia it is lower than 50%.

This paper also contributes to a better understanding of the institutional determinants of civic participation, especially concerning optional voting and how it interacts with a large CCT program. One robust finding in the literature on compulsory voting is that it compresses inequality in turnout (Jackman, 2001). However, recently, Cepaluni et al. (2016) show evidence that in Brazil, the largest country to use such a rule, compulsory voting increases inequality in turnout because the non-monetary penalties for abstention primarily affect middle and upper class voters. The authors take advantage of the Brazilian context, which has compulsory voting but with exceptions based on both age and educational criterion. Unlike them, in this paper, we explore the educational criteria. Voting is voluntary for illiterates who, not coincidentally, broadly represent the target public of the BF program. We find that the BF program had a positive effect on political participation and the size of the effect depends positively on the proportion of voters who are not required to vote, especially for illiterates. We conclude that cash transfers policies can reduce inequalities in civic participation related to social status.

Finally, this paper provides empirical evidence about how local politicians are affected by CCT programs that are under the control of a central government. Frey (2015) uses data from Brazil's *Bolsa Família* and exploits a non-parametric multivariate regression discontinuity design using cross-municipal variation in program coverage. Estimates show that transfers trigger a reduction in incumbency advantage and a reduction in the support for clientelistic parties. The mechanism proposed in his paper is that transfers reduce the marginal utility of voters coming from cash payments, decreasing the ability of local incumbents to buy votes. Our results indicate that mayors are able to claim credit for the BF program. Rodriguez-Chamussy (2015) focuses on party incumbency rather than candidate incumbency and use variation in the timing of the Mexican anti-poverty program's introduction across municipalities. The paper finds that voters reward the mayor's party for the central benefit to their constituencies. Moreover, an analysis of party alignment shows that this electoral effect cannot be explained as a reward for the federal incumbent in local elections.

The remainder of the paper is divided as follows. The next Section provides background on the institutional environment in Brazil regarding to electoral and political system, as well as the *Bolsa Família* program. Section 3 presents our datasets and Section 4 presents the empirical strategy. Section 5 shows the results and Section 6 concludes.

## 2 Institutional Context

### 2.1 Electoral and Political System

The Federal Constitution of 1988 establishes the basis of the Brazilian democracy as well as the republican principle that people are able of self-government and choosing their representatives. Article 14 of the Federal Constitution ensures universal suffrage and the direct and secret vote of citizens. In Brazil, voting is compulsory for citizens over 18 and is optional for illiterate citizens, citizens 70 years of age and older, and for those aged from 16 to 18. The Electoral Code stipulates sanctions for abstention for those who must vote. Basically, they are required to visit a electoral judiciary office and pay a fee of 3% to 10% of the regional minimum wage. Moreover, citizens who do not pay the fee are forbidden to participate in civil service exams or public bidding processes, working in the government, obtaining a passport, enrolling in a public university, or obtaining loans from state banks<sup>8</sup>. The percentage of citizens who are eligible to vote is around 75 per cent, making Brazil the world's fourth-largest democracy, with over 140 million voters.

At the time of registration, citizens are assigned to vote in a specific polling place, which is a public building (in general a schools). In order to make voting convenient, the polling place must be geographically close to their homes or somewhere else according to voters' preferences. After the polling place is chosen, voters are assigned to a specific polling booths (labelled as "electoral sections" according to Brazil's system). Electoral sections are regulated by Art. 117 of the Electoral Code as well as by complementary legislation. The electoral sections must be identified as soon as the applications for registration are granted. Each one of them must not have more than 400 (four hundred) voters in the capitals and 300 (three hundred) in the other cities, and no less than 50 (fifty) voters.<sup>9</sup> Given a polling place, voters are sequentially assigned within electoral sections (or polling booths). Importantly for our strategy, the distribution of voters is done to ensure randomness and mainly to balance the number of voters among polling booths in the same polling place.

Brazil follows the principle of separation of powers into executive, legislative and judicial. In this paper we focus in the executive power, since the election results are based on majority rule. If none of the candidates receives a majority in the first round of voting, a second round is held. The national executive branch is headed by the president and at the sub-national level the executive branch consists of the governors (state level) and mayors (municipal level). The heads

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<sup>8</sup>For most Brazilians, the monetary penalty is small but the non-monetary penalties can be costly, especially for those who use many state services.

<sup>9</sup>However, in exceptional and duly justified cases, the Regional Courts can authorize the above-mentioned indexes to be exceeded, since this can facilitate the voting process.

of the executive branches (president, governors and mayors) are chosen through direct elections and each candidate elected has a term of 4 years with a two consecutive term limit. Therefore, the same candidate can run in the election as incumbent candidate only once. Lastly, Governor elections occur simultaneously with Presidential elections, while mayoral elections always happen between two presidential elections. In this paper we concentrate our analysis on the national elections of 2010 and 2014 (presidential and state elections) and the municipal election of 2012.

## 2.2 The *Bolsa Família* Program

The federal government established the BF program in 2003 by Provisional Measure no. 132/2003, during the first year of Lula as President of Brazil. Lula was elected in 2002 by the Workers' Party (Partido dos Trabalhadores, or PT), the party that also won the three subsequent presidential elections (with Lula in 2006, and Dilma in both 2010 and 2014). Subsequently, during the PT's governments the BF program was adapted and expanded. The BF program was converted into Law No. 10.836, of January 9, 2004, which provided more stability and prospect of continuity for its implementation. The law that established the BF program determined the unification of four existing programs: *Bolsa Escola*, *Bolsa Alimentação*, *Auxílio Gás* and *Cartão Alimentação*.

Also in 2004, the Ministry of Social Development (MDS) was formed in order to reduce administrative costs and bureaucratic complexity for the administration of the program. According to the MDS, the BF program was designed to promote an immediate poverty alleviation and reinforce access to basic social services in education and health. The program also ensures a set of supplementary services in order to encourage poor families to overcome social vulnerability and the persistence of poverty across generations. As a standard CCT, the BF program follows two basic principles: 1) provide cash transfer in order to help poor families with their basic daily needs and 2) create both incentives and conditions for the beneficiary families to invest in the human capital of their children. Basically, in order to collect the transfer, parents need to ensure that their children receive education and proper medical care.

BF program is restricted to poor families<sup>10</sup>, currently defined as those families with a *per capita* income less than 170 BRL per month. The final amount of transfer for each family depends on demographic composition and level of income. For "extremely poor" families, with a *per capita* income less than 85 (half of 170 BRL) per month, the program transfers monthly a basic benefit, regardless of their demographic composition. In addition, regardless of their level

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<sup>10</sup>The eligibility is based on self-reported income, but home interviews and visits verify the reliability of the information on the *Cadastro Único* questionnaire. Moreover, the *per capita* income thresholds have changed over time.



of *per capita* income, poor families receives a variable benefit (conditional stipend) for children under 18 years of age and pregnant (or lactating) mothers. Thus, the final amount transferred depends on the family composition. Finally, in order to receive the variable benefit, the family has to meet certain conditions in education and health.<sup>11</sup>

All the households that receive benefits from the BF program must be registered in the *Cadastro Único*.<sup>12</sup> The registration process is shared between local and federal authorities. The federal government institutes the total number of poor families to survey and register in the system and the municipalities conduct the household registry process as well as the interviews. Therefore, local governments are responsible for the enrolment process as well as updating the *Cadastro Único* database. Municipalities and states must check whether the families have accomplished the required conditions. Based on the information sent by them, the federal government controls the approval and cancellation of benefits and provides all payments on a monthly basis. Finally, despite the actual participation of municipalities, all advertising about the BF program identifies it as a national or federal program, rather than under municipal or state administration.

### 3 Data

We use three sources of data in this paper. First, we use the Single Registry for Social Programs, *Cadastro Único*. Second, we use administrative data from the monthly payroll reports of the BF program. Finally, we explore electoral data from the Brazilian Superior Electoral Court (TSE). Below we describe each of them in more detail.

*Cadastro Único* is an important database that identifies and characterizes all low-income families in Brazil. This dataset reports socioeconomic conditions of the families with information about all its members. It is organized by the Ministry for Social Development (MDS) in order to select all the beneficiaries of any federal social program, including *Bolsa Família*. In particular, and importantly to our analysis, *Cadastro Único* provides information about voter registration, based on which we can identify the polling booths where beneficiaries are assigned to vote. It also contains the Social Identification Number (or NIS), useful to link the voter registration information with the payroll of the BF program. Therefore, *Cadastro Único* contains the main

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<sup>11</sup>All children under seven years old have to accomplish the health requirements and immunization schedule, children over six years old have to be enrolled at school (with a minimum percentage of attendance) and pregnant or lactating women have to participate in prenatal and postnatal care.

<sup>12</sup>*Cadastro Único para Programas Sociais do Governo Federal*, or Single Registry for Social Programs of the Federal Government, was initially conceived to register all poor families in the country to facilitate their access to social programs. The *Cadastro Único* is a crucial tool to manage the BF program and other social programs and services.

key identifier variables to match all datasets used in this study.

Cash payments are made directly through the banking system (Caixa Econômica Federal) using a special debit card issued to BF beneficiaries. Only one person in the family (the reference person of the household) is responsible for handling the card and consequently for receiving the stipends. It is worth noting that, according to the rule, a woman over 16 years old must be the reference person, except in particular cases. All information about the benefits are described on the payroll, including the NIS of the reference persons. We have monthly payroll of the BF program since its beginning and we can select those people who has received the program, as the reference person, and match them with the *Cadastro Único*, using the NIS, in order to pick up their voter registration information. After linking them at the polling booths where they are assigned to vote we obtain the total number of BF beneficiaries per polling booth.

We use two datasets from TSE. The first dataset contains Brazilian voter characteristics at the level of polling booth for each election. The characteristics include marital status, age, educational level and gender. The second dataset comes from "Web Report of Electronic Voting Machine", where we can obtain full information on election results at the polling booth level as well<sup>13</sup>. This dataset has information on the number of registered voters, turnout, absent, votes for each candidate (or party) and invalid (blank and null) votes. In this research we use data about three national elections: two presidential elections (2010 and 2014) and the municipal elections of 2012.

## 4 Empirical Strategy

Ideally, we are interested in studying how the BF program affects the individual voting behavior, but in most countries, including Brazil, the use of individual-level voting data is not possible or allowed. However, we are able to calculate the proportion of BF beneficiaries as well as voting outcomes at the polling booth level and estimate by OLS a linear regression model including polling places fixed effects as follow<sup>14</sup>:

$$y_{pb} = \alpha_p + \beta BF_{pb} + Z'_{pb}\Theta + \epsilon_{pb} \tag{1}$$

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<sup>13</sup>The disclosure of this information has been done since 2010 in order to offer more transparency about electoral procedures.

<sup>14</sup>This is the most disaggregated level available, since each polling booth contains generally less than 400 voters. Since we use the number of voters registered in each polling booth as weights in the estimation procedure, this equation must be understood as an aggregate version of  $y_{pi} = \alpha_p + \beta x_{pi} + Z'_{pi}\Theta + \epsilon_{pi}$ , where  $i$  indexes the individual.

where  $Cov(BF_{pb}, \epsilon_{pb} | Z'_{pb}, \alpha_p) = 0$ , the subscript 'p' indexes polling places and 'b' the polling booths.

The outcomes of interest are generically represented by  $y_{pb}$ .<sup>15</sup>  $Z_{pb}$  represents the (averages) voter profile at the polling booth level, such as: marital status (percentage of single, married, divorced and widower); groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79 and 79 years of age or older); educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete and college completed) and gender (percentage of men and women). We cluster our results at the municipality level and we use the number of registered voters in each polling booth as weights in the estimation procedure.

The main variable of interest in this study, the treatment variable  $BF_{pb}$ , is the proportion of registered voters who are BF beneficiaries in each polling booth.<sup>16</sup> We consider two versions of the variable  $BF_{pb}$ : *Version 1*) % who received BF assistance at the moment of the election and *Version 2*) % who received BF assistance at some point in their lifetimes before the election.

The treatment effect is defined as the change on the outcome of interest triggered by a variation from zero-coverage,  $BF_{pb} = 0$ , to the actual mean coverage,  $BF_{pb} = \overline{BF}$ :

$$E(y_{pb} | \alpha_p, BF_{pb} = \overline{BF}, Z'_{pb}) - E(y_{pb} | \alpha_p, BF_{pb} = 0, Z'_{pb}) = \beta \overline{BF} \quad (2)$$

It is worth noting that the lack of randomized rollout of the BF program creates a major difficulty for having unbiased estimates of its effects, since the estimation may be confounded by unobserved variables potentially correlated with both outcomes and the placement of the program. In another words, a caveat here would be the endogenous relationship between voting outcomes and the enrolment on the program. In order to circumvent this difficulty we use the polling place identifier. In Brazil, voters are registered to vote at a polling place geographically close to their homes and, given the polling place, voters are sequentially assigned within polling booths in order to ensure randomness and mainly the balance in the number of voters between polling booths at the same polling place. Therefore, the inclusion of polling place fixed effects makes our treatment variation as good as randomized, since we control for socio-economic char-

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<sup>15</sup>As we analyze a broad set of outcomes, represented by averages of voting behavior at the polling booth level, each one of them will be better described in the section of results.

<sup>16</sup>We consider those who receive BF program as a reference person (i.e. the head), which is usually a woman. This is important because the voter's registration information is required only for the head of the family. In addition, we consider only the beneficiaries who live in the same state where they are registered to vote, since those people who are domiciled outside their voting states do not have to vote. Therefore, the treatment here may also be considered as a lower bound for the program's coverage.

acteristics of the neighbourhoods and exploit the variation in the proportion of BF beneficiaries across polling booths within the same polling place.

## 5 Results

### 5.1 Effects on Presidential Elections

Table 1 shows the effect of the BF program on the voting behavior for the elections of 2010 and 2014, based on cross-sectional analysis for each election round. Given the similar results found for the first and second rounds, we concentrate on interpreting the second round results. Overall, in both elections the BF program triggered a positive effect on both turnout rate and vote share for incumbent party, PT. Unlike 2010, in 2014 the BF program affected negatively the vote share for the opposition. Considering the version 2 of the treatment effect and the election of 2010, when the BF program had an average coverage around 7.2%, we find that voter participation rates increased by 0.9 (0.125\*0.072) percentage points due to the program. In the election of 2014, when the average coverage was 9,7%, this effect was around 0.74 (0.076\*0.097) percentage points. Since the abstention rate was about 21,45% in 2010 and 21.05% in 2014, this means a persuasion rate of 4,2% in 2010 and 3,5% in 2014.<sup>17</sup>

The evidences regarding the effects of the BF program on the choices between the candidates, indicate an positive effect on the vote share for the incumbent party. However, notice that the effect of the BF program considering the version 2, which includes everyone who received BF assistance at some point of their lifetimes until the election, is greater than under version 1. This suggests that perhaps those who received BF benefits (but no longer receive them) tend to punish the party incumbent, a issue which will be better explored later in the paper. Based on the version 1 of treatment we find that an increase of 10 percentage point on the average BF participation rate raises the support for the incumbent party by 1.47 (1.2) percentage points in 2010 (2014). On the other hand, the same variation would reduce the support for the opposition by 0.73 percentage points in 2014, with no significant effect in 2010.

As a robustness check, Table 2 shows analogous results as the previous analysis with the elections pooled in a panel data set. First, we consider an immediate generalization of the equation 1, i.e.,

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<sup>17</sup>The *Persuasion Rate*, is defined in DellaVigna and Gentzkow (2010) as  $PR = 100 * \frac{(y_T - y_C)}{(BF_T - BF_C)} \frac{1}{(1 - y_0)}$ , with T symbolizing the "treatment" group and C the "control",  $(1 - y_0)$  is the size to be convinced (% of abstention) and  $\frac{(y_T - y_C)}{(BF_T - BF_C)}$  would be the  $\beta$  coefficient. We calculate *Persuasion Rate* by considering  $dBF = \overline{BF}$ .

$$y_{pb,t} = \alpha_{p,t} + \beta x_{pb,t} + Z'_{pb,t} \Theta + \epsilon_{pb,t} \quad (3)$$

where the key hypothesis for identification becomes  $Cov(BF_{pb,t}, \epsilon_{pb,t} | Z'_{pb,t}, \alpha_{p,t}) = 0$ .

We also modify the econometric model by including polling booths fixed effects, which is equivalently estimated as a first-difference model as following:

$$\Delta y_{pb} = \Delta \alpha_p + \beta \Delta BF_{pb} + \Delta Z'_{pb} \Theta + \Delta \epsilon_{pb} \quad (4)$$

where the fundamental assumption now is  $Cov(\Delta BF_{pb}, \Delta \epsilon_{pb} | \Delta Z'_{pb}, \Delta \alpha_p) = 0$ .

Note that, unlike the previous results, in equation 4 we are exploiting the temporal variation of the BF program,  $\Delta BF_{pb}$ , across polling booths within the same polling place. An important point to be highlighted here is that in this analysis the interpretation of the results changes. In this case, the effect under *version 1* represents the net effect of the BF program, considering who entered and left the BF program between 2010 and 2014<sup>18</sup>. Regarding the *version 2*, the treatment effect becomes the effect of having participated to the BF program between 2010 and 2014.<sup>19</sup> The inclusion of polling booths fixed effects eliminates the time-invariant influences at the pooling level.

Overall, the results shown in table 2 are quite similar to those found in the cross-sectional analysis. This robustness analysis confirms the previous results, in which the BF program affected positively both the turnout and the support for the incumbent party as well as triggered a reduction on the vote share for the opposition.

### 5.1.1 Mobilizing versus Shifting effect

The BF program may affect voting through two mechanisms: more voters turning out to vote (mobilizing effect) and voters shifting their preferences between candidates (or invalid vote). To see that, let the incumbent ( $I$ ) vote share be written as  $I/R = (I/V) * (V/R)$ , where  $R$  symbolizes registered voters and  $V$  those who actually voted. Therefore, assuming a variation,  $dBF$ , in the program we have:

$$\frac{d(I/R)}{dBF} = \frac{d(V/R)}{dBF} \frac{I}{V} + \frac{d(I/V)}{dBF} \frac{V}{R} = Mobilizing + Shifting \quad (5)$$

<sup>18</sup>For instance, notice that  $\Delta BF_{pb} = BF_{pb2014} - BF_{pb2010} = (BF_{pb14 \wedge 10} + BF_{pb14 \wedge N10}) - (BF_{pb10 \wedge 14} + BF_{pb10 \wedge N14}) = BF_{pb14 \wedge N10} - BF_{pb10 \wedge N14}$ , which is exactly the difference in the proportion of BF beneficiaries who entered and left the program between 2010 and 2014.

<sup>19</sup>For instance, notice that  $\Delta BF_{pb} = BF_{pb2014} - BF_{pb2010} = (BF_{pb10-14} + BF_{pb10}) - BF_{pb10} = BF_{pb10-14}$ , which is exactly the proportion of BF beneficiaries who participated during the period 2010-2014.

Where the left side is directly observed from the estimates in table 1 as well as the effect on turnout  $\frac{d(V/R)}{dBF}$ . We also observe  $\frac{I}{V}$  in the data. The same idea can be applied to decompose the total effect on opposition and invalid votes. In the Figure 2, we conduct this decomposition by considering the second round of each election and the average program coverage (i.e.,  $\overline{BF}$ ) in which year. The results show that the BF program affects the advantage of the incumbent party not only by mobilizing more people to vote but also by persuading voters from the opposition. Moreover, the shifting effect was considerably more pronounced for the election of 2014.

### 5.1.2 BF program entry and exit dynamics

We use the first version of treatment to study the role that timing of entry into the program plays in the total effect. Considering the version 1, which is represented by the fraction of people who received BF assistance at the moment of the election ( $BF_{pb}$ ), there are two possibilities: 1) A fraction of them,  $BF_{pb}^1$ , that has received BF program since its beginning (when it was only unified by the PT's government) and 2) a fraction of them,  $BF_{pb}^2$ , represented by those beneficiaries who entered into the BF program along the PT's governments. Notice that,  $BF_{pb} = BF_{pb}^1 + BF_{pb}^2$ . We estimate the basic model replacing  $BF_{pb}$  by  $BF_{pb}^1$  and  $BF_{pb}^2$  in order to decompose the total total effect into two effects:

$$y_{pb} = \alpha_p + \beta_1 BF_{pb}^1 + \beta_2 BF_{pb}^2 + Z'_{pb} \Theta + \epsilon_{pb} \quad (6)$$

Analogously, we also divide the fraction of beneficiaries in version 2 into two parts (mutually exclusive) in order to understand the effects of leaving the program. First, remember that this version considers as treated all of those who received BF assistance at some point in their lifetimes before the election. In this case, there are two possibilities: 1) a fraction of them who no longer receive the benefits at the moment of the election (i.e., who left the BF program before) and a 2) a fraction of them who are still receiving benefits from the BF program.

The results in Table 3 indicate that both those who receive the BF program since its beginning and those who have entered over time tend to support the incumbent party. However, the negative effect on vote share for opposition comes mostly from beneficiaries who entered into the program over time, especially in 2014. The results in Table 3 also show that the loss of benefits led to a negative effect on votes for the incumbent party, considering the first round of both elections. In addition, the negative effect on the opposition's votes comes from those who are still receiving the program, while leaving the BF program had a positive effect on the opposition's votes.

Although the previous analysis can be easily interpreted in terms of sign, interpreting the

magnitude of the effects is not so immediate, since it depends on the proportion of beneficiaries in each group. In order to clarify this point, we decompose the (average) total effect as

$$\beta \overline{BF} = \beta_1 \overline{BF^1} + \beta_2 \overline{BF^2} \quad (7)$$

The decomposition for the second round of each election are shown in Figures 3 and 4. The first figure presents the decomposition based on the first version of treatment. It shows that most of the advantage for the incumbent comes from beneficiaries who entered into the program during the PT's governments. Moreover, unlike the election of 2010, in 2014 the opposition was greatly punished in terms of vote due to the entry of people into the program over time. Considering the decomposition based on the version 2, we find that those who received assistance of the BF program, but no longer receive it, tend not to reward the incumbent party relative to those who are still participating in the program. Almost all of the effect on the incumbent vote share comes from beneficiaries who are still receiving the benefits at the moment of the election. In 2014 this group triggered a strong negative effect on the support for the opposition.

### 5.1.3 Compulsory vs. Voluntary voting

Since voting in Brazil is mandatory, someone may wonder how the BF program is able to affect turnout rate. First, the monetary penalty is not very high, even for a poor person. On the other hand, non-monetary penalties are more costly for the middle classes and more educated voters. Thus, even under compulsory voting, some voters prefer justifying their absence after the election. Secondly, there is a considerable fraction (around 14%) of voters who are not required to vote such as: 1) people aged 16-17 or over 70 years of age and 2) illiterate people. The data allow us to divide the electorate, for each polling booth, into voters for whom voting is mandatory and those for whom it is voluntary.

Let  $Com_{pb}$  be the fraction of people in the polling booth who are required to vote and  $Fac_{pb}$  the fraction of voters for whom voting is optional, i.e.,  $Com_{pb} + Fac_{pb} = 1$ . Then we modify the basic model in order to estimate the heterogeneous effects of the BF program based on the share of compulsory and voluntary voting. Thus,

$$y_{pb} = \alpha_p + \beta_C BF_{pb} \times Com_{pb} + \beta_F BF_{pb} \times Fac_{pb} + Z'_{pb} \Theta + \epsilon_{pb} \quad (8)$$

The total effect of the BF program can be interpreted as a weighted average according to

the fraction of voters in each group<sup>20</sup>. We also divide the proportion of facultative voters (per polling booth) by considering: 1) the reason for voluntary voting is the age criteria, 2) the reason is because the voter is illiterate or 3) voter meets both criteria. Table 4 shows the effects of the BF program on turnout rate by considering this potential heterogeneous effects. The impacts of the program are more pronounced in environments with highest proportion of voluntary voting, especially when it was due to the illiteracy criteria.

## 5.2 Local Elections: Partisanship and Incumbency Advantage

In this part, we explore state and municipal elections data sets in order to analyse the effects of the BF program under two perspective: 1) impacts of the program on support for PT and 2) its effects on votes for incumbent candidates. To do that, the following results are restricted to those states (or municipalities) where the PT ran the election (labelled PT database) or where there was an incumbent candidate (labelled incumbent database).<sup>21</sup>

### 5.2.1 State Election

Table 5 shows the effects of the BF program on state election results. The vote share for the PT candidates were positively affected by the program in both elections, with no significant effect on votes for the opposition. This shows that politicians have a benefit for being affiliated with the party that manages the program, which means that there is a component of partisanship playing an important role on the effects of the program. Regarding the effects on incumbency advantage, we find that the BF program affected positively both the vote share for both incumbent and opposition. However, the magnitude of the effect on the vote share for the incumbent candidate was greater than for the opposition party, which in practice means that the BF program increased the incumbency advantage.

### 5.2.2 Municipal Election

The results show that an increase in the proportion of BF beneficiaries affects positively voter turnout and support for PT, with no significant impact on opposition vote share. Therefore, the party also had an advantage in the municipal elections triggered by the BF program. On the other hand, we find that the transfers triggered a reduction in incumbency advantage. Finally, we analyse the impacts of the program on incumbency advantage by considering the incumbent's

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<sup>20</sup>Notice that  $\beta = \beta_C \times Com_{pb} + \beta_F \times Fac_{pb}$  and  $Com_{pb} + Fac_{pb} = 1$

<sup>21</sup>We discard the states (and municipalities) where the PT ran the election as the incumbent, since in this case we cannot distinguish between partisanship and incumbency effect.



ability to claim credit for the program. To do that, we interact the variable of treatment with a variable indicating whether Secretariat of Social Assistance works at the same building as the mayor's office, which is an indicative of potential influence of the mayor. The results show that when this is the case, then the incumbent can have gains due to the program.

## 6 Conclusion

This paper studies the effects of the largest Conditional Cash Transfer in the world, the Brazilian *Bolsa Família* program, on voting behaviour. Using three sources of administrative data, we calculate the proportion of BF beneficiaries and voting outcomes at the polling booth level, which is the most disaggregated level possible. Based on this rich data structure and a novel empirical strategy, we overcome the endogenous relationship between voting outcomes and enrolment on the program. We present a set of preliminary results on the effects of the BF program on presidential, state and municipal elections. This paper, which is still in progress, extends the literature on the relationship between public policy, political institutions and development economic. We contribute to a literature that is only beginning to emerge, regarding the political effects of CCT programs on both national and local levels.

## 7 References

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Figure 1: Timeline of important events for this research: BF program, elections and data/information availability

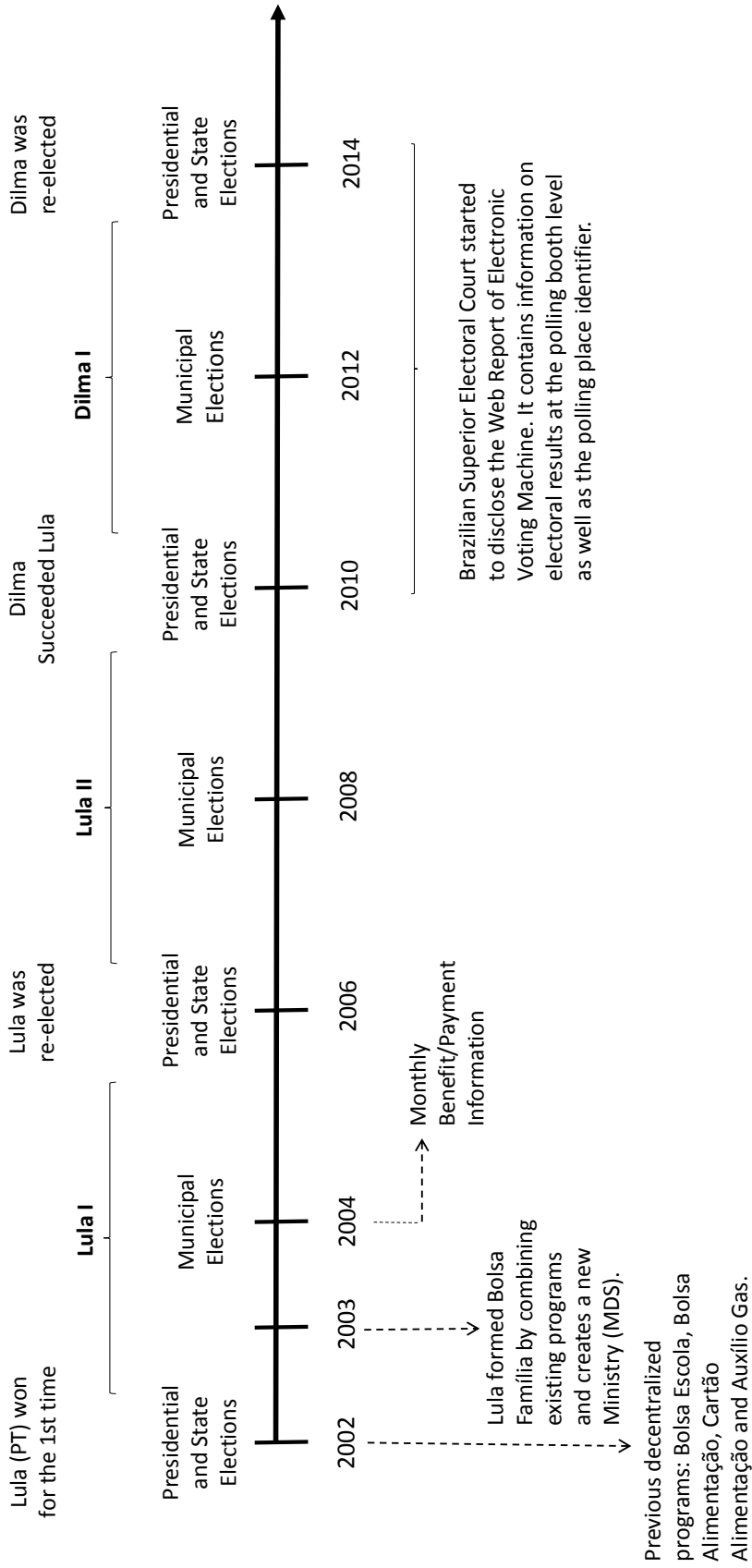


Table 1: Effects of the *Bolsa Família* Program on Presidential Election

Presidential Election of 2010								
Variables	First round				Second round			
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.115*** (0.007)	0.131*** (0.006)	-0.030*** (0.007)	0.014*** (0.004)	0.125*** (0.007)	0.120*** (0.006)	0.007 (0.006)	-0.002 (0.003)
Constant	0.863*** (0.026)	0.477*** (0.019)	0.313*** (0.017)	0.072*** (0.007)	0.803*** (0.029)	0.539*** (0.021)	0.238*** (0.013)	0.026*** (0.007)
R-squared	0.872	0.953	0.966	0.748	0.872	0.955	0.965	0.772
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.112*** (0.006)	0.097*** (0.005)	-0.014** (0.006)	0.030*** (0.003)	0.125*** (0.006)	0.104*** (0.005)	0.011** (0.005)	0.009*** (0.003)
Constant	0.860*** (0.026)	0.478*** (0.019)	0.312*** (0.017)	0.069*** (0.007)	0.800*** (0.029)	0.538*** (0.021)	0.238*** (0.013)	0.024*** (0.007)
R-squared	0.872	0.953	0.966	0.749	0.873	0.955	0.965	0.772
Presidential Election of 2014								
Variables	First round				Second round			
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.073*** (0.005)	0.149*** (0.006)	-0.081*** (0.006)	0.004** (0.002)	0.072*** (0.005)	0.147*** (0.006)	-0.073*** (0.005)	-0.003* (0.002)
Constant	0.892*** (0.028)	0.428*** (0.019)	0.353*** (0.016)	0.112*** (0.006)	0.866*** (0.028)	0.533*** (0.024)	0.270*** (0.012)	0.063*** (0.006)
R-squared	0.878	0.970	0.971	0.809	0.881	0.967	0.973	0.838
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.074*** (0.004)	0.095*** (0.005)	-0.042*** (0.005)	0.021*** (0.002)	0.076*** (0.005)	0.115*** (0.005)	-0.045*** (0.004)	0.007*** (0.002)
Constant	0.883*** (0.029)	0.423*** (0.020)	0.353*** (0.016)	0.108*** (0.006)	0.857*** (0.028)	0.523*** (0.024)	0.272*** (0.012)	0.062*** (0.006)
R-squared	0.878	0.970	0.971	0.809	0.881	0.967	0.973	0.838

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. In 2010 (2014), voters were distributed across 89,869 (91,368) polling places and 385,649 (410,219) polling booths. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Table 2: Effects of the *Bolsa Família* Program on Presidential Election: Pooled databases

Pooled databases: Presidential Election of 2010 and 2014								
Variables	First round				Second round			
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.089*** (0.005)	0.158*** (0.005)	-0.075*** (0.006)	0.006** (0.002)	0.094*** (0.005)	0.145*** (0.005)	-0.043*** (0.004)	-0.008*** (0.003)
Constant	0.855*** (0.026)	0.436*** (0.019)	0.323*** (0.014)	0.096*** (0.006)	0.811*** (0.028)	0.515*** (0.022)	0.260*** (0.011)	0.036*** (0.006)
R-squared	0.882	0.965	0.970	0.785	0.881	0.964	0.971	0.811
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.094*** (0.004)	0.114*** (0.005)	-0.040*** (0.005)	0.020*** (0.002)	0.103*** (0.004)	0.123*** (0.004)	-0.027*** (0.004)	0.006*** (0.002)
Constant	0.847*** (0.026)	0.432*** (0.019)	0.322*** (0.014)	0.093*** (0.006)	0.802*** (0.028)	0.508*** (0.022)	0.260*** (0.011)	0.034*** (0.006)
R-squared	0.883	0.965	0.970	0.785	0.882	0.964	0.971	0.811
Pooled databases with polling booth fixed effect: Presidential Election of 2010 and 2014								
Variables	First round				Second round			
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.072*** (0.008)	0.058*** (0.007)	-0.013** (0.006)	0.026*** (0.004)	0.077*** (0.008)	0.068*** (0.008)	-0.003 (0.005)	0.012*** (0.003)
Constant	-0.014*** (0.001)	-0.046*** (0.001)	0.023*** (0.001)	0.009*** (0.000)	0.002*** (0.001)	-0.028*** (0.001)	0.033*** (0.001)	-0.003*** (0.000)
R-squared	0.733	0.878	0.834	0.671	0.747	0.872	0.861	0.631
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.092*** (0.009)	0.074*** (0.009)	-0.003 (0.007)	0.021*** (0.004)	0.091*** (0.009)	0.094*** (0.009)	-0.012* (0.006)	0.009*** (0.003)
Constant	-0.016*** (0.001)	-0.047*** (0.001)	0.023*** (0.001)	0.008*** (0.000)	0.001 (0.001)	-0.030*** (0.001)	0.034*** (0.001)	-0.003*** (0.000)
R-squared	0.734	0.878	0.834	0.671	0.747	0.872	0.861	0.631

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. In 2010 (2014), voters were distributed across 89,869 (91,368) polling places and 385,649 (410,219) polling booths. The data was restricted to the polling booths in both elections, 374,755. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Figure 2: Effects of the BF Program: Mobilizing and Shifting Effect

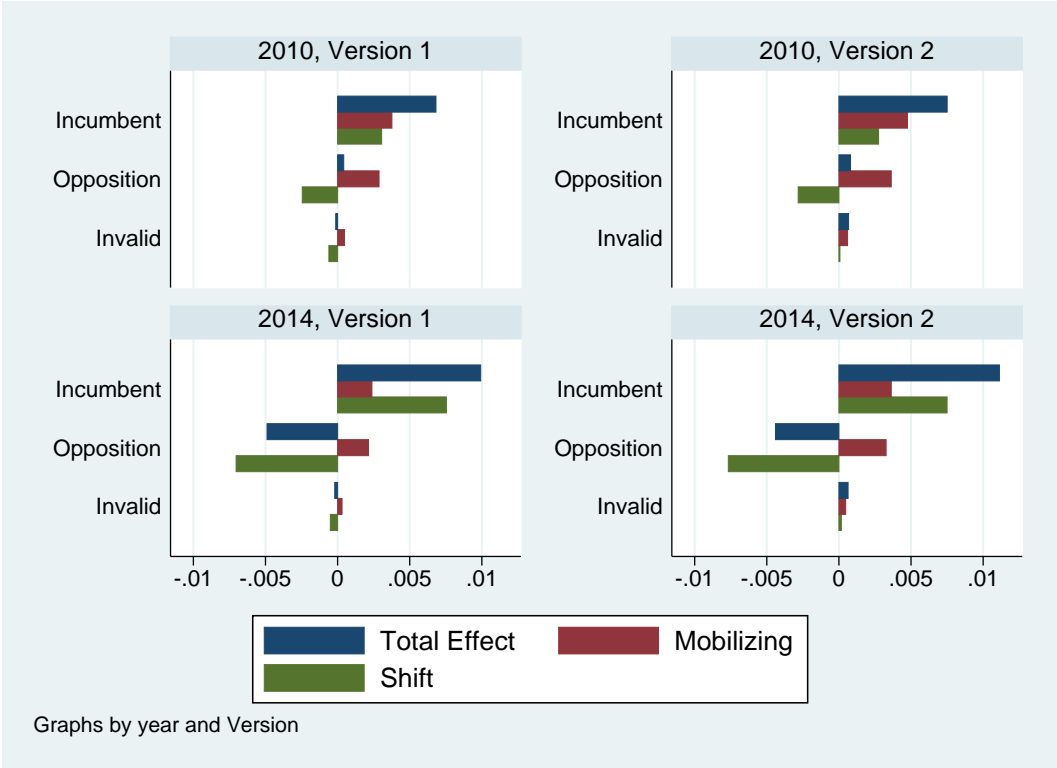


Table 3: Decomposing the Effects of the *Bolsa Família* Program on Presidential Election

Variables	Presidential Election of 2010							
	First round			Second round				
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
Since the beginning of the program	0.177*** (0.012)	0.117*** (0.011)	0.017 (0.011)	0.043*** (0.007)	0.209*** (0.013)	0.149*** (0.011)	0.044*** (0.009)	0.016*** (0.006)
Entered into the program later	0.088*** (0.008)	0.137*** (0.007)	-0.051*** (0.008)	0.002 (0.004)	0.089*** (0.009)	0.107*** (0.007)	-0.008 (0.007)	-0.010*** (0.003)
	<i>Version 1: % who received BF assistance at the moment of the election</i>							
No longer receive the benefits	0.143*** (0.014)	-0.045*** (0.010)	0.064*** (0.013)	0.124*** (0.008)	0.177*** (0.016)	0.066*** (0.011)	0.036*** (0.012)	0.075*** (0.007)
Still receiving benefits	0.103*** (0.007)	0.135*** (0.006)	-0.035*** (0.007)	0.004 (0.004)	0.111*** (0.007)	0.114*** (0.006)	0.005 (0.006)	-0.008*** (0.003)
	<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>							
Variables	Presidential Election of 2014							
	First round			Second round				
	Turnout	Incumbent	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
Since the beginning of the program	0.171*** (0.012)	0.133*** (0.013)	-0.007 (0.011)	0.045*** (0.007)	0.199*** (0.014)	0.191*** (0.014)	-0.006 (0.010)	0.014*** (0.005)
Entered into the program later	0.047*** (0.006)	0.154*** (0.006)	-0.100*** (0.007)	-0.007*** (0.002)	0.039*** (0.006)	0.136*** (0.006)	-0.090*** (0.005)	-0.007*** (0.002)
	<i>Version 1: % who received BF assistance at the moment of the election</i>							
No longer receive the benefits	0.108*** (0.011)	-0.034*** (0.007)	0.063*** (0.009)	0.079*** (0.007)	0.117*** (0.012)	0.058*** (0.009)	0.022** (0.009)	0.038*** (0.005)
Still receiving benefits	0.060*** (0.005)	0.154*** (0.006)	-0.089*** (0.006)	-0.005*** (0.002)	0.057*** (0.005)	0.140*** (0.005)	-0.075*** (0.005)	-0.008*** (0.002)
	<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>							

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. In 2010 (2014), voters were distributed across 89,869 (91,368) polling places and 385,649 (410,219) polling booths. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Figure 3: Effects of the BF Program (% who received BF assistance at the moment of the election): decomposition based on the time of entry into the program

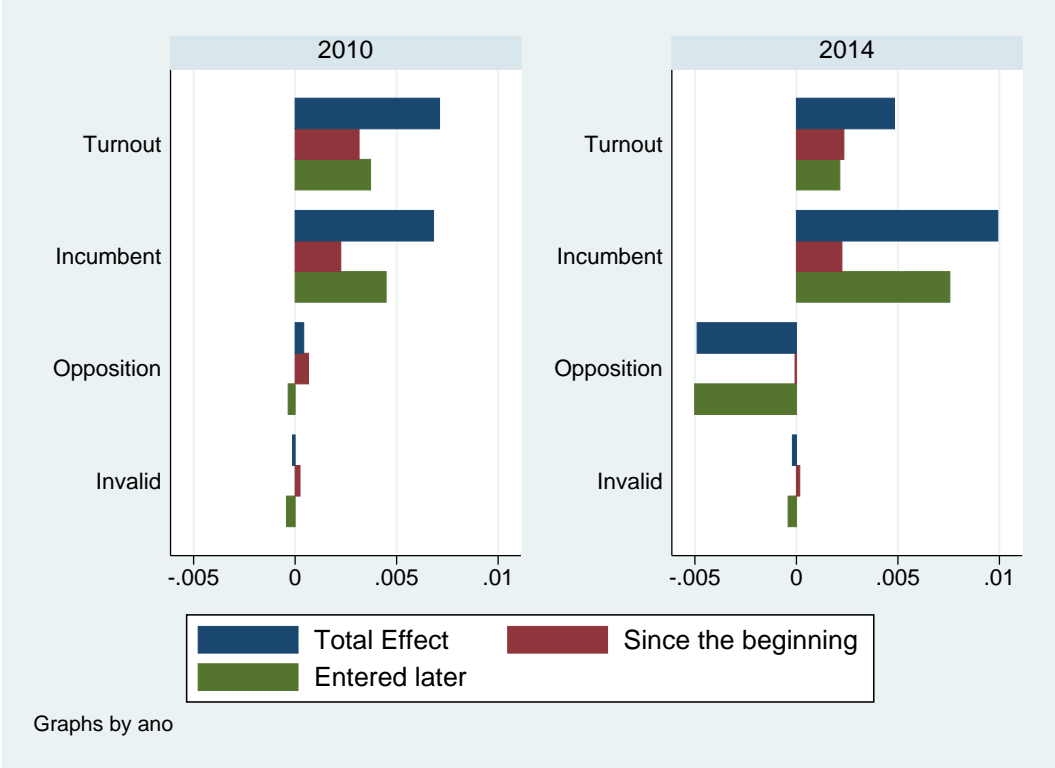




Figure 4: Effects of the BF Program (% who received BF assistance at some point in their lifetimes before the election): decomposition based on current status

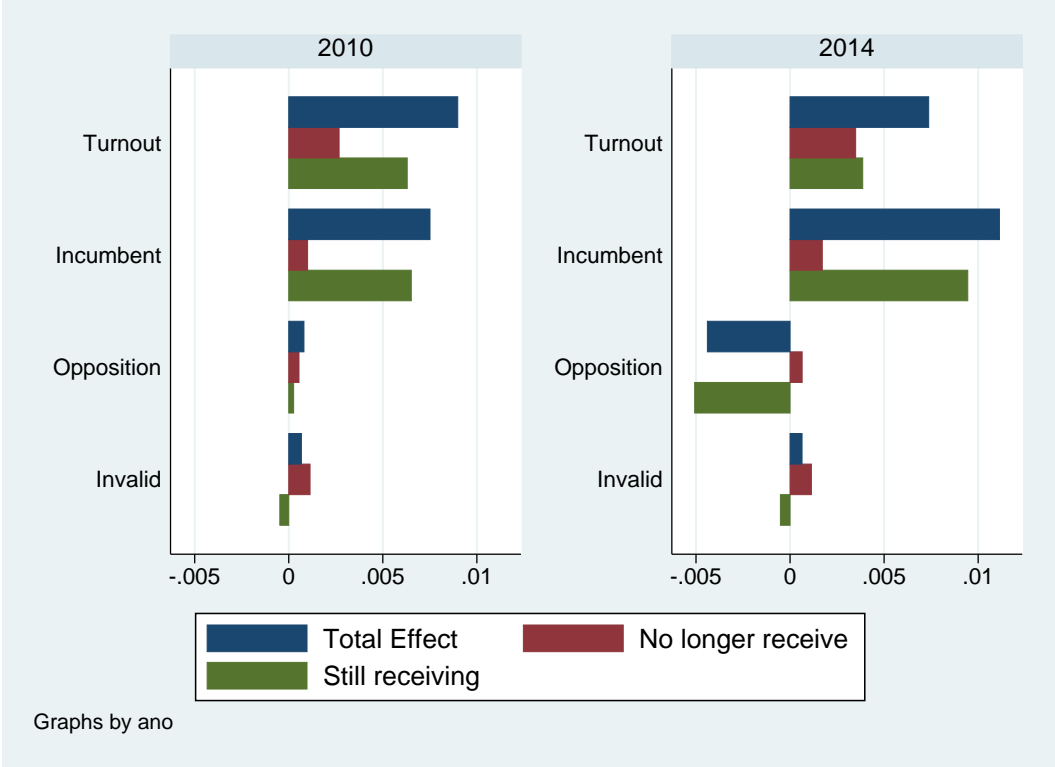


Table 4: Effects of the BF Program on Turnout in Presidential Election by Compulsory and Facultative Voting

	Presidential Election of 2010		Presidential Election of 2014	
	First round	Second round	First round	Second round
	<i>Version 1: % who received BF assistance at the moment of the election</i>			
BF × %Comp	0.096*** (0.013)	0.088*** (0.012)	0.091*** (0.013)	0.083*** (0.012)
BF × %Fac	0.215*** (0.051)	0.304*** (0.053)	0.304*** (0.053)	0.252*** (0.040)
BF × %(Fac based on age)		-0.015 (0.087)	0.032 (0.090)	0.195** (0.083)
BF × %(Fac based on illiteracy)		0.338*** (0.060)	0.404*** (0.060)	0.297*** (0.048)
BF × %(Fac based on both)		0.525*** (0.192)	0.828*** (0.210)	0.230* (0.131)
Constant	0.865*** (0.026)	0.870*** (0.026)	0.808*** (0.029)	0.893*** (0.029)
R-squared	0.872	0.872	0.872	0.878
	<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>			
BF × %Comp	0.084*** (0.011)	0.079*** (0.010)	0.086*** (0.011)	0.080*** (0.010)
BF × %Fac	0.251*** (0.048)	0.325*** (0.050)	0.325*** (0.050)	0.207*** (0.036)
BF × %(Fac based on age)		0.082 (0.085)	0.116 (0.087)	0.153** (0.076)
BF × %(Fac based on illiteracy)		0.352*** (0.054)	0.417*** (0.054)	0.264*** (0.039)
BF × %(Fac based on both)		0.443*** (0.161)	0.668*** (0.176)	0.175* (0.103)
Constant	0.865*** (0.026)	0.869*** (0.026)	0.807*** (0.029)	0.885*** (0.029)
R-squared	0.872	0.872	0.873	0.878

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. In 2010 (2014), voters were distributed across 89,869 (91,368) polling places and 385,649 (410,219) polling booths. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Table 5: Effects of the *Bolsa Família* Program on State Elections: Partisanship and Incumbency

State Election of 2010								
Variables	PT database			Incumbent database				
	Turnout	Vote for PT	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.084*** (0.012)	0.051*** (0.012)	0.015 (0.014)	0.018*** (0.006)	0.129*** (0.011)	0.097*** (0.009)	0.021* (0.012)	0.011 (0.007)
Constant	0.922*** (0.025)	0.445*** (0.030)	0.388*** (0.024)	0.089*** (0.008)	0.819*** (0.035)	0.402*** (0.022)	0.315*** (0.022)	0.102*** (0.014)
R-squared	0.845	0.956	0.943	0.712	0.882	0.953	0.964	0.802
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.082*** (0.010)	0.034*** (0.010)	0.015 (0.011)	0.032*** (0.005)	0.126*** (0.009)	0.072*** (0.009)	0.025** (0.012)	0.029*** (0.006)
Constant	0.921*** (0.025)	0.445*** (0.030)	0.388*** (0.024)	0.088*** (0.008)	0.816*** (0.035)	0.405*** (0.022)	0.314*** (0.022)	0.098*** (0.014)
R-squared	0.845	0.956	0.943	0.713	0.882	0.953	0.964	0.802
State Election of 2014								
Variables	PT database			Incumbent database				
	Turnout	Vote for PT	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.056*** (0.009)	0.069*** (0.009)	-0.019* (0.010)	0.005 (0.005)	0.078*** (0.017)	0.042*** (0.012)	0.031** (0.014)	0.005 (0.005)
Constant	0.851*** (0.022)	0.381*** (0.017)	0.356*** (0.022)	0.113*** (0.013)	0.933*** (0.029)	0.289*** (0.044)	0.496*** (0.042)	0.149*** (0.023)
R-squared	0.891	0.966	0.975	0.869	0.914	0.943	0.939	0.851
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.061*** (0.007)	0.049*** (0.006)	-0.014* (0.007)	0.026*** (0.004)	0.066*** (0.012)	0.035*** (0.011)	0.023** (0.009)	0.009* (0.005)
Constant	0.842*** (0.022)	0.379*** (0.017)	0.357*** (0.022)	0.106*** (0.013)	0.927*** (0.029)	0.286*** (0.045)	0.495*** (0.042)	0.146*** (0.023)
R-squared	0.891	0.966	0.975	0.869	0.914	0.943	0.939	0.851

Standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. "PT database" (with 136,102 polling booths in 2010 and 159,828 in 2014) is restricted to those states where PT presented a candidate and "incumbent database" (with 167,616 polling booths in 2010 and 41,491 in 2014) is restricted to those states where there was incumbent candidate. We excluded the states where the PT candidate ran the election as the incumbent. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Table 6: Effects of the *Bolsa Família* Program on Municipal Elections: Partisanship and Incumbency

Municipal Election of 2012								
Variables	PT database				Incumbent database			
	Turnout	Vote for PT	Opposition	Invalid	Turnout	Incumbent	Opposition	Invalid
<i>Version 1: % who received BF assistance at the moment of the election</i>								
BF	0.063*** (0.016)	0.047*** (0.012)	0.014 (0.019)	0.002 (0.005)	0.063*** (0.016)	0.014 (0.010)	0.050*** (0.013)	-0.000 (0.005)
Constant	0.919*** (0.042)	0.317*** (0.025)	0.499*** (0.034)	0.103*** (0.012)	0.873*** (0.048)	0.401*** (0.039)	0.389*** (0.038)	0.083*** (0.014)
R-squared	0.820	0.976	0.966	0.849	0.886	0.959	0.967	0.894
<i>Version 2: % who received BF assistance at some point in their lifetimes before the election</i>								
BF	0.068*** (0.013)	0.044*** (0.010)	0.009 (0.016)	0.015*** (0.003)	0.073*** (0.011)	0.012 (0.008)	0.052*** (0.009)	0.010*** (0.004)
Constant	0.961*** (0.045)	0.321*** (0.022)	0.533*** (0.033)	0.107*** (0.010)	0.896*** (0.049)	0.407*** (0.041)	0.406*** (0.040)	0.082*** (0.013)
R-squared	0.820	0.976	0.965	0.847	0.886	0.958	0.967	0.894

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. "PT database" (with 146,214 polling booths) is restricted to those municipalities where PT presented a candidate and "incumbent database" (with 68,853 polling booths) is restricted to those municipalities where there was incumbent candidate. We excluded the municipalities where the PT candidate ran the election as the incumbent. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.

Table 7: Effects of the BF Program on Incumbency Advantage Considering the Potential Influence of the Mayor on the Secretariat of Social Assistance

Variables	Municipal Election of 2012 Incumbent database			
	Turnout	Incumbent	Opposition	Invalid
	<i>Version 1</i>			
BF × (1-CH)	0.051** (0.025)	-0.001 (0.019)	0.054*** (0.011)	-0.002 (0.007)
BF × CH	0.123*** (0.023)	0.087** (0.037)	0.030 (0.044)	0.006 (0.015)
Constant	0.873*** (0.047)	0.402*** (0.038)	0.388*** (0.038)	0.083*** (0.014)
R-squared	0.886	0.959	0.967	0.894
	<i>Version 2</i>			
BF × (1-CH)	0.062*** (0.017)	-0.002 (0.018)	0.057*** (0.013)	0.008 (0.006)
BF × CH	0.126*** (0.019)	0.079** (0.033)	0.029 (0.040)	0.018* (0.010)
Constant	0.897*** (0.049)	0.408*** (0.040)	0.406*** (0.039)	0.083*** (0.013)
R-squared	0.887	0.958	0.967	0.894

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

CH is equal 1 whether Secretariat of Social Assistance works at the same building as the mayor's office and zero otherwise. All regressions include polling place fixed effects in order to exploit the variation in the program coverage across polling booths within the same polling place. The control variables include: marital status (percentage of single, married, divorced or widower), groups of age (percentage of 16, 17, 18-20, 21-24, 25-34, 35-44, 45-59, 60-69, 70-79, 79 years of age or older), educational level (percentage of illiterate, "read and write" but no formal education, primary incomplete, primary completed, secondary education incomplete, secondary education completed, college incomplete or college completed) and gender (percentage of men and women). The results are clustered at the municipality level and the number of registered voters in each polling booth are used as weights in the estimation.