

FUNDAÇÃO GETÚLIO VARGAS
ESCOLA DE ADMINISTRAÇÃO DE EMPRESAS DE SÃO PAULO

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RETROSPECTIVE VOTING IN BRAZIL

a case study of São Paulo's Smart-card Policy

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Dissertação apresentada à Escola de Administração de Empresas de São Paulo da Fundação Getúlio Vargas como requisito para obtenção do título de mestre no curso de Administração Pública e Governo. Linha de pesquisa: Política e Economia do Setor Público.

Campo do conhecimento: Administração Pública e Economia Política

Orientador: Ciro Biderman

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RESUMO

O voto retrospectivo é um grande tema de acadêmicos preocupados com a responsabilidade democrática. O trabalho tenta medir a votação retrospectiva de uma importante política urbana na maior metrópole do Brasil, São Paulo - SP. A política do Bilhete Único foi o primeiro cartão inteligente para transporte público no Brasil. Os passageiros com o cartão inteligente conseguiram economizar até três passagens de ônibus em uma viagem, uma quantia substancial de dinheiro para a maioria dos cidadãos de São Paulo. Usando uma abordagem de método misto, tento testar a hipótese de que a melhoria da política sobre o bem-estar impactou positivamente o desempenho do eleitorado da prefeita em exercício. Minhas descobertas sugerem que nem todos os usuários de ônibus recompensaram a prefeita por ter entregue a política. Em particular, alunos e as famílias dos alunos parecem ter sido os que realmente sentiram os efeitos da política e votaram retrospectivamente. Isso pode ser devido às dificuldades na rede de entrega e ao momento da política. Além disso, emprego uma discussão normativa para estabelecer benchmarks de melhores bens públicos. A votação retrospectiva não necessariamente recompensa as melhores políticas, por isso, a necessidade de discutir benchmarks.

Palavras chave: Voto retrospectivo, contabilidade democrática, políticas urbanas

ABSTRACT

Retrospective voting is a major concern of scholars worried about democratic accountability. The work attempts to measure the retrospective voting of an important urban policy in Brazil's largest metropolis, São Paulo - SP. The *Bilhete Único* policy was the first smart-card for public transportation in Brazil. Commuters with the smart-card were able to save up to three bus fares in a journey, a substantial amount of money for most of São Paulo's citizens. Using a mixed method approach, I try to test the hypothesis that the policy improvement on welfare positively impacted the electorate performance of the incumbent mayor. My findings suggest that not all bus users rewarded the incumbent mayor for delivering the policy. In particular, students and students' families seem to be the ones who actually felt the policy effects and cast a retrospective vote. This could be due to delivery network difficulties and to the timing of the policy. Additionally, I employ a normative discussion to establish benchmarks of better public goods. Retrospective voting does not necessarily reward the best policies, therefore the need to discuss benchmarks.

Key words: retrospective voting, democratic accountability, urban policies

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1. Introduction

Studying how voters reward or sanction politicians based on previous performance is a key issue for democratic accountability. If democracies should be political systems devoted to improving social welfare, we should contribute – as students of public policy, economics, political science and other social sciences – to better understand the main forces driving democracies to their goals.

This work hopes to contribute to the discussion. Its focus is to verify whether *Bilhete Único*, a key urban policy of São Paulo, had any impact on Marta Suplicy's electoral performance after her mandate as mayor of Brazil's largest city. Marta, as Brazilians call her, is a well-known politician from Brazil's labor party (PT¹), with which was elected mayor in 2000 and ran as incumbent in 2004. Throughout her four-year mandate, she produced many important urban public policies, such as CEUs², bus corridors and *Bilhete Único*, the first smart-card for public transport in Brazil. São Paulo's smart-card was not just an electronic device to store credits; it was a policy aimed at rationalizing the public transport system as well as being a better pricing policy mechanism. Public transport users with smart-cards could catch two or more buses for the price of one. When the smart-card first started, people only had to pay one bus fare for a two-hour period. It represented an important economic impact that ultimately improved the welfare of millions of people. Besides, the electronic technology provided higher quality billing information that could be used for tariff policy as well as many other traffic concerns.

The main hypothesis to be tested in the present work is that voters who were benefitted by *Bilhete Único* rewarded Marta on her campaign in 2004, when she ran as incumbent. If true, this would be empirical evidence of retrospective economic voting in Brazilian urban policies. To investigate this main hypothesis, I employ a mixed method approach. Based on rational choice theory, I first ran multiple econometric models on aggregate level data to empirically and statistically test the hypothesis. After less-than

¹ PT holds for “Partido dos Trabalhadores”

² The CEUs – “Centro Educacional Unificado” – are a very innovative public policy. They work as schools that aggregate broad cultural and sports equipment, such as theaters, movie theaters, swimming-pools, sports courts and many others. The CEU facilities were designed not only for students but for the whole community that it serves.

conclusive quantitative results, I tried to interpret them under the lens of qualitative research.

As I demonstrate, while retrospective voting partially appears for smart-card users, the policy's effects are not as broad as expected. Not all types of bus users were benefitted and voted for PT. After analyzing the qualitative data, I conclude that difficulties in the network delivery systems and timing of the implementation may have hampered the *Bilhete Único* electoral performance.

The work is organized on the following manner: chapter 2 summarizes the literature on retrospective voting and present key concepts to a normative discussion about public goods provision; chapter 3 presents my methodological domain and give details on my mixed methods approach; chapter 4 introduces *Bilhete Único* history and preliminary qualitative findings; chapter 5 is dedicated to quantitative results while chapter 6 to further qualitative results that help interpret quantitative findings; chapter 7 presents a normative discussion and the work's main conclusions.

2. Retrospective voting in Brazil (Literature Review)

In a positive sense, studies on retrospective voting are concerned with the ability of citizens to look to elected officials' performance and, based on that, decide their future vote. But beyond this positive sense, the literature also has a normative appeal: either sanctioning politicians with poor performance (Ferejohn, 1986) or selecting good leaders (Fearon, 1999) can ultimately improve democratic governance and enhance public welfare (Healy & Malhotra, 2013). Understanding how retrospective voting sets incentives for democratic governments to improve public policies (or, on the contrary, provide less desirable goods) is a major issue for democratic accountability, especially in low-income countries (Besley & Burgess, 2002).

Historically, there are two major schools of voting behavior: the Michigan school, associated to psychological theory, and the "Revisionist" school that criticized the Michigan school, based on rational choice theory. The pioneering study from Columbia

University (Lazarsfeld, Berelson, & Gaudet, 1948) set the basis of the debate when it first stated that voters “are relatively invulnerable to direct argumentation” and “characterized more by faith than by conviction and by wishful expectations rather than careful prediction of consequences”. Going deeper into their Columbia colleagues’ argumentation, a group of scholars from Michigan wrote a prominent book called *The American Voter* (Campbell, P.E Converse, Miller, & Stokes, 1960), wherein they argue that voters lack sufficient knowledge about political and ideology issues. They conclude their work stating that electoral outcomes rely on partisan loyalties that are formed early in life and that don’t change much with time (Bartels, 2002). Surveys from the 50s and 60s and stable partisan identification through those decades seemed to confirm the Michigan hypothesis.

The first critique of *The American Voter* was Key’s book, *The Responsible Electorate*. Key (1966) inaugurated the “Revisionist” school stating that voters are “not the fools” that the Michigan school believed. He argued that citizens can think by themselves and do have a minimum of rationale concerning political choices. The “Revisionist” school argues that although voters lack sufficient knowledge about politics or even lack interest in politics, they can still use cues or shortcuts to decide their votes (Shugart, Valdini, & Suominen, 2005). These shortcuts could be simple and objective performance metrics, such as unemployment rates, GDP growth or personal attributes (Fair, 1978; Kramer, 1971; Shugart et al., 2005). The debate between schools reached a notable peak in the 80s, when one of the likely most influential works on retrospective voting was done by Fiorina (1981). Inspired by the rational theory models of Downs (1957), Fiorina’s work set the basis of “a political theory of party identification” (Fiorina, 1977). Regarding the empirical evidence of stable party identification in the 50s and 60s, the counter argument of Fiorina was that party identification was “a running tally of retrospective evaluations of party promises and performance” (Fiorina, 1981). Finding evidence of the retrospective economic vote, as defined by (Fiorina, 1978), had become one of the main goals of many scholars from the rational choice perspective.

Although both schools still have major relevance for studies on voter behavior, modern approaches (at least in US literature) tend to stand on a middle ground between the two pioneering theories (Healy & Malhotra, 2013). The new theoretical approaches that fall

between the Michigan model and the rational choice model neither consider voters perfect optimizing agents nor clueless and politically uninterested citizens; rather, voters are assumed to make self-interested choices but also to commit mistakes sometimes (Healy & Malhotra, 2013). In other words, voters do have rational behavior, but conditional on psychological biases that influence their political (and even non-political) decisions. According to Healy and Malhotra (2013), this new literature is worried about how retrospective voting can be moderated by cognitive limitations and political institutions. The present dissertation attempts to follow this path and, as Healy and Malhotra suggest, it tries to go beyond measuring retrospective voting to discuss whether voters are reacting to government performance in the right way. The main normative question is: does performance responsiveness always improve public welfare? As classical collective action studies suggest, rational individual behavior does not necessarily produce optimal social welfare. Thus, retrospective voting could sometimes produce negative incentives for politicians to produce suboptimal public policies. According to Healy and Malhotra (2013), “the literature thus suggest that retrospective voting does not automatically ensure good incentives, particularly given voter errors”. Biases on voter’s choices would reward bad policies instead of good ones.

At this point, it is useful to recall what are the main discussions in Brazilian literature. The objective here is less to make an extensive review and more to situate the present work and to identify gaps to be fulfilled. In Brazil, retrospective voting studies on the executive branch are, in most part, linked to discussions of broad national policy with emphasis on the legislative power (Borges, 2010; Firpo, Pieri, & Souza, 2017). There are few studies concerned with the electoral connection of executive power and subnational governments (especially mayoral authorities) (Borges, 2010). More recently, new literature presents heated discussions about impacts of the worker’s party’s (PT) major public policies to the electoral realignment of its basis. Some argue that PT’s electorate change between 1989 and 2006 (from urban, well-educated and wealthier regions to not-so-urban, less-educated and poorer regions) has a lot to do with “Programa Bolsa Família” (PBF) and other social policies from Lula’s first mandate (Hunter & Power, 2007; Nicolau & Peixoto, 2007; Zucco, 2008). Bohn (2011), in contrast, argues that despite the changes in Lula’s electorate, the PBF cannot account for them. Using survey data, she claims that PBF

beneficiaries were already in support for Lula in 2002 and “cast ballots for him during his reelection at the same rate as non-recipients”. Junior (2016) points out direct and indirect effects of PBF: although retrospective voting worked positively with beneficiaries, it also did so negatively with non-beneficiaries. Besides PBF, there are also some studies on retrospective voting of “Minha Casa, Minha Vida” (MCMV), PT’s main federal housing program. Dias and Junior (2015) found that PT did not benefit electorally in São Paulo municipalities, showing negative results in a couple of empirical tests. Although focused on municipalities, this work’s effort is to explain broad national policy.

Although all these studies have major relevance in political science in Brazil, there is still a lack of studies on retrospective voting of public policies at the executive municipal level. A few studies rely on the impact of urban or municipal policies on mayoral electoral outcomes. One of these studies is Firpo et al. (2017), in which they successfully attempt to show how mayors are responsive to their electorates’ evaluation of public school performance in 2008, given a new wave of federal accountability system since 2005. Another example is Cavalcante (2015), a study that analyzes the reelection chances of mayor incumbents based on their fiscal performance. This study’s conclusion is that voters reward mayors that are fiscally responsible. But studies like these are not very common, thus one of my work goals is to contribute to this literature. To be more specific, I would like to contribute to a rare literature on retrospective voting of urban policies. Those are policies that can vary substantially from one region of the country to another, from small towns to large metropolises and even within the same city. However, most mayors must, at least to some extent, worry about urban policies. What incentives do politicians receive to provide better public policies according to different urban environments?

To better understand how political institutions shape retrospective voting and the provision of different types of public policies, I borrow Borges’ (2010) typology. His typology classifies public policies in two dimensions: nature of goods produced and resource allocation criteria. In the first dimension, there are two ideal-types of public goods that can be provided: private goods and public goods. Private goods are excludable and rivals while public goods are non-excludable and non-rivals. Private goods can be basic food staples or public office (that is, goods associated to individual benefits), while public

goods are associated to collective benefits. Clientelism happens more easily with the provision of private goods because politicians can exclude others from the benefit (consumption) of that good and decide the allocation of resources based on their political interest (whoever supports the politicians receives the goods). A mid-term of the two ideal-types are local public goods, usually associated to distributive politics. Schools, hospitals, bridges etc. are examples of goods that benefit a broader public but limited to a specific geographical area. Politicians in this case cannot exclude people from using the good, but they can allocate resources to strategic areas according to the number of core and swing voters (pork-barrel politics). According to this dimension, politicians find it easier to control political outcomes when providing private goods than public goods (with local public goods in between). Extending to what types of public policies will be implemented relies on social-economic characteristics of the electorate. When comparing less developed regions to more developed ones, the effect of distributive politics on well-being is stronger on the former because, *ceteris paribus*, poor people rely more on the government than rich people (Diaz-Cayeros, Magaloni, & Weingast, 2003; Medina & Stokes, 2002). It is also easier to control the electorate in small and rural municipalities, where social interaction is face-to-face, and communities are small and more homogenous. In large urban municipalities, costs of monitoring the electorate are much higher because there is more heterogeneity and political action often happens under anonymity (Desposato, 2001; Stokes, 2005). Poor people tend to prefer private goods because they have urgent needs that must be solved in the short term (Desposato, 2001).

However, Borges (2010) argues that another dimension must be added to the first one to better understand public provision. It is misleading to conclude that, based on poor people's preference to private goods, less-developed regions will tend to produce private goods within a logic of clientelism, while rich regions will tend to produce public goods within universalist logic. In fact, private goods, such as conditional cash transfer programs, can be delivered on a universalist logic that follows well-established criteria. Hence, the need for the second dimension. The resource allocation criteria can be either political-partisan or universalist. The two dimensions can be summarized on the following matrix on Table 1:

Type of benefit	Allocation criteria	
	political-partisan	universalist
Private	I	III
Public	II	IV

Table 1 - Borges (2010) Typology

A clientelist relationship would be represented by quadrant I, a private good delivered following a political-partisan criterion. Quadrant II represents the classical definition of distributive politics and quadrant III represents conditional cash transfer, for example. Type IV could be public goods by definition (non-excludable and non-rival) or a local public good more related to redistributive rather than distributive politics.

From this typology, Borges derives a first naïve scheme: the best strategy for politicians is to first provide clientelist public policies and then distribute pork-barrel policies, given that this provides better control over the electorate. However, public provision can also depend on political competition (horizontal/vertical)³ and socioeconomic context and demography (Borges, 2010). Higher political competition and party fragmentation, as well as more conflicted competition, tend to make politicians coopt bureaucracy and provide policies of type I and II. Even though more urban and developed regions have richer electorates that prefer less private goods, these regions also tend to have more competitive and fragmented electoral arenas, meaning that there are more incentives to politicize the bureaucracy and to adopt non-universalist strategies (Borges, 2010). The costs to have a broad electoral and legislative coalition are higher in these places, favoring the substitution of technical bureaucrats for political allies. On the other hand, the heterogeneity of large urban areas raises the cost of controlling the electorate and favors type III and IV.

What Borges' (2010) typology adds to the comprehension of retrospective voting is that there are many socioeconomic and demographic aspects, as well as political conditions, that shape incentives for governments to provide better or worse public goods. Researches worried about government accountability should consider those aspects if they want to

³ Horizontal competition is between political parties and vertical competition is between tiers of government.

contribute in a normative sense. The present work aims to provide further empirical evidence of retrospective voting in municipal executive tiers of government, in the hope that these findings help societies to provide better public policies, with broad impact and positive externalities. I study the case of São Paulo from 2001 to 2004 because the city best represents a large metropolitan area in Brazil and because it was a moment when – for particular reasons beyond the scope of this work – many different types of public policies were provided. Two of PT's major municipal public policies were the CEUs and the *Bilhete Único*, with the first being a good example of local public good and the second a policy that can be considered very close to a public good by definition⁴. In the next chapters, my focus is to discuss the impacts of *Bilhete Único* on Marta's electoral outcomes, but I try to acknowledge the importance of CEUs for her government and the possible conflicts between distinct agendas related to these policies within PT's administration.

3. Methodological domain – a mixed methods approach

To situate the reader on my methodological domain, I dedicate this small section to explain my method option. I decided to take a mixed method approach. According to Creswell and Clark (2011), not all research agenda fits with mixed methods. Some are better suited by quantitative and some by qualitative approaches. But a large part of studies, especially on social science, could be better addressed by mixed methods. As Creswell and Clark point out, there are many reasons to employ mixed methods: when one data source is insufficient to address a research problem; when results need to be explained; when exploratory findings need to be generalized; when a primary experimental design needs to be expanded; when there is a need to compare multiple cases; and many others (Creswell & Clark, 2011).

Having decided that my theoretical domain is the rational choice model with modern nuances that allow for psychological biases, my methodological approach starts with a quantitative approach, to test whether retrospective voting does indeed happen in

⁴ I state that *Bilhete Único* is almost, but not exactly, a public good by definition, because there is a local component associated to this policy. People who live further are more benefited than people living downtown. However, this local feature is much weaker than pork policies such as CEUs.

São Paulo's mayoral elections concerning the smart-card policy. A post-positivist ontology such as the rational choice theory usually does not worry about qualitative findings. So, my research should stop there. However, there is a need to better explain my initial quantitative results. When the first database provides incomplete results, it is time to employ a mixed method approach, with "the second database helping to explain the first" (Creswell & Clark, 2011).

Following the Creswell and Clark (2011) typology for research design, I decided to conduct an explanatory sequential design. As the name of the design suggests, it is a step-by-step approach: first the researcher collects and interprets quantitative data, then he or she uses qualitative data to reinterpret or expand the quantitative findings. Some of the quantitative findings may be hard to interpret without a full understanding of the research problem, therefore, the qualitative findings can help to fill the gaps. In the next two sections I give details on the quantitative and qualitative methods employed on this research.

Quantitative model

The empirical quantitative models assume that the smart-card could impact electoral outcomes in the two following ways: for those commuters that used to take more than two buses before policy implementation, the smart-card represents radical transport cost savings (Neto, 2016; Souza & Colares, 2005). Rather than paying for every bus ticket, commuters started to pay just once for the whole trip. It is reasonable to assume that it represents an improvement on bus users' budget constraint, which could translate into votes, i.e. voters would reward politicians for a given improvement on their well-being, the retrospective economic vote (Fiorina, 1978). Besides the economic vote, where voters reward politicians based on a monetary improvement, there are also other ways to extract utility from the policy, e.g. smart-card users can be better simply by carrying less money in their pockets – in fact, on my qualitative research, more than one interviewee cited studies of SPTrans that reported decrease in robbery after the policy was implemented⁵ – or because they save time

⁵ Unfortunately, I could not find these studies and my interviewees lost track of them. An anecdotal evidence of this effect is the sharp fall in robbery in Campinas-SP a month after electronic smart cards were

with a better combination of buses on a new route. Also, the smart-card policy could help unemployed workers who live far from job hotspots to be employed, as it evens the transport cost for all workers, making workers from the outskirts of the city as competitive as workers from downtown (Souza & Colares, 2005). Both the monetary and non-monetary retrospective vote could impact electoral outcomes, but it is very difficult to partial out their effects.

All this reasoning can be synthetized into the following research hypotheses:

- H1: smart-card promotes fare savings for its users who in turn reward politicians in a retrospective manner.
- H2: voters can also reward politicians due to non-material gains.

In order to test the retrospective vote (monetary or non-monetary), the work must face the causal inference problem (Angrist & Pischke, 2008). Fortunately, the smart-card policy has a slight advantage when compared to other types of urban policies: it is hard to define the policy allocation according to political-partisan criteria, unlike pork-barrel policies where the place of the allocation is defined in accordance to such criteria. Take, for example, two similar zones in the outskirts of the city equally distant from downtown, the government could not give the smart card to individuals in the first zone and not to the second. All citizens are eligible for the policy independent from where they live. Assuming that on the first zone residents do have access to subway or train stations while on the second zone residents do not, the smart-card's benefit is stronger in the second zone because residents rely more on buses. This is a nice identification opportunity because PT could not prioritize zones, nonetheless some of them have greater treatment intention than others. Thus, the smart-card will be as-good-as randomly assigned if the more treated zones are not correlated to votes for PT. On this hypothetical situation, the empirical strategy compares intensity of the policy by zones to give a causal relationship.

However, votes are also not randomly assigned and as it happens PT's and Marta's voting were stronger in peripheral areas of São Paulo city back in that time (Limongi &

implemented on this city in 2014.

http://correio.rac.com.br/conteudo/2014/11/capa/campinas_e_rmc/221465-bilhete-eletronico-reduz-assaltos-a-onibus.html

Mesquita, 2008). As the outskirts of the city are the zones where the intensity of bus use (and so smart-card) is greater, there are good reasons to believe that the smart-card impact could be mixed to regional support for PT. In other words, there is a risk to confound the smart-card effect to a “periphery effect”. There could be confounding factors between the smart-card policy and electoral realignment of PT constituency in different zones of the city. Living in the outskirts could be a source of endogeneity and the empirical strategy must address this problem.

How then could the empirical model isolate effects that are possibly mixed to the smart-card policy pure effect? The first step of the strategy is to regionally analyze Marta’s vote share variation from one year to another. In other words, the dependent variable is Marta’s vote share in 2004 minus her vote share in 2000, for every region of the city. I only considered the second-round voting because in the first round there could be a strategic behavior in which people don’t vote for their first best and instead choose the second best in order to harm their least preferable candidate (M. F. Figueiredo, 2008). As mentioned before, it is expected that the smart-card will render more votes in peripheral areas, where more people are benefitted and with greater intensity. To explain the temporal and regional variance of her performance, the model has a measure of the smart-card on the baseline (2000) as explanatory variable (Costa, Garred, & Pessoa, 2016; Dinkelman, 2011) and each observation of the sample is a zone of the city. Therefore, an increase on the smart-card in 2000 would represent an impact on the growth of PT’s vote share between 2000 and 2004. To correctly find the effect of the policy, the model also must control for other variables that may be also correlated to the share of the votes and to the smart-card itself. If controlling for other important public policies, and a periphery effect does not substantially change the coefficient associated to the smart-card variable, it means that the model is close to capturing the correct effect of the policy of interest.

The second and last step is to further isolate the periphery effect. Controlling for income and other social-demographic variables in step one is not enough. To address this potential problem, a second set of models was designed. These models exclude areas from the center of the city that were not matched with areas of the periphery. After this exclusion I run the same models as on first step. This new strategy attempts to compare comparable

areas of the city. The aim is to only take similar zones on the outskirts and compare them, avoiding the confounding factor of PT's distribution of votes within the city. It is almost as if I could compare zones that are just as likely to vote on PT. More details on how I used the matching technic will be presented in the next section.

Data, variables and model specification

For the quantitative analysis, there were two main databases: electoral outcomes from TSE⁶ and OD Surveys⁷ from years 1997 and 2007. But additional information was also collected from the Demographic Census and for other policies implemented between 2001 and May 2004, to build control variables.

The OD Survey interviews São Paulo metropolitan area residents since 1967. In interviewees' households, researchers ask questions about the previous weekday trips and social-economic questions. Each observation from these databases represents characteristics of a trip taken by someone, such as length and distance, modals used, zone of origin, zone of destination and many others. Because the database gives information on the zone in which a person lives, it is possible to aggregate individuals' information into zones' information.

Given the available data, an initial challenge is that it is not possible to identify individuals in time, as each OD Research interviews a different sample. The data is not a panel on the individual level, so to speak. But we have a pseudo panel on OD zones' aggregate level. Also, on aggregate level, it is possible to merge unidentified votes into OD zones to have a proper Database for analyzing electoral outcomes. The data from TSE does not have information aggregated by polling place, only by electoral zone and ballot-box. Thus, I use an aggregation of TSE ballot-box information by polling place (with geo-references) made by the Center of Studies of the Metropolis (CEM)⁸. Polling place

⁶ TSE: Electoral Court.

⁷ São Paulo's Subway Company conducts The Origin and Destiny Research every ten years.

⁸ CEM is a center of studies from the University of São Paulo.

information can be viewed as dots on a map. Merging these dots to the corresponding polygons of the OD zones is one way to aggregate vote data into an OD zone.

Control variables come from the Demographic Census. Merging Census and OD Surveys is similar to what is done for the electoral variables, except for the fact that census data are aggregated in census blocks, i.e. not dots but polygons. In this case, census blocks and OD zones were made to be compatible with one another. The next step then is simply to aggregate census information with each OD zone.

Finally, the control variables include presence of CEU facilities close to the zone and proximity to Rapid Transit (subway and train) and bus corridor infrastructure. The city hall platform GeoSampa has plenty of information about public facilities, such as hospitals, schools and many others. The education database has the geographic coordinates of all CEU locations, making it easy to be merged with the OD and elections data. Rapid Transit and bus corridor shape files can also be easily accessed within the city hall online platforms.

The empirical model can now be presented. Remember that, given the available data, it is only possible to analyze aggregate voting behavior at the OD zones level.

$$\Delta \%Votes\ Marta\ (PT)_z = \delta_1 SmartCard_z^{97} + \beta X_z^{2000} + \gamma W_z^{2004} + \mu_z$$

Where the subscript z accounts for zones. The vector β are coefficients for the census covariates X , δ is the coefficient for the smart-card variable, γ are coefficients for public policies implemented between 2001 and May 2004 (before smart-cart policy) and μ is the error term. Census covariates include average nominal income and percentage of illiterates. Government policies include a dummy variable, indicating whether a zone's centroid is closer than 1.0 km from a CEU facility⁹, a variable indicating distance (in meters) to Rapid Transit infrastructure and another variable indicating distance (in meters) to bus corridors. To explore possible heterogeneities in beneficiaries' profiles, I also control

⁹ The 1.0 km is a reasonable distance for education facilities according to Neves (2015).

for Percentage of Transport Pass for workers¹⁰, percentage of students in the zone and percentage of workers that had their bus fare paid by their employers.

Census variables, the first two controls, should give a first sense of how peripheral areas vote for the workers party. Lower income should be correlated with a greater number of votes for Marta. Lower levels of education were also a characteristic of the labor party in the beginning of the 2000s (Limongi & Mesquita, 2008); therefore, the greater the illiteracy in a zone, the greater the number of votes for PT. Proximity to CEU facilities should increase PT's share of the votes because that was one of the most successful policies of Marta's administration. Proximity to rapid transit (trains and subway) could have an ambiguous effect to PT votes because people could associate a general improvement on transport system to the well-functioning of subway and train and reward PT, even though the rail system is not under municipal jurisdiction (positive effect), but on the other hand, voters could recognize jurisdictions and reward state level government, votes that would then go to PT opposition (negative effect).

Marta is also well known for her bus corridors and transport improvement policies other than smart-card itself, therefore it makes sense to at least control for bus corridors (available data). However, bus corridors could have ambiguous effects because NIMB voters (not in my backyard) usually feel uncomfortable with public infrastructure in their neighborhoods (Glaeser, 2011). NIMB voters in São Paulo are usually high-income citizens that tend to use less public transportation than low-income citizens and feel that bus corridors disturb their street business and their mobility with cars, while intense public transportation users find corridors quite useful because they save time. A small distance to a bus corridor in the outskirts is potentially good, but in central areas, it could be potentially bad.

Finally, the models must also control for three possible sources of heterogeneity: The Transport Pass for workers; the percentage of workers that have their bus fares paid by employers; and the students' pass. Federal law nr. 7.418/1985 institutes that all workers must receive from their employers a Transport Pass. But bus users that receive the

¹⁰ Transport Pass is a right that every worker has according to Brazilian laws. Employers usually chose to buy a Transport Pass for their employees or to simply pay the transport expenses by cash. The employer must pay the surplus in relation to 6% of the income of the employee.

Transport Pass should not be monetarily benefitted by the smart-card, assuming that the fare discount should actually affect the employers rather than employees in most cases. Although the law institutes the Transport Pass, many employers prefer to use cash to pay their expenses with employees' transport cost. Some workers get their transport fares paid by employers, but do not have a Transport Pass. For this reason, I had to build a second variable that includes any worker who get fares paid by the employer, including those who have a Transport Pass¹¹. Both types of employees (with Transport Pass and without it) should have the same null monetary effect. However, as the qualitative research later presents, the two types of employees receive the smart-card in a different manner, that could potentially influence their use and become a source of heterogeneity. The students' pass is also a federal law (Decree nº8.537/2015 over Laws nr. 12.852/2013 and nr. 12.933/2013): all students are allowed to pay half fare, but until the smart-card they also had to pay as many fares as necessary. The advent of the policy represents important savings for students' families that could also be turned into votes. Therefore, the smart-card policy could have a different effect for students and students' families, being another source of heterogeneity.

The smart-card variable was built in two distinctive ways. Note that the available data (OD Research) does not identify smart-card users, so I consider the number of buses taken in a trip as a proxy to smart-card. A trip with two or more buses is a trip from a potential smart-card user. My main assumption for both variables is that whoever takes two or more buses will at some point get a smart-card. Because the data is only available at an aggregate level, the research can explore an intensive margin and an extensive margin. A given peripheral zone can be more affected either because its residents take much more than two buses (and so have a greater amount of money saved per trip) or because it has many residents being benefitted. The intensive margin accounts for number of fare tickets saved by beneficiaries and is strongly related to the monetary vote. This first variable was built as follows:

¹¹ This variable includes all employees, those who have the fares paid by Transport Pass and those who do not. Housemaids, which are very common in Brazil, are a good example of employees who get their fares paid by employers but usually do not receive a Transport Pass.

$$SC_z = \frac{1 \times \sum_{t \in z} Trips_t^{2bus} + 2 \times \sum_{t \in z} Trips_t^{3bus} + 3 \times \sum_{t \in z} Trips_t^{4bus}}{\sum_{t \in z} Trips_t^{any\ modal}}$$

Where z = OD zone of residence, t = trips in which commuters took either bus or any other vehicle (including walking). The OD survey database is organized on the following way: each row gives information about a particular trip t from an individual i with a origin in zone z and destiny in another zone z' . Each individual can make more than one trip and use more than one modal for each trip. Thus, on a given trip the person could, for example, catch two buses, one car and walk to his/her destiny. With this information of modals, I can build dummy variables for two buses in a trip, three buses in a trip and four buses in a trip. A given row in my database will have three extra dummies, so if, for example, this trip had two buses the dummy for two buses will have value one, while the other dummies will have value zero. My aim with this smart-card variable is to have a measure of the impact of saving extra bus fares when using the electronic card. To build it, the first step was to simply sum up the dummy variables for the number of buses in each trip by zones. It is important to mention that I only considered trips that are originated on the individuals' zones of residence. The second step is to multiply the three separated sums of the numerator by the number of bus fares saved according to the number of buses. Thus, the sum for two buses is multiplied by one, because when an individual catches two buses he/she saves one bus fare with the smart-card, and so on. Zones with a greater number of buses per trip will have a greater value of SC. The last step is to divide by a measure of how intense the zones are regarding mobility. This is important because it could be the case that two given zones have the same level of SC, but the first one has only 10 trips total and the second one has 1000. The denominator takes into consideration all trips within a zone (trips with all types of modals); thus, the variable controls for zones with intense flow of people and avoids possible biases towards these zones. In short, the intense margin smart-card variable gives a sense of “fare savings per trip”.

The extensive margin is more straight forward. It is simply the amount of smart car beneficiaries with voting age¹² (bus riders that take two or more buses) over the total amount of people with voting age in that zone¹³. It was built as follows:

$$SC_z = \frac{\sum_{i \neq z} SCusers_i^{voters}}{\sum_{i \neq z} AllVoters_i}$$

Where z = OD zone of residence and i = individuals older than 16 years old (eligible to vote). For the extensive margin, the greater the number of residents that are smart-card beneficiaries, the greater the value of the variable. This variable capture both the monetary and non-monetary retrospective votes. However, it gives no different weights to more intense smart-card beneficiaries.

The reason to have two distinctive margins is to further explore the impacts of smart-card. A bus user that catches four buses saves three extra fares, while a bus user that catches two buses saves only one fare. Exploring an intensive margin could help better understand the marginal effects of saving one extra fare. The extensive margin is important to corroborate intensive margin results. If both margins present positive impacts the confidence on the results increases.

Following with the empirical strategy, new models derived from the first model above attempt to test the stability of the smart-card coefficient. They interact the smart-card variable with income, Marta's policies for CEU and bus corridors, rapid transit, Transport Pass, percentage of workers that have their fares paid by employers and percentage of students in a zone. If coefficients change little and survive the statistical hypothesis tests, it suggests that the smart-card has a causal impact on retrospective voting as expected at first glance. However, if they fail to do so, the smart-card policy probably did not result in votes as expected. The two margins multiply by two the number of models that are going to be tested, as different effects are expected for each margin.

The last step of the empirical quantitative strategy is to match zones and then subset a better sample for the causal relationship inquiry (Angrist & Pischke, 2008). To do so, the

¹² The intensive margin variable does not take into consideration voting age (i.e. it does account for students on the sample), because the unit of analysis are trips, not individuals. Nevertheless, when students are included in the analysis, effects on students should be assumed as effects on the family savings.

¹³ Voting age in Brazil is 16 years or older.

first criteria is to define which zones are “treated” and which are not. For each smart-card variable, zones above the median will be defined as “treated” and zones below will be “non-treated”. Then, as the literature suggests, a propensity score match (PSM) is calculated. I used a logit model to calculate the probability of a zone being treated, as follows:

$$Treated_z = \beta_0 + \beta_1 Nominal\ Income_z + \beta_2 illiteracy_z + \beta_3 Rapid\ Transit_z + \mu_z$$

Where *Nominal income* holds for the average nominal income of households on the zone; *illiteracy* holds for the percentage of illiterate people living in the zone; *Rapid Transit* is the distance to trains and subway infrastructure; and μ is the error term. The greater the income, the fewer votes to Marta; the greater the illiteracy, the more votes to Marta; and distance to rail facilities have ambiguous effects. Results of the propensity score models can be viewed in Appendix B (all three variables are statistically significant).

After calculating propensity scores, I matched treated zones to their nearest neighbors. Non-treated zones that were not a nearest neighbor to a treated zone were discarded. This way the strategy makes sure that there will be no bias towards peripheral areas’ characteristics. The figures below confirm that the matching criteria works to exclude downtown zones and keep the dataset with comparable areas (for both smart-card variables). On the first and third maps (full sample), grey colored zones are those zones that do not have any polling place, thus they are excluded from the analysis. On the second and fourth (matched sample), grey colored zones are not only zones without data by polling place, but also the zones excluded for not being a nearest neighbor to a treated zone. Notice that most of the exclusion from the first map to the second and from the third map to the fourth are zones in the center of the city.

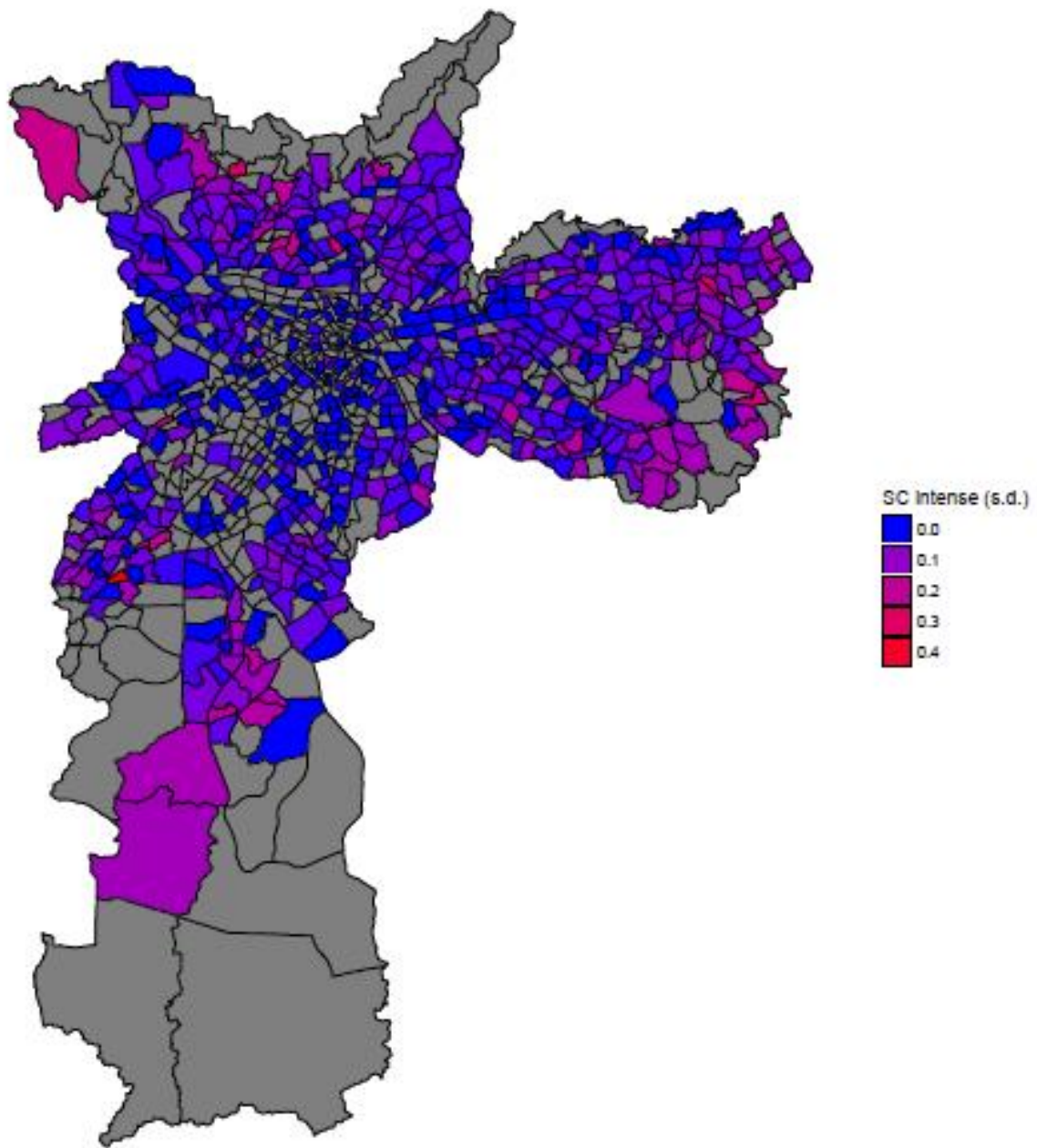


Figure 1 - Smart-card intensive margin - full sample

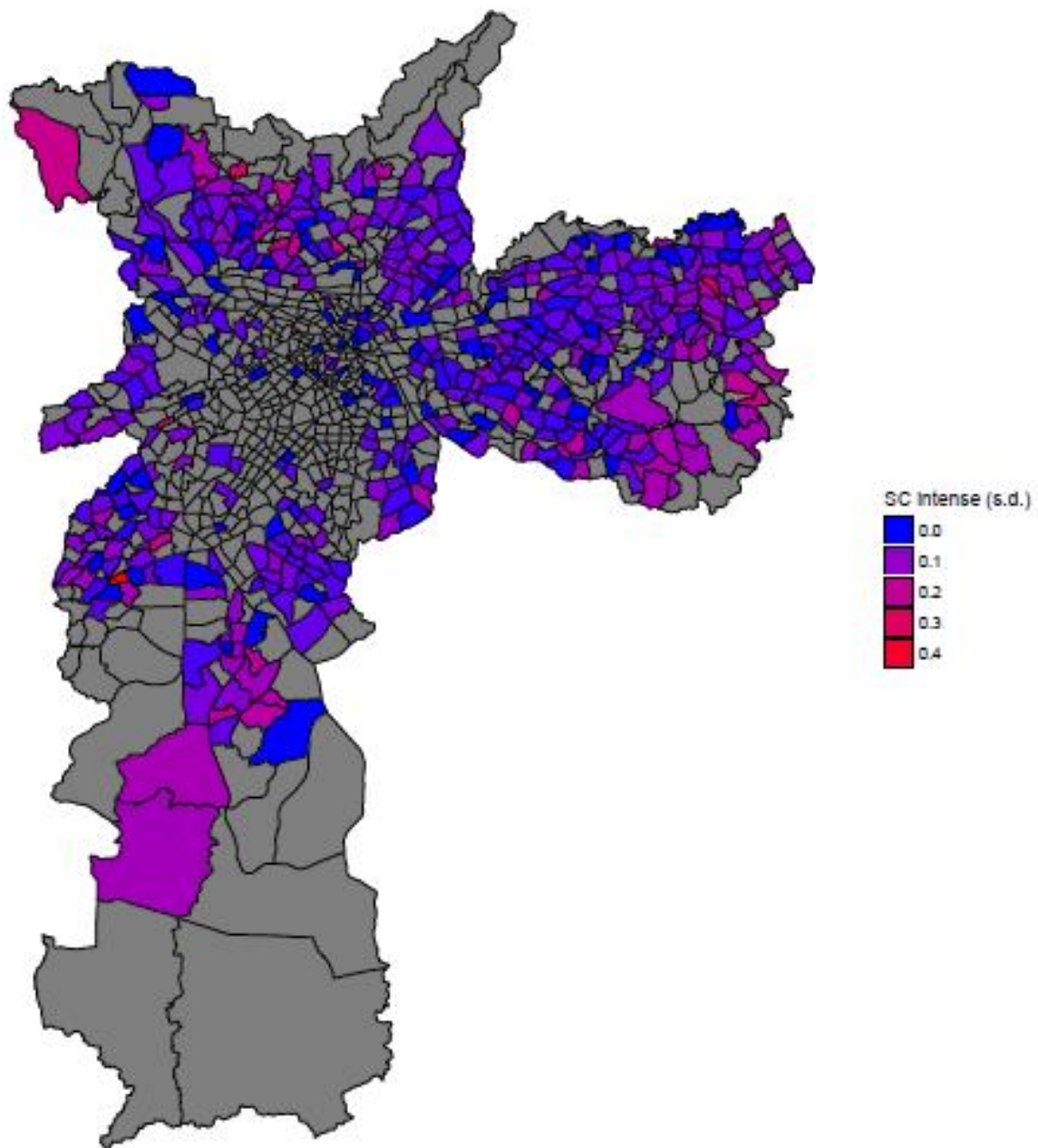


Figure 2 - Smart-card intensive margin - matching sample

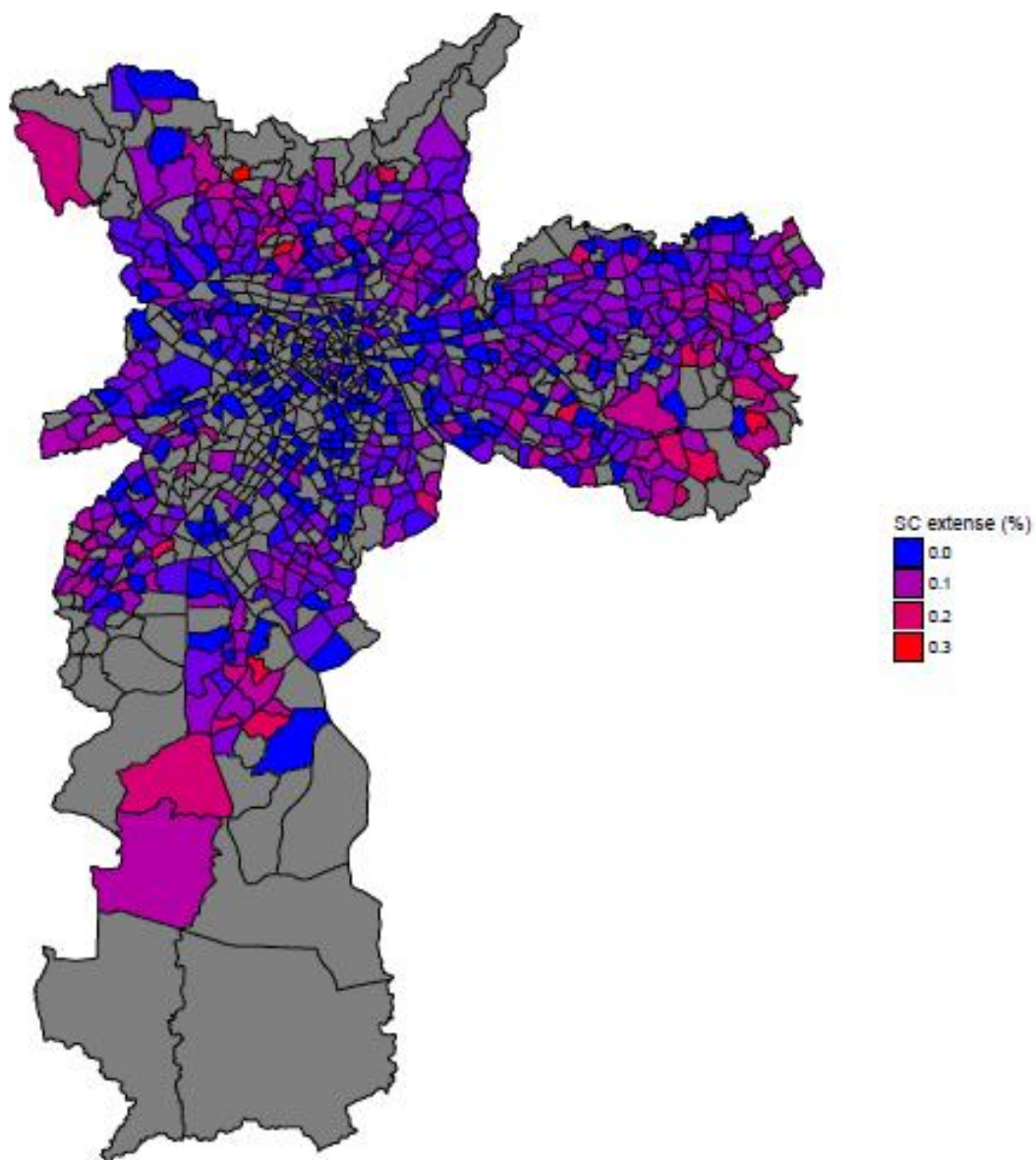


Figure 3 - Smart-card extensive margin - full sample

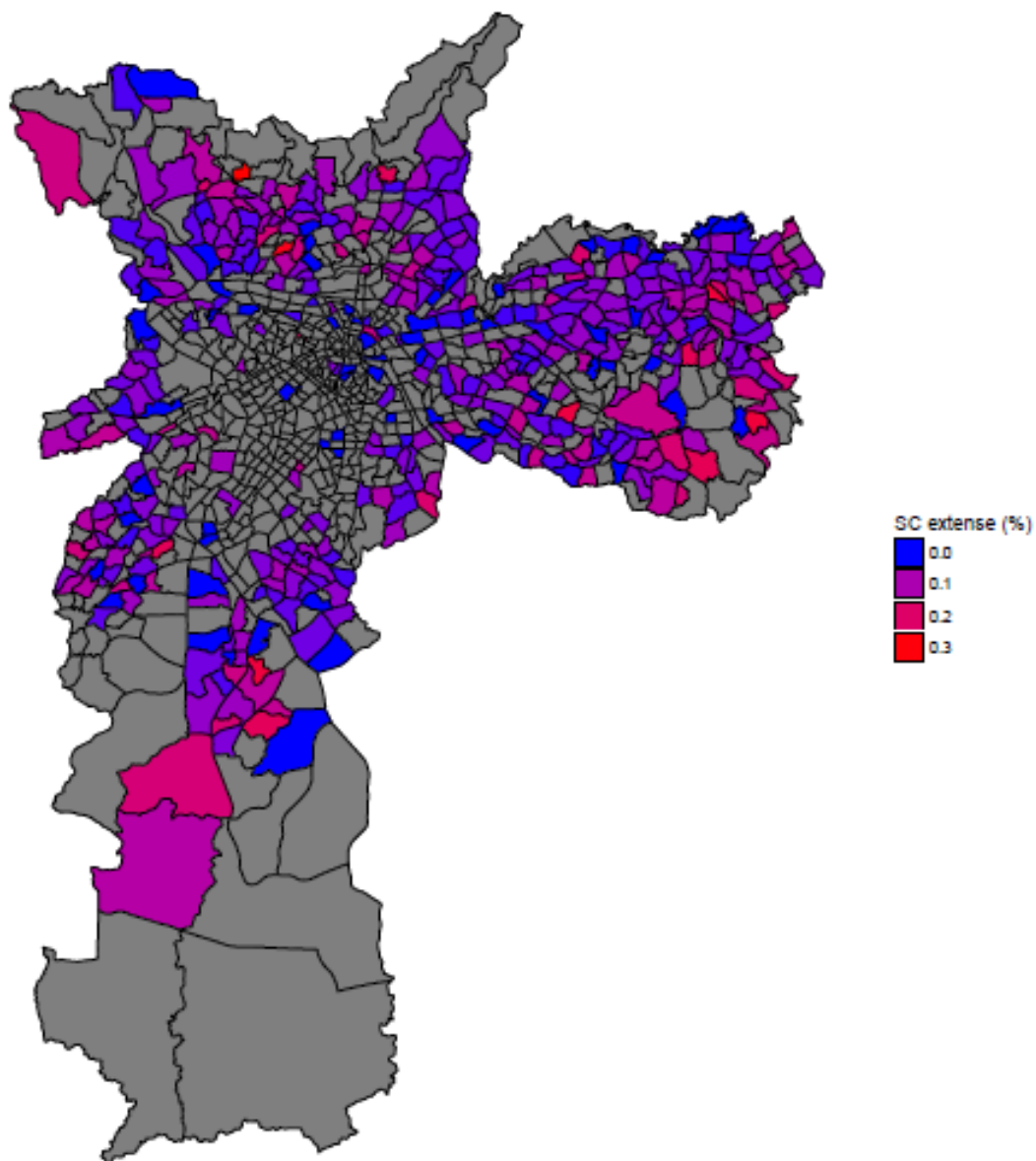


Figure 4 - Smart-card extensive margin - matching sample

Qualitative analysis

As Eisenhardt (1989) proposes: “the qualitative data are useful for understanding the rationale or theory underlying relationships revealed in the quantitative data”. Thus, my qualitative research was designed to further understand the quantitative results. On qualitative research terms, a single case study was conducted, being the implementation process of *Bilhete Único* during PT’s mandate (2000-2004) and its electoral implications my single case to be studied. Even on my qualitative analysis I keep the post-positivist paradigm, that is the reason why I’m more concerned with deductive hypothesis testing than inductive story-telling, as the constructivism paradigm for example (Guba & Lincoln, 1994). According to Eisenhardt (1989) case studies can be used for many purposes that include testing theory, generating theory and providing description. My aim here is to build constructs that can help me explain the incidence (or not) of the retrospective voting. I collect more data to interpret whether the retrospective voting occurs on my case study and why. In this sense, I’m performing theory testing on a deductive way, but this doesn’t mean that some induction was not performed¹⁴.

Because there was a limited availability of documents about the smart-card implementation it was important to talk to people that participated on the policy elaboration. I first decided to conduct semi-structured interviews with SPTrans bureaucrats and politicians involved in the process of creating the policy. The primary objective was to better understand the context of the *Bilhete Único* implementation and confront it with the electoral performance of this policy. The main concerns were: how the policy was implemented (to test if the retrospective voting suffered influence of this process); what was the technical purpose of the policy according to bureaucrats (to test the bureaucracy agenda setting); and how smart-card could be of electoral value according to politicians (to test the political agenda to what concerns the policy). My criteria to choose interviewees was that they should be directly involved in *Bilhete Único* implementation and/or had exercised leadership in this process. Therefore, I interviewed four bureaucrats of high and medium ranks in SPTrans and the Secretary of Transport of PT’s mandate at that time

¹⁴ Even on post-positivist lens some induction is usual, because sometimes new constructs arise without fitting the previous theory. These constructs can be used on theory building on an inductive manner and the researcher may recognize opportunities (Eisenhardt, 1989).

(Jilmar Tatto). To further understand political issues, I also interviewed Maria Aparecida Perez, the former secretary of education and one of the main persons responsible for CEU's implementation and José Américo Dias, the former secretary of communication. It was important to the present work to understand the political agenda of *Bilhete Único* and how it was related to other competing agendas within the mandate. Talking to Maria Aparecida and José Américo helped in this sense. The data collected helped to better understand the steps of implementation of the policy, its technical and political challenges and its accomplishments. The interview questions can be accessed in Appendix A.

To address the credit-claiming literature and further explain the advertising of the multiple public policies provided by Marta's administration, I analyzed all TV programs of Marta Suplicy during her campaign. The recordings were made available by the Laboratory of Political Communication and Public Opinion Doxa / IUPERJ. With this material at hand, it was possible to show how the marketing strategies of PT helped to shape electoral results. I counted the number of minutes that PT's major policies appeared on the Mandatory Election Time¹⁵, as a measure of its relative importance. The triangulation of advertisement data, quantitative regressions and interviews helped me better understand the impacts of *Bilhete Único* and its bureaucratic and political contingencies.

4. Smart-card's history

A technical solution to an interconnected system

The smart-card policy cannot be properly understood apart from its administrative and political context. In this section, I focus on the administrative context, while the next section is dedicated to the political context.

At the end of the 20th century, the city's transport and mobility system was evidently saturated and inefficient. According to a study developed by IPEA (Institute of Economic Applied Research) and ANTP (National Association of Public Transport) in 1998,

¹⁵ In Brazil all open channels must give way to the Mandatory Election Time, when political parties have the opportunity to present their television campaign.

diseconomies due to inefficiency and lack of mobility totaled R\$ 346 million/year at that time (São Paulo (cidade), 2004). It was clear to authorities that something ambitious had to be done. The opportunity came with the end of the service provider contracts in 2001. Law nr. 13.241, approved by the city legislative body and sanctioned by the executive on 12/12/2001, set the legal framework for an important new stage of transport policies in the city of São Paulo.

The 2000-2004 municipal administration had the big challenge of delivering a more interconnected and efficient system with a limited quantity of resources in a four-year window. To accomplish this goal, they formulated the “São Paulo interligado” plan (literally: São Paulo interconnected) for public transport bus service¹⁶. The first initiative was to reorganize the bus system using the same infrastructure available. A team of specialists, bureaucrat technicians, consultants and civil society was formed to discuss the problem. After the first diagnoses, the plan was ready to be executed. But soon it became clear that reorganizing bus lines wouldn’t be enough, so the next step was an investment plan to deal with the bottlenecks of the system. The “São Paulo interligado” then suggested four investment items: electronic billing, to promote a faster integration between subsystems and enable the tariff policy; bus terminal facilities, to improve integration; priority for buses on the road system (bus corridors), to create incentives for public transport use; and monitoring and control, to rationalize the system (São Paulo (cidade), 2004). All four investment plans were implemented throughout Marta’s mandate (2001-2004).

It becomes clear from the above mentioned that the smart-card was a central part of a broader plan to improve the municipal transport system. Specifically, it was a technical solution to enable the tariff policy and the main instrument of trip integration. Without the smart-card, the ambitious plan of “São Paulo interligado” would never be complete. The bus terminal facilities and bus corridors were important policies to improve the system, but the most innovative initiative and the heart of the plan was certainly the electronic billing. Furthermore, it was vital for the new monitoring and control system to work.

¹⁶ Only the bus system is under municipality jurisdiction in São Paulo. Rail system is under state jurisdiction.

Having noticed the context in which the smart-card was inserted, it is relevant to report its implementation history. According to (São Paulo (cidade), 2004), through 2002 and 2003, the first tests and legal arrangements took place. Between January and October (2003), the first smart-cards were delivered to the elderly, who are exempt from fares. Between February and May 2004, students (who pay half fare) started to receive cards and so did some Transport Pass users. In March 2004, a formal agreement with the public bank *Caixa Econômica Federal* took place, allowing the delivery of cards in lottery houses. This was an important achievement, because delivering cards to millions of people is not an easy task¹⁷. In my interviews with bureaucrats and the municipal secretary of transport, I discovered that, before this agreement, only a few places could deliver the card (about 40 SPTrans centers) and, even with lottery houses, it was increased to about 700 spots. The penetration was not enough; it was only on a latter agreement in June 2004 that SPTrans could gradually create an accredited network composed of newsstands, pharmacies and other small businesses, reaching thousands of delivery centers by the end of 2004. In May 2004, the smart-card system started to officially work and at full pace. Trials for elderly, students and Transport Pass for workers had begun before, but it was only after May (2004) that the delivery to the broader public started (Common card). An important fact is that, according to one of SPTrans's interviewees: it was "only the common card that depended on the network's capillarity", meaning that it was harder for common users¹⁸ to get the card.

The Transport Pass cards started to be available at the same time as the students' cards, and there is a big difference between the way they were delivered when compared to common users. This difference could be crucial to the proper understanding of the smart-card effects on votes, as I will show in my conclusions. According to my interviews, the Transport Pass smart-cards were delivered directly to employers, who then passed them to their respective employees. At first, SPTrans used to deliver 1/3 of fares on the smart-cards and 2/3 on the older paper Transport Pass. Gradually through the months until September 2004, 3/3 were on the smart-cards and the paper pass was suspended, meaning that on the month prior to the first round of elections, most Transport Pass beneficiaries already had

¹⁷ According to Jilmar Tatto, on the first weeks of implementation of the smart-card, the Caixa Econômica network system could not work properly, because it could not support the amount of card being loaded.

¹⁸ Common users exclude elderly, students and employees with Transport pass.

the smart-card in hand. But the same cannot be said about common pass users, because many of them were still paying with cash and may not have acquired the smart-card by election time. The delivery of the Transport pass was only possible thanks to partnerships between SPTrans and benefit distribution companies, such as *Sodexo*, *Alelo* and *Benefício Certo*. These companies were crucial because they helped install magnetic terminals in workplaces where employees could load their Transport passes, making the access to the policy easier. Students also did not have to go by themselves to the delivery spots to get a card because they received it at schools. Therefore, both workers with Transport Pass and students had an easier access to acquire the cards, when compared to common pass users. Furthermore, they received the cards earlier. Given that *Bilhete Único* was implemented very close to elections, the timing could be of great importance. The different timing and difficulty to get the smart-card have an important role on my conclusions because it could be the case that part of the beneficiaries did not properly feel the impacts of the policy.

Political context and smart-card's potential

Political discussions about implementing the smart-card date from the early 90's when Eduardo Suplicy (PT) proposed it in his mayoral campaign in 1992 (Balago, 2014). He lost that election, but the idea endured in superseding years and campaigns. In 1995, alderman Carlos Zarattini (PT) approved a law with the city's legislative body to implement a smart-card, but mayor Paulo Maluf (PDS) vetoed it. In Celso Pitta's (PPB) mandate (1997-2000), a pilot of an electronic card was implemented, but the policy did not move on due to technological difficulties.

The political context was gradually favoring an electronic solution for billing, as many cities around the world adopted this kind of technology. But there were still uncertainties about the capacity of public authorities to implement it properly. In Jilmar Tatto's words: "the *Bilhete Único* didn't move on, people were afraid to deal with it, because it was something new, something monstrous". Not only politicians but also owners of the operating companies were reluctant to go on with the project, said Jilmar. Everyone knew that the effort to implement it would be enormous and there were many risks involved,

especially concerning the technology and the political consequences if it failed. According to Jilmar, Marta called him for a talk in her home and said to him: “We have done a lot in the transport area, we have organized the system (...) the *Bilhete Único* issue is not decisive for our election”. She knew the risks: if the policy did not work, it would throw away all the efforts that had been done on transports so far. This conversation with Totto was a few months before the official launching of the program, but the plan was already at full pace, so they decided to keep up with it and Marta gave Jilmar all her support and undertook the risks. "Marta always supported me, always gave me autonomy, always accompanied the *Bilhete Único*, she wanted to implement it" (...) "she began to be afraid because of the electoral calendar that something could go wrong, what if it didn't work? We were short on time", said Totto.

My interviews with Jilmar and SPTrans bureaucrats confirm that after the official launch of the program, and even in trials before that, there were many problems of all sorts. Some people were reluctant to load money onto an electronical card because they were not used to this type of technology (especially the elderly and less educated) and did not believe it could work. Operators of the bus system (drivers and ticket collectors) could not understand how the money was stored on a cloud. Besides, in the first months, the smart-card system showed many problems on *Caixa Econômica* loading spots.

With all the investments and efforts to improve the public transport, it would be a paradox if Marta's government had a bad evaluation, especially on transportation. In fact, she really improved her evaluation due to these efforts. Figure 5 presents Marta's government evaluation and Table 2 presents her evaluation per administration area (Datafolha, 2005). It is clear from Figure 5 that she has a consistent improvement on Great/good evaluation from the end of March 2004, when most of her transport investments were being implemented (especially the smart-card). It is probably not a coincidence that public transport improvement and better evaluation have a similar tendency. If we look at Marta's other major policy, the CEUs, they were being inaugurated from the middle of the mandate, but they do not necessarily correlate to Great/Good evaluation.

2 confirms this interpretation because it is very clear how public transportation evaluation improves through 2004. Public transportation evaluation overcomes – by the end of 2004 – education, a traditionally well evaluated area of Marta’s administration due to CEU policy.

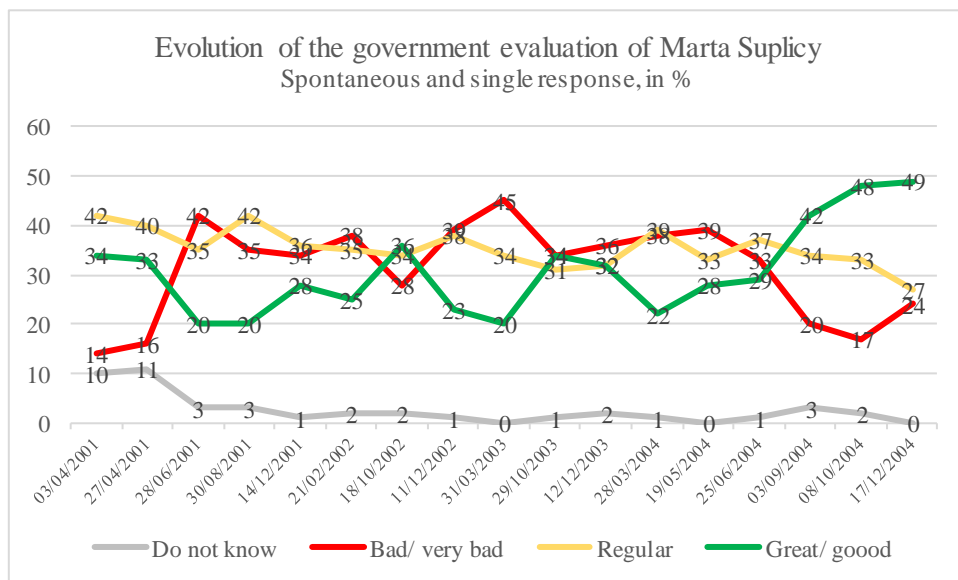


Figure 5 – Government evaluation. source: Datafolha, 2005

Worst performance areas of city hall - Marta Suplicy Administration					
Spontaneous and single response, in %					
Categories	12/12/2003	25/03/2004	24/06/2004	26/08/2004	17/12/2004
health / hospitals / health posts	8	11	17	28	34
Sewers / drainpipes	1	9	3	2	7
Unemployment / fighting unemployment	6	9	8	7	6
Security / violence / crime	10	7	8	10	4
Education / schools / day care	6	4	8	4	4
Public transportation	11	10	7	4	3
clipping / asphaltting / holes	5	7	6	4	3
Cleaning / garbage	3	3	4	4	2
Traffic	1	3	3	2	2
Housing	3	3	2	1	2
Poverty / squalor	1	2	2	1	1
Sanitation	1	2	2	1	0
Fight against corruption	0	1	0	0	0
Light / power grid / power	0	0	0	0	-
other issues	15	11	11	10	10
It's not working out worse in any issue	7	2	2	3	3
Do not know	21	16	16	17	16

Table 2 - Government evaluation per administration area. Source: Datafolha, 2005

It is also important to notice how she terribly underperforms on health when the campaign gets closer and closer to the end. Health becomes by far her worst area, probably because of her main campaign adversary José Serra, who was Brazil's former ministry of health and insisted all the time that she has indeed underperformed. Furthermore, she may have lost elections partly because the marketing strategy focused too much on promising the Health CEU and lost time defending against Serra's attacks on this area. As Totto pointed out: PT made a big mistake, spending too much effort on campaign promises for health and forgot to properly sell one of its greatest accomplishment, the smart-card policy.

Figure 5 and Table 2 show that the smart-card policy had great potential to render votes. Even with all difficulties, *Bilhete Único* actually became a broad public policy – almost a public good by definition (Borges, 2010) –, as, by January 2005, about 6.7 million cards

were distributed (Souza & Colares, 2005). Moreover, the monetary gains of the smart-card could be of great importance, especially for the poor. Carvalho and Pereira (2012) estimate that Brazilian families spend on average about 15% of their income on urban transportation. For a poor citizen of São Paulo, a city with 17.000 km of streets and a high cost of living, mobility can be even more expensive. According to OD Research (1997), from a total of 2.08 million bus users, about 320 thousand take two or more buses, meaning that 15% may automatically reduce at least by half their bus fare expenses using the smart-card. From the 85% that take only one bus, a large part does not take more buses because they cannot afford paying (let us call them the “poor users”). The “poor users” can, for example, opt to walk long distances instead of paying one extra fare every day. Although the “poor users” did not save money when the policy was implemented they may also be benefited because they could optimize their routes using as many buses as they want.

There is also another potential middle to long-term effect of *Bilhete Único*. Because paying the transport pass for workers is mandatory, employers explicitly make accounts of this cost in their management routines. Therefore, *ceteris paribus*, a potential employee that lives closer and catches only one bus is preferable than another one that lives far and catches two buses, just because the first one is cheaper. In the medium or long run, after the smart-card’s implementation, the job market reaches equilibrium and the two potential employees will cost the same for the employer. Therefore, the smart-card could help democratize access to job opportunities (Souza & Colares, 2005). However, I do not expect that this effect over unemployment plays a major role on retrospective voting for the 2004 election because it takes time to reach a job market equilibrium and the smart-card policy started too close to elections.

A naïve look at so many positive potentialities of *Bilhete Único* could lead to misleading conclusions. As the credit-claiming literature suggests, it is not enough to deliver policies; politicians also need to communicate properly (Besley & Burgess, 2002; Grimmer, Messing, & Westwood, 2012). Even with the success of the smart-card solution, it could be the case that this policy did not return as votes to PT and Marta because the campaign failed to communicate the “ownership” of the policy. The next section shows the

results of the quantitative research that tested retrospective voting. The following section explains the results in light of the qualitative data.

5. Econometric Results

As mentioned in the methodology section, the empirical strategy is to measure whether the smart-card variables have a causal impact on votes, given a control on observables. If, after controlling for covariates, the coefficient of interests does not change much, then we have a good suggestion that there is a causal effect.

Let us first see the extensive margin behavior. Table 3 presents two sets of models. Models (1) through (4) are the standard regressions with all 612 compatible zones, while models (5) through (8) are the regressions with the 440 matched zones. On model (2), Marta would have change her vote share between 2000 and 2004 by 0.16 percentage points more in a zone with 1 percentage point more smart-card beneficiaries than the average. Given that she falls 12% on average from 2000 to 2004, 0.16% represents 1.2% of this fall, not an irrelevant effect for a single public policy. This coefficient is significant at a 1% level, but this model has not been saturated yet. Model (3) makes a further saturation, but now the extensive margin is not significant when controlling for Marta's CEU and bus corridor policies. All controls of this model have a sign in accordance with theory – the greater the income, the fewer votes for PT; the presence of a CEU has a positive relationship with PT and the greater the percentage of illiteracy, the more votes for PT. In model (4), when I control for percentage of Transport Pass, percentage of workers who have their fares subsidized and percentage of students, the effect of the smart-card becomes negative, but not significant. However, the interaction between smart-card and percentage of students shows a positive and very significant effect, meaning that, when increasing the number of students in a zone, the effect of the smart-card becomes stronger.

But the first set of models could fail to account for unobserved effects of the periphery, even controlling for income and illiteracy. Models (5) through (8) are rigorously the same as the first set, except for the fact that now there are less zones, due to the matching

exclusion. This new set presents a very similar result: the smart-card variable alone fails to have any impact when controlling for the alternative policies of Marta (model 5). On model (8), which I prefer, the coefficient of the interaction term between smart-card and percentage of students is similar to model (4). The effect of the smart-card on students seems to be true for the extensive margin. The marginal impact of the smart-card on the growth of share of votes can be calculated as follows:

Given the significant coefficients of the preferred specification (6), the true model is:

$$\Delta\%Votes_z = \beta_0 + \beta_1 SC_z + \beta_2 AvgIncome_z + \beta_3 \%Unlettered_z + \beta_4 CEU_z + \beta_5 SC \times \%Students_z$$

The marginal impact of smart-card (SC) then is:

$$\frac{\partial \Delta\%Votes}{\partial SC} = \beta_1 + \beta_5 \%Students_z, \text{ and}$$

$$\frac{\partial \Delta\%Votes}{\partial SC} = \beta_1 + \beta_5 \overline{\%Students_z} \text{ to get average impacts.}$$

Because β_1 is non-significant, it equals to zero and the average impact is $\beta_5 \overline{\%Students_z}$. From model (6), the result is $0.993 \times 0.29 = 0.29$ – as, according to OD Research 1997, students represent on average almost 30% of a zone population in the city of São Paulo. Therefore, a marginal increase in the smart-card variable represents on average an impact of roughly 0.29 percentage points.

	Dependent variable							
	(1)	(2)	(3)	Var. %Marta's second round voting (4)	(5)	(6)	(7)	(8)
SmartCard (extensive)	0.751*** (0.075)	0.159*** (0.051)	0.284 (0.589)	-0.536 (0.820)	0.451*** (0.078)	0.180*** (0.056)	0.568 (0.718)	-0.211 (0.963)
%TP Users				0.008 (0.034)				-0.001 (0.044)
%Workers paid by employers				0.070* (0.041)				0.066 (0.059)
%Students				-0.006 (0.028)				0.024 (0.042)
Average nominal income (log)		-0.065*** (0.008)	-0.066*** (0.008)	-0.063*** (0.008)		-0.068*** (0.012)	-0.064*** (0.014)	-0.061*** (0.015)
%illiterate		0.420*** (0.115)	0.416*** (0.115)	0.425*** (0.113)		0.385*** (0.141)	0.387*** (0.141)	0.396*** (0.138)
Distance to Rapid Transit		0.002 (0.002)	0.002 (0.002)	0.002 (0.002)		0.002 (0.002)	0.002 (0.002)	0.002 (0.002)
Dummy CEU		0.048*** (0.013)	0.049*** (0.019)	0.047*** (0.018)		0.049*** (0.013)	0.052*** (0.019)	0.050*** (0.018)
Distance to bus corridor		0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)		0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)
SmartCard x income			-0.029 (0.077)	0.028 (0.098)			-0.065 (0.096)	-0.009 (0.119)
SmartCard x Dummy CEU			-0.017 (0.205)	0.081 (0.162)			-0.039 (0.210)	0.053 (0.172)
SmartCard x Distance to bus corridor			0.011 (0.008)	0.008 (0.008)			0.008 (0.009)	0.006 (0.009)
SmartCard x %TP				0.307 (0.417)				0.357 (0.440)
SmartCard x %Workers paid by employers				-0.098 (0.655)				-0.051 (0.757)
SmartCard x %Students				1.202*** (0.437)				0.993*** (0.498)
Constant	-0.164*** (0.005)	0.260*** (0.068)	0.271*** (0.072)	0.242*** (0.072)	-0.130*** (0.006)	0.278*** (0.000)	0.256** (0.117)	0.222* (0.122)
Observations	612	612	612	612	440	440	440	440
R ²	0.182	0.669	0.671	0.679	0.083	0.563	0.565	0.577
Adjusted R ²	0.180	0.665	0.666	0.671	0.081	0.557	0.556	0.562
F Statistic	135.436*** (df = 1; 610)	203.404*** (df = 6; 605)	136.144*** (df = 9; 602)	83.939*** (df = 15; 596)	39.483*** (df = 1; 438)	92.901*** (df = 6; 433)	62.151*** (df = 9; 430)	38.620*** (df = 15; 424)
Note:	p<0.1; **p<0.05; ***p<0.01							

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 3 – Regression models for extensive smart-card variable

	Dependent variable:							
	(1)	(2)	(3)	Var. %Marta's second round voting (4)	(5)	(6)	(7)	(8)
SmartCard (intensive)	0.774*** (0.095)	0.160*** (0.051)	0.633 (0.478)	-0.108 (0.610)	0.539*** (0.091)	0.184*** (0.053)	0.134 (0.493)	-0.664 (0.650)
%TP Users				0.002 (0.034)				-0.024 (0.042)
%Workers paid by employers				0.071* (0.041)				0.077 (0.052)
%Students				0.008 (0.028)				0.024 (0.038)
Average nominal income (log)		-0.065*** (0.008)	-0.066*** (0.008)	-0.063*** (0.008)		-0.090*** (0.012)	-0.091*** (0.013)	-0.090*** (0.013)
%illiterate		0.418*** (0.115)	0.399*** (0.117)	0.395*** (0.115)		0.241* (0.137)	0.235* (0.137)	0.227* (0.136)
Distance to Rapid Transit		0.002 (0.002)	0.002 (0.002)	0.002 (0.002)		0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Dummy CEU		0.047*** (0.013)	0.049*** (0.018)	0.048*** (0.018)		0.042*** (0.012)	0.038*** (0.016)	0.033*** (0.014)
Distance to bus corridor		0.002*** (0.001)	0.001* (0.001)	0.001* (0.001)		0.002*** (0.001)	0.001 (0.001)	0.001 (0.001)
SmartCard x income			-0.077 (0.065)	-0.023 (0.080)			-0.002 (0.068)	0.064 (0.085)
SmartCard x Dummy CEU			-0.047 (0.205)	0.057 (0.176)			0.048 (0.212)	0.175 (0.166)
SmartCard x Distance to bus corridor			0.009 (0.007)	0.006 (0.007)			0.009 (0.007)	0.006 (0.007)
SmartCard x %TP				0.436 (0.532)				0.673 (0.552)
SmartCard x %Workers paid by employers				-0.180 (0.672)				-0.413 (0.718)
SmartCard x %Students				1.165** (0.453)				1.084** (0.494)
Constant	-0.161*** (0.005)	0.259*** (0.068)	0.269*** (0.070)	0.235*** (0.070)	-0.135*** (0.006)	0.460*** (0.099)	0.471*** (0.106)	0.451*** (0.108)
Observations	612	612	612	612	449	449	449	449
R ²	0.184	0.668	0.670	0.679	0.114	0.613	0.615	0.627
Adjusted R ²	0.182	0.665	0.666	0.671	0.112	0.608	0.607	0.614
F Statistic	137.284***	(df = 1; 610)203.198***	(df = 6; 605)136.073***	(df = 9; 602)84.005***	(df = 15; 596)57.541***	(df = 1; 447)116.862***	(df = 6; 442)77.931***	(df = 9; 439)48.573***
Note:	(df = 15; 433)							
	*p<0.1; **p<0.05; ***p<0.01							

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 4 - Regression models for intensive smart-card variable

The intensive margin presents similar results. Table 4 is analogous to Table 3, except for the smart-card variable. In model (2) of Table 4, a variation of one unit on “fare savings” (the intensive margin variable) increases by 0.16 percentage points the growth of Marta’s share of votes. For the first set of models of the intensive margin, the story to be told is almost the same as the extensive margin: when further saturating the model, the impact of the smart-card disappears, but when I explore heterogeneity effects on model (4), the smart-card seems to have effect when increasing the percentage of students.

The after matching models tell the same story as the extensive margin. When we look at model (8), results are very similar to model (4) again. After the matching, it is safer to say that the empirical strategy correctly estimates the model’s parameters. But the final result is very interesting: indeed, the policy did not impact the electoral outcome as suspected (coefficients of the smart-card variables are not stable), but it does have an important effect on zones with more students with smart-cards. As both sets of models present similar results, the confidence in the empirical strategy increases. Comparing the extensive to the intensive margin, this work confirms that retrospective voting works for monetary and non-monetary effects. On the extensive margin, although the economic vote is considered, it does not account for marginal returns of saving one extra fare, but the other possible effects are mixed within the extensive margin variable and could be the reason for such impact. It is almost as if the non-monetary effects compensate the monetary effect, given that, on the extensive margin, I do not weight smart-card users according to how many bus fares they saved as I do on the intensive margin. How much of the extensive margin impact is due to monetary effect and to non-monetary, I cannot say, but I suspect that most of the effect is due to monetary savings. As argued before, non-monetary effects such as security and impacts on unemployment should come in middle to long term.

Now the research attempts to understand why the smart-card only impacts share of votes growth when increasing the share of students in a zone. Intuitively, the smart-card must be increasing welfare only to students and their families through the budget constraint mechanism, while other groups of users were not benefitted. The first and not so enthusiastic answer to this result is the following: the empirical strategy fails to recognize the true impact of the policy on other potential beneficiaries. This could happen for two

reasons. First, there could be some non-observable variables that can bias the model's estimators. Even with all the care to control for other mandate policies, and the effects of the periphery that are certainly correlated to PT's performance, the models are not perfect.

The second answer is related to the number of people that do feel the policy in their pockets. Although the non-monetary effects could play an important role, it is reasonable to assume that the largest effect of the policy would come from the monetary effect. If the non-monetary effects were to play a major role, the models should present significant and positive coefficients for the smart-card and its interactions to Transport Pass workers and to workers that get their fare paid by employers, groups that should not feel any monetary effect. The monetary effect is positive and significant for areas that have a larger number of students that get the benefits of *Bilhete Único*, because, even though students pay half fare, they do save some money when using more than one bus to go to school. Beside the psychological appeal of being able to go to school, the money saved by a poor family with many children can be substantial in the end of the month. Also, students represent an important share of the number of bus users (about 13.6%), meaning that their role to electoral outcomes should not be neglected. Furthermore, the family is saving money, so the parents may be more willing to vote for Marta even if just their kids were actually benefited by the policy.

The other groups that could potentially feel the policy are workers that pay their own fare and unemployed people ¹⁹. It is reasonable to assume that the unemployed work force belongs to the "poor users" group that make a big effort to pay one fare at most (the unemployed represent 3.7% of bus users). If the unemployed are "poor users" and represent such a small share, the monetary effect on them should be negligible. Workers that get their fare paid by employers according to the law represent 84% of worker bus users. The remaining 16% are composed by employers, autonomous workers, liberal professionals and owners of family businesses (according to OD Research 1997). From this group, approximately 28% take two or more buses. Therefore, it is clear that just a small number of workers are actually affected by the monetary effect. This could be another reason why

¹⁹ Elder people and people with special needs are exempt from paying according to the federal law nº 10.741/2003 and municipal law nº 11.250/1992, respectively.

retrospective voting responds only to marginal increases in percentage of students and not to other types of smart-card users.

Further answers will be presented in the next section, when I complete the quantitative findings with my qualitative data.

6. Further qualitative findings and interpretation of quantitative results

There are three hypotheses that if confirmed can further help to explain why the *Bilhete Único* failed to create votes, at least in the way it was expected. The three of them are either connected to the political context or to the process of implementation of the policy or to both. It is worth remembering that the smart-card was implemented in the exact same year as the elections, when the environment was anything but calm. The *Bilhete Único* was an important policy, but neither was it the only policy on transport nor it was the main trademark from the Marta's administration – this title was definitely “awarded” to CEUs. It can be said that the smart-card had to compete for space in the campaign and prove itself useful.

I test these hypotheses using my qualitative data in the hope to provide better explanations to my quantitative results. The three hypotheses are:

- PT campaign did not communicate well. Therefore, the benefits of *Bilhete Único* were not transformed into votes.
- Delivery difficulties of the smart-card hampered a broader effect of the policy
- Timing played a major role for the effects of the policy in different types of beneficiaries. Those who received the card earlier could benefit more from the policy.

The first hypothesis then is the failure of sufficiently communicating the policy. As the credit-claiming literature poses (Besley & Burgess, 2002; Grimmer et al., 2012), it is not enough to create the policy; you also must advertise the initiative as yours. A campaign has always limited resources and the marketing team must decide how to best allocate them. The qualitative results show that the main focuses of Marta's discourses were: what she had

done for education (emphasis always on CEUs); her proximity to Lula (recently elected as president); promising to do with health what she had done in education and transports (CEU of health); achievements on revitalization of the city and investments on public infrastructure as well as socioeconomic programs for development; and some emphasis on transport achievements (only within it the *Bilhete Único*). In a study of São Paulo's 2004 municipal elections television campaigns, Veiga et al. (2007) conclude that Marta's warranty to what concerns her administration experience was: she ended the transport mafia, built the education CEUs, revitalized the municipal market, street and avenues of the city. But no mention of the smart-card as an important warranty. Moreover, the quantitative models show great stability of the coefficient for CEU – on all the models, they present statistical significance. This could be due to the intense advertising of CEUs along the campaign, meaning that retrospective voting does work well for this policy²⁰.

According to Veiga et al. (2007) and to my qualitative research, it does seem that the smart-card was not the focus, but had its role. A good way to measure the main campaign strategies and focuses is to count the number of minutes (M. Figueiredo, Alde, Dias, & Jorge, 2000). Take the television campaign for example; the first program on the Mandatory Election Time usually works as a summary of the main ideas and discourses that are going to appear throughout elections. On her first appearance, she dedicated 2 minutes and 58 seconds to achievements on education (specially CEU), 25 seconds to promises (especially on health) and 22 seconds to achievements on transport. Within achievements on transport, only 4 seconds were dedicated to *Bilhete Único*. Another good example of her marketing strategy during elections is the final speech of the previous debate before the first-round elections²¹. Approximately 1:40 minutes were dedicated to her proximity to Lula from a total of 2 minutes, 15 seconds on promises for health and only on the last 5 seconds she started to talk about CEU. No mention at all to the smart-card. Looking for the main television marketing play, the conclusion can only be that *Bilhete Único* was not her priority to win elections, as she had confessed to Jilmar Tatto a couple of months earlier. Data from Doxa/IUPERJ summarized on

²⁰ Given my empirical strategy, I cannot affirm that CEUs coefficients represent a causal relationship. I can only confirm a positive correlation.

²¹ The most watched is the debate of Rede Globo channel.

confirms that the smart-card didn't have as many references as other public policies on her campaign. However, the number of minutes dedicated exclusively for *Bilhete Único* is not to be neglected. To build this table, I watched all the TV Campaign of the Mandatory Election Time for mayors that was made available by Doxa. I counted the number of minutes of the main public policies presented on these programs and two other types of strategies of communication that were frequent on her speech: her proximity to former President Lula (federal government) and her personal attributes.

Main advertisements	Accumulated minutes
<i>Bilhete Único</i>	00:03:05
Other policies on transport and transit	00:18:57
CEUs	00:15:33
Other policies on education	00:21:01
Health	00:29:51
Revitalization of the city/ Investments/ Socioeconomic development	00:29:28
Housing policies	00:00:55
Security	00:04:29
Personal attributes	00:04:44
Partnerships with federal government	00:04:43

Table 5 – Minutes of PT's main advertisements on Mandatory Election Time

Table 5 presents inconclusive results. If on the one hand *Bilhete Único* is not as highlighted as CEUs, on the other it does represent an important share of communications regarding transports. It is definitely not the main focus, but it plays some role on the marketing strategy. Even though Jilmar Tatto stated that more time of the campaign should go to the smart-card policy, the results for credit-claiming are hard to be measured and is difficult to affirm that a lack of proper advertising explains why the retrospective voting

was not as broad as expected. According to José Américo the marketing decisions were based on qualitative researches that appointed larger benefits in using CEUs during campaign. Clearly, decisions were not only based on technical researches, as all politicians in some sense admitted, but a large part of the decisions were indeed technical.

The second hypothesis and complementary explanation of the econometric results is the implementation process of the policy. As the challenge to implement such an innovative technology was big, the risks associated were also high. No wonder Marta was afraid that the smart-card could be a disaster and was confident that the other transport policies were enough. When the party defined strategies for elections and when the campaign started, the *Bilhete Único* was an ongoing policy, at full pace and with good results, it must be admitted, but the other policies were already great and concrete achievements and *Bilhete Único* had still some way to go. A total of 19 CEUs were already working when the smart-card was officially announced in May 2004; 5 terminal facilities by December 2003 and 3 more by August 2004; 5 bus rapid transit corridors by August 2004; and the regularization of the illegal fleet of vans that took place between December 2001 and October 2003 that fought the transport mafia (São Paulo (cidade), 2004). All these policies were already achievements before the elections in October and November 2004. Even granting that the smart-card was moving faster and faster as time went by (there was a peak of 500,000 cards delivered in a week by the end of the year, according to interviews), it must also be recognized that there were problems with the technology implementation on the way and resistances to the new technology itself on the first contacts, as my interviewees pointed out.

The econometric models confirm that the only group that reward Marta for the use of the smart-card were the students. The Transport pass group and workers that had their fares paid were not benefitted (as expected), nor were other groups that had to pay their own fare (not expected). The self-paying people had to buy the common pass, but, according to my interviews, they were the group that most needed a good penetration of the delivery network. Transport Pass was delivered at work and Students' Pass at schools, but the common pass was sold in the delivery network and was not so easy to get it at first. The common pass users had to wait for the growth of the delivery network. I claim that delivery

difficulties could be a good reason to explain why people that should feel the monetary effect didn't reward Marta for her policy. My interviews with SPTrans bureaucrats showed the difficulties in implementing the policy and making it reach as many people as possible. Therefore, the second hypothesis is confirmed.

The last hypothesis is also confirmed by the qualitative inquiry. As SPTrans bureaucrats explained, students and Transport Pass users received the smart-cards a couple of months before other types of users. My claim is that effects of the policy on different groups depend on how many people from these groups did actually receive the smart card. It could be the case that most of students and Transport Pass users already had the card before election time, while many people from other groups did not have the card or had the card too close to elections. The fact that the quantitative models find evidence of effects on students, but not on Transport Pass users are not incompatible with this conclusion because Transport Pass users should not feel the impacts of monetary savings at first place, rather their employers should. Given that students and Transport Pass users received the cards roughly at the same time one group works as placebo to each other, what reinforces my results.

Combined, the timing of the policy and difficulties to deliver the card to some groups of the voters contribute to explain why the retrospective economic vote didn't work as broadly as expected. The students were an important share of bus users and their monetary savings represent substantial gains to families' welfare. With that in mind, families with students may have rewarded the smart-card policy with votes. We can speculate that regular users not relying on the Transport Pass would have rewarded Marta with votes if the distribution of Smart Cards were already broadly fulfilled before election.

7. Discussion and Conclusion

As the literature suggests, executive politicians must choose a basket of different types of public policies that maximize their votes. This basket composition will be conditional on political competition as well as demographic and socioeconomic characteristics of the voters (Borges, 2010). According to my qualitative research, CEUs had a higher weight on

Marta's basket (in the sense that it was strategically more relevant), given that her campaign focuses much more on CEUs than *Bilhete Único* and that CEUs started to be implemented earlier in her mandate. Also, CEUs were the main policy from the education secretary while *Bilhete Único* was one of many combined efforts to improve the transport system. My claim is that the choice to deliver CEUs along most of the mandate and to claim more credits on campaign was not random.

São Paulo is a large city with more than twelve million inhabitants; people from every part of the country and even from abroad live in São Paulo and there are areas with high standards of living and other very poor areas. Thus, its electorate can be considered very heterogeneous. It also has a very high urbanization rate and, when compared to other cities in Brazil, it is well developed. Political competition in São Paulo is also high, not only because of Brazilian proportional elections with open list but also due to the city's size. Thus, it is no surprise that Marta's mandate relied on a policy such as CEU, a local public good with the potential of being very strategic to PT elections. As a distributive policy, it has a high efficiency in delivering votes to the party in such a competitive context. Besides high competition between parties in such a large city, my interviews showed some competition within the workers party itself. My qualitative research confirmed that different groups within PT competed to promote their policies during campaign time, but the main criterion to decide which policy should be the focus was technical. José Américo Dias, stated that qualitative researches of the marketing team indicated that CEUs were very popular. On the other hand, it is likely that to what concerns the provision of public goods, these political groups compete to best serve their constituencies.

Furthermore, an urban constituency with higher comparative income standards is also more demanding, which can raise costs of "buying" support of the electorate with public policies. In a competitive environment, this higher cost of obtaining political support can produce incentives for politicians to substitute bureaucrats for political allies, diminishing the probability of production of long-term policies (Borges, 2010). Even though high-income constituency demands public goods rather than private goods, high competition could lead, *ceteris paribus*, to distributive policies. My case study seems to partly confirm these hypotheses because even assuming high political competition and higher cost of

support, *Bilhete Único* still was a successful universal policy implemented and had some highlight during campaign, not as much as CEUs, but it played some role.

CEUs and *Bilhete Único* were very successful policies and had many merits. Although CEUs had a prominence in PT government, I could not fail to address the success of *Bilhete Único* as a good example of public good. Not every government has bureaucratic competence and political conditions to deliver such policies. Thus, it must be recognized that there is some space on the politicians' basket for policies with public benefits (as opposed to private benefits) and with universalist criteria of allocation (as opposed to political-partisan) in cities like São Paulo. CEUs are known to be a new and broader concept of school, in which education is designed to be not only classroom content but also culture and sport. Also, they were designed to serve entire communities, not only their students. Therefore, at least in some sense, they also follow universalist criteria, but they are much closer to be a private benefit than the smart-card is. That is to say that, on Borges (2010) ideal types, CEUs follow in between type II and III, while *Bilhete Único* is closer to type IV. I am not saying that CEUs are substantively better or worse than *Bilhete Único*; I'm just saying that it is harder to make electoral use of the last one, because such a broad policy cannot exclude users based on political criteria. Although the smart-card benefits more the poor electorate, it's not precisely pork-barrel; it's actually closer to be a public good by definition that follows universalist criteria of allocation. On my interviews with SPTrans bureaucrats, it became very clear that *Bilhete Único* was a technical solution to São Paulo's intense transit problems and that it was a desire of the bureaucratic body for many years. Of course, it had political appeal, but it was a long-term policy designed through many years by SPTrans staff to solve urban bottlenecks. CEUs, on the other hand, were designed in PT's study groups on education according to Maria Aparecida Perez (not a demerit nor a merit, just different). Given both policies' characteristics, I conclude that it was easier to allocate CEUs according to political-partisan criteria than to do the same with *Bilhete Único*. This doesn't mean that pork-barrel politics such as CEUs are bad for beneficiaries; in fact, there are studies that show the opposite: a good example is Bertholini et al. (2017).

The present work tried not only to measure whether retrospective voting happened for the smart-card policy but also to analyze what conditions could have played a major role in the provision of such policy. As Healy and Malhotra (2013) suggest, a normative perspective should also be present in works on retrospective voting. As they say, the normative question should be “whether the responsiveness that we observe incentivizes politicians to maximize social welfare”. It is not only about asking if voters are responsive to public policies but if they are responsive in the right manner. To answer the new question, a benchmark of what is good or bad is necessary. I tried to address this problem by using the Borges (2010) typology and reasoning. If one admits that there is a continuum of possible public policies between type I and type IV, and that being close to type I is, *ceteris paribus*, worse than being close to type IV, then the typology works to my interest. Sure, it is just a model of reality, as there can be excellent policies between types II and III, but I do believe that policies that can be relatively insulated by political-partisan criteria and that attend as many people as possible have a greater chance of producing positive externalities and maximizing social welfare. The *Bilhete Único* is such a policy, because, in addition to the effects on the welfare of its beneficiaries, it is socially superior in the sense that it rationalizes the transport system, allowing more complete integration of the system. This better integration produces positive externalities for the whole city, as transit flows better, and all citizens spend less time on their everyday trips. It also incentivizes the use of public transport, which can ultimately be good for the environment.

To conclude, the smart-card was effective in rewarding Marta in a retrospective manner at least for part of the electorate, as the econometric models confirm. As the percentage of students were higher in São Paulo zones, the retrospective vote for Marta increased, suggesting that students and their families were more affected by the policy and recognized the government effort in the ballot-box. Other groups of users did not present the same results, either because they are not the ones who actually saved money with the policy (Transport Pass users and other workers that had their fare paid by employers) or because they do not represent a relevant share of the bus users’ population or even because the common pass was experimenting difficulties in its distribution and timing. Furthermore, I did not confirm the hypothesis that campaign choices may have hampered the *Bilhete Único* electoral performance, if that was the case, the smart-card policy should not have any

attention on campaign efforts. Finally, even with all the odds of implementing *Bilhete Único*, the retrospective vote holds. If my results are correct, there are good reasons to believe that the political arena of São Paulo presents good incentives for politicians to provide broad public goods such as *Bilhete Único*. After all, as the public choice theory suggests, what would be a better incentive than having more votes?

8. References

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9. Appendix A – interview questions

Jilmar Tatto (secretário de transportes)

- 1- Qual foi a motivação política para retomar o projeto do Bilhete único e quais foram as dificuldades políticas para tocá-lo adiante?
- 2- Quais as dificuldades técnicas e como elas foram superadas? (Ex. parcerias com Caixa e Vale Transporte)
- 3- Quais eram as expectativas que a gestão tinha em relação ao retorno eleitoral do Bilhete único?
- 4- Analisando as propagandas eleitorais e os debates da eleição de 2004, o CEU aparece como principal plataforma de campanha da gestão e em seguida vêm os projetos de transporte, em especial o Bilhete único. Por que maior ênfase no CEU?
- 5- Isso estaria de alguma forma ligado à boa avaliação do governo no âmbito dos transportes?
- 6- O CEU é uma política pública mais localizada enquanto o Bilhete único é mais universalista. Você considera essa diferença relevante na hora de conseguir votos?
- 7- Qual era a avaliação da gestão em relação à expansão do programa à CPTM e Metrô? Havia dificuldades/custos políticos (no sentido de risco de apropriação de crédito)?
- 8- Na sua opinião, outros políticos além da Marta se beneficiaram do programa?
- 9- O PT como um todo se beneficiou do programa? Por quê?
- 10- O “timing” de lançamento do programa foi politicamente acertado? Por quê?

Burocratas SPTrans

- 1- Você pode me contar um pouco como e por que surgiu a ideia do Bilhete Único?
- 2- Oficialmente o Bilhete Único foi lançado em maio de 2004. Mas cartões para idosos, estudantes e vale-transporte já haviam sido distribuídos. Desde quando o sistema para estes grupos já estava operando?
- 3- Qual distribuição foi feita antes, passe comum ou vale transporte eletrônico?
- 4- Existem números registrados de quantos usuários de vale comum e de vale transporte aderiram em 2004 (por mês)? Ou de quantos vales de cada tipo foram distribuídos por mês?
- 5- Como se deu a distribuição dos cartões para estes grupos especiais, em particular o cartão Vale-Transporte e para estudantes?
- 6- Quando, mais ou menos, os cartões eletrônicos para vale transporte e estudantes atingiram todo o seu público? E o vale comum?
- 7- Você pode me explicar melhor a parceria com as empresas Sodexo, Alelo, VT, etc? Era uma parceria para a distribuição dos cartões ou para validação dos créditos?
- 8- A parceria com a Caixa- econômica foi firmada em março. Quanto tempo demorou para que os problemas com o sistema da Caixa fossem resolvidos?
- 9- Quando entrou a rede credenciada? Há registros disso por mês?
- 10- Para que os usuários não dependessem tanto dos créditos carregados no cartão a prefeitura permitiu o “validar na catraca”, que permitia a baldeação gratuita mesmo sem os créditos. Até quando durou a validação na catraca?
- 11- Agora umas perguntas menos técnicas e mais políticas. Como o Bilhete Único entrou na agenda de governo? A sugestão foi técnica ou era mais uma vontade dos políticos?
- 12- Ao que parece olhando as campanhas na TV, o CEU costumava ter mais destaque do que o Bilhete Único. Você sabe me dizer o porquê?

Cida Perez (secretária da educação)

- 1- Como os CEUs entraram na agenda do governo Marta?
- 2- Como era o apoio dentro do partido às iniciativas da secretaria de educação (em especial ao CEU)? Havia muita resistência? Foi preciso convencer muita gente?
- 3- Existiam receios quanto ao projeto? Riscos políticos envolvidos?
- 4- Como era o apoio dado pela marta ao projeto dos CEUs? Ela sempre apoiou e abraçou a ideia?
- 5- Como foi a divulgação do CEU ao longo dos 4 anos de governo? Foi apenas durante a campanha eleitoral ou houveram divulgações antes disso?
- 6- Como era a expectativa eleitoral em relação ao CEU por parte da secretaria? E por parte da Marta? E por parte do restante do governo e partido?
- 7- Como surgiu a ideia de fazer o CEU da saúde? Foi uma ideia exclusivamente dos marqueteiros ou teve envolvimento do pessoal da educação?
- 8- Como a secretaria de educação via essa ideia do CEU da saúde? Qual a sua opinião sobre essa ideia?
- 9- Como eram definidas as prioridades de campanha? Era uma decisão conjunta entre as diversas pastas de governo ou a decisão ficava restrita a equipe de marketing e comunicação?

José Américo Dias (secretário de Abastecimento e de Comunicação da Prefeitura de São Paulo)

- 1- Quais eram suas responsabilidades no governo como secretário de comunicação?
- 2- Na sua opinião, como o Bilhete Único entrou na agenda do governo Marta?
- 3- Na sua opinião, como o CEU entrou na agenda do governo Marta?
- 4- Como se definia quais políticas públicas eram prioritárias para o governo? Essa era uma decisão conjunta ou definida de cima para baixo pela própria Marta?
- 5- Como era a estratégia de comunicação dessas políticas antes da campanha?
- 6- Como a cúpula do governo decidia as estratégias de campanha? Era tudo definido pelos marqueteiros ou os secretários tinham espaço para opinar?
- 7- Por que algumas políticas públicas apareciam mais do que outras nos programas eleitorais? Por exemplo, o CEU aparece muito mais do que o Bilhete Único.
- 8- Como era a relação entre as secretarias na definição da campanha?

10. Appendix B – Propensity score models

	<i>Dependent variable:</i>	
	Probability of Treatment (intensive)	Probability of Treatment (extensive)
	(1)	(2)
Average nominal income	-1.104*** (0.312)	-0.920*** (0.326)
% illiterate	3.791 (3.422)	6.784* (3.569)
Distance to rapid transit	0.149** (0.063)	0.157** (0.066)
Constant	7.042*** (2.616)	5.318* (2.739)
Observations	612	612
Log Likelihood	-362.362	-356.852
Akaike Inf. Crit.	732.725	721.705
<i>Note:</i>		*p<0.1; ** p<0.05; *** p<0.01

Table 6 - Logit model for Propensity Score Matching

11. Appendix C – variables descriptive statistics

	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.
Var. %Marta's second round voting	-0,3578	-0,1966	-0,1390	-0,1288	-0,0656	0,1544
smart-card extensive	0,0000	0,0000	0,0290	0,0473	0,0714	0,3054
smart-card intensive	0,0000	0,0000	0,0274	0,0418	0,0613	0,4470
%TP Users	0,0000	0,0704	0,1343	0,1412	0,1970	0,5680
%Workers paid by employers	0,0000	0,0797	0,1277	0,1328	0,1774	0,5000
%Students	0,0000	0,2422	0,2953	0,2921	0,3408	0,6998
Average nominal income (R\$)	459	790	1100	1639	1974	10547
% illiterate	0,0341	0,0863	0,1275	0,1336	0,1787	0,2946
Distance to rapid transit (km)	0,1456	1,0356	1,8341	2,2611	3,0351	12,6836
Distance to bus corridor (km)	0,0513	1,3396	3,5570	5,8233	8,2621	25,1305