



Bernardo Barboza Ribeiro

**Politics of government advertising: evidence
from Brazil**

Dissertação de Mestrado

Dissertation presented to the Programa de Pós-graduação em
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for the degree of Mestre em Economia.

Advisor: Prof. Claudio Abramovay Ferraz do Amaral

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Abstract

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Using a unique data set of central government expenditure on advertising in Brazil, we shed light on the behavior of public advertisers and the relation between government ads and voting. In particular, we investigate political motivations behind the allocation of the advertisement budget by the federal government and its impacts on voting. Borrowing insights from the literature of distributive politics, we first correlate ad money and votes for the government's party on the local level. Next, we exploit plausible exogenous variation on radio signal coverage to test if money spent on ads turn into votes for the government's party. Our findings show that although past presidential election outcomes predict where in the territory the government places ads, voters do not seem to be persuaded by those ads to favor the party in power.

Keywords

Government advertising; Political Economy; Presidential elections; Distributive politics; Radio;

Resumo

Barboza Ribeiro, Bernardo; Ferraz, Claudio. **Política e propaganda: evidência do Brasil**. Rio de Janeiro, 2017. 104p. Dissertação de Mestrado – Departamento de Economia, Pontifícia Universidade Católica do Rio de Janeiro.

Usando uma base de dados inédita com informações sobre o gasto do governo federal brasileira com propaganda, nós lançamos luz sobre o comportamento de anunciantes do setor público a relação entre propaganda governamental e voto. Em particular, nós investigamos possíveis motivações políticas por trás da alocação do orçamento dedicado à propaganda governamental e seu impacto sobre voto. No espírito da literatura de *distributive politics*, primeiro nós calculamos a correlação entre gasto com anúncios por entes públicos e votos no partido do governo no nível local. Em seguida, nós exploramos a variação exógena gerada pela cobertura de sinais de rádio para testar a hipótese de que o gasto com propaganda aumenta os votos recebidos pelo partido do governo. Nossos resultados sugerem que, ainda que resultados de eleições passadas prevêem onde no território o governo anuncia, os eleitores não parecem ser persuadidos pelos anúncios a votar em favor do partido no poder.

Palavras-chave

Propaganda governamental; Economia política; Eleições presidenciais; Política de distribuição; Rádio;

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1

Introduction

Many governments around the world spend significant amounts of money on advertisement campaigns and propaganda.¹ Government advertising campaigns may be useful to inform citizens on issues of public interest (e.g. vaccination campaigns), but it may also accentuate incumbency advantage and reduce political competition.

In this paper, we examine the role played by electoral incentives in advertising decisions and whether advertising affects voting patterns. The exercises we propose help us to distinguish pure informative strategy when the government places ads from worrisome electoral motivations. Considering Brazil's case, where the federal government spends a relevant amount of resources on advertising through ministries and public companies, we assemble a unique data set of central government expenditure on advertising and shed light on the behavior of public advertisers and its impact on voters. We find that the incumbent party in the presidency spends more money where it received fewer votes in the past, but this strategy does not seem to persuade voters to support the government in ballots.

Borrowing insights from the literature on distributive politics, we first regress ad money and votes in the local level using the period in which PT, the Brazilian worker's party, was in power. We show that (past) presidential election outcomes predict where in the territory the government places ads. In particular, this relation is negative and statistically significant, which suggests that the lower the PT share of votes in a given municipality in a given election year, more money is poured into subsequent years. The relation is stronger when taking into account only money poured by ministries (compared to public

¹Media vehicles and civic and political organizations frequently contest the goals of government advertising campaigns and their content. The Washington Post once called government advertising spending a "black box". See "Public relations and advertising are a 'black box' in government spending", October 14th, 2014. Similar claims have been made in other countries, such as India, Australia, and United Kingdom. In 2016, the Indian Congress contested the federal government on campaigns featuring the Prime Minister Narendra Modi. See India Today, "Union government spent over Rs 1,100 crore on advertisements featuring PM Modi, reveals RTI query", November 29th, 2016. See The Guardian on UK's ad campaigns, "Government ad spend to increase by 22% to almost £300m", May 14th, 2014. See The Australian on Australia's ad campaigns, "Cutbacks in government advertising spending save \$60m", December 30th, 2014.

companies). This is compatible with public companies trying to maximize profits and ministries being more subject to political influence. Finally, the association is also stronger when taking into account the money poured into low range media, such as radio (compared to TV etc.). This is compatible with a situation in which the federal government wants to gather votes locally using ads, as low range media, such as radio, not TV, are probably more suitable for that.

Next, we assess the causal impact of federal government spending on ads on voting by exploiting exogenous variation associated with the geography of radio coverage. We compare polling stations close enough to each other, one that did and other(s) that did not receive FM radio signal from a station sponsored by the government. Using different specifications for the treatment status, we show that it does not seem to be the case that advertising spending induces individuals to vote for the government.

Although we don't provide evidence on that, the probable mechanism through which government tries to persuade voters is by pouring money into media vehicles to induce bias in content. Since the government ads we have data on are mostly institutional or ran by public companies, we believe the ad content itself is unlikely to carry pro-government information.

Our work is related to different broader literatures in Economics and Political Science. First, when describing how ad money is spent across space and time, we borrow insights from the literature of distributive politics. In a vast literature review, (1) define distributive policies as “*those that involve taxes and transfers, and in particular the decisions about allocations of government goods and services to identifiable localities or groups*”. We can think of those policies as decisions taken by elected representatives to provide goods or services to voters of a specific region in the country's territory. In this literature, one question is particularly relevant: do elected representatives allocate resources targeting their local bases, in which their support is greater (core voters), or do they target places where the fight for votes seems to be tougher (swing voters)? Several papers have built models that help answering this question, such as (2), (3), (4) and the political competition under special interest politics in (5).

An immediate implication of this family of models is that, once the candidates must direct more resources to get less aligned voters, the parties will naturally dispute moderate or “swing” voters. However, sometimes parties may allocate goods and services to core voters. It happens when one party has more information about the electorate than the other party and, thus, is more capable of precisely targeting the resources to those voters ((2)). In this case,

targeting resources to swing voters becomes inefficient: candidates do not hold detailed information on voters and some citizens end up not receiving enough resources to change their votes.

Based on this theoretical framework, several studies try to answer empirically the question on core supporter vs. swing voters.² Among several empirical studies on distributive politics, there is no established answer to support only one of the two hypotheses mentioned. (7), for instance, show that marginal constituencies ran by opposition parties received more money from the central government in England, which leads the authors to argue in favor of the swing voter hypothesis. On the other hand, (8) provide evidence on the core supporter hypothesis by observing that the central government in India targets money to aligned states. In a similar framework, (9) study government responsiveness and analyze empirically the case of India. The authors argue that state governments respond more to falls in food production and crop flood damage via public food distribution and calamity relief expenditure where newspaper circulation is higher and electoral accountability greater.

The goal of our first exercise is to calculate a broad, spatial association between government spending on ads and past votes. In contrast to what is typically done in the literature of distributive politics, which studies the allocation of identifiable public goods and services, public jobs etc. having in mind redistribution outcomes, in our paper we study the allocation of advertising money. There reside some important differences. For instance, an important instrument identified by the literature through which the federal government was able to gather votes in Brazil is the country's biggest Conditional Cash Transfer (CCT) program, *Bolsa Família*. *Bolsa Família* is aimed at families in situation of poverty and extreme poverty and benefits more than 20% of the entire population. When evaluating the impact of this CCT program on incumbent party presidential candidates, (10) argues that the program boosts these candidates' performance, although this effect is reaped among candidates of other parties too.

In Brazil, *Bolsa Família* involves a sizable amount of resources to be distributed among citizens. However, the total amount spent by the Brazilian federal government in 2009-2015 corresponded to less than 10 percent of *Bolsa Família*. Moreover, Brazil has nearly 100 million voters and 5500 municipalities, so the potential redistribution in terms of resources spent by the federal government on advertisement is probably not very large.

²The models are based on individual voters, but the data are usually available in a more aggregated level, typically in the electoral district or constituency level. The hypothesis to be tested, then, involves core versus swing constituencies, not voters. This subtle difference ends up favoring the swing voter hypothesis. See (6).

Our work differs from the pork barrel politics literature that studies the behavior of voters when rewarding or not past performance by politicians. In our case, there is no clear redistribution towards groups of voters when choosing where to place ads, as the electorate only gets the information that the ad campaign carries. However, the inspiration contained in our first argument is similar to those papers if we imagine the government wants some groups of voters to get specific information that may persuade them into voting for the incumbent party. If that is the case, the natural question to be answered next is whether advertising allocation actually affects voters.

In our second exercise, we estimate the causal impact of advertising on voter behavior. As we will argue, persuasion is the likely channel through which advertising affects voting. When estimating this effect, our paper relates closely to the literature on persuasion (see (11)) and, in particular, to papers that study media persuasion and media bias. For instance, our work is tied to articles that estimate TV and radio impact on voter behavior ((12), (13)). We contribute to the literature concerned about incumbent power and media bias too ((14)).

Our work is also related to the literature that studies the role of advertisers in the media sector and their impact on media bias. In a canonical model, (15) predict that greater (private) advertisement potential of a media vehicle is associated with lower risk of media capture. (16) argues that large advertising potential reduces bias, but this can increase the probability of nationalization of private media vehicles by the government. On the empirical side, there are a few relevant works on the interaction between private ads, media bias and politics. Di (17), for example, document an interesting lobbying channel, by which firms shift spending on ads towards a politician's business in the hope of securing favorable regulation. (18) study a more direct channel, advertising by political parties, and find that it does not induce bias in newspaper coverage.

When modeling the possible mechanisms through which private advertisers may induce media bias, apart from the world of politics, (19) argue, in line with (15), that advertising can raise accuracy by increasing the intensity of competition for readers, who in the model value the accuracy of news. However, it may be also the case that the media does not reach full accuracy if advertisers are able to commit to withdrawing advertising from newspapers that are very accurate on sensitive issues. (20) and (21) study the interaction between firms and media vehicles and document coverage bias towards private advertisers. Di (22) and (19) present the mechanism we argue is in place in Brazil: the money poured by the government in media vehicles are crucial for

financing them and this induces bias.

Most of the literature presented above, however, is mute about the government as an advertiser. Two recent papers study government advertising empirically. Di (22) document a strong negative association between the amount of government advertising and coverage of corruption scandals by Argentinian newspapers. (23) study the Hungarian case and show that, under right-wing governments, state-owned firms direct advertising money to low-circulation right-connected media, providing evidence of (indirect) political favoritism operating through the advertisement channel. As mentioned before, the mechanism we have in mind operates through media financing. But unlike Di (22), we are not able to point this out empirically because we don't observe media content. We cannot either say anything about media alignment or ideology, as (23) do. Instead, here we are interested in the impact of advertising on voters.

Finally, our empirical strategy is closely related to that of (24), which exploits geographic variation made available by radio technology to show that signal availability of Serbian station across the border with Croatia triggers higher voting on extreme, nationalist parties by Croats. Similarly, (25) argues that a radio station in Rwanda played an important role in disseminating hate speech and mobilizing people to promote violence.

The remaining of this work is organized as follows. In Section 2 we present the institutional background on how the Brazilian federal government places ads, briefly describing the media landscape, its relation to politics and the political system in Brazil. Section 3, we present the data we use throughout both exercises we do. In Sections 4 and 5, we present the empirical strategy and the results of each one of the exercises we propose. Section 6 concludes.

2

Institutional Background

Before presenting our data and moving on to the empirical strategy and results, it is worth describing the institutional framework of the public sector as an advertiser in Brazil.

2.1

Advertising in the Public Sector

The Brazilian federal government as a unique advertiser, i.e., considering together all the money spent on ads by ministries, public companies etc., ranks first in the country.¹ As typically occurs in the private sector, the ad contracts in the Brazilian public sector are signed by advertisers with private ad agencies, which in turn produce the campaigns and negotiate price conditions with the media vehicles directly. And as typically occurs in the public sector, public advertisers hire agencies based on public procurement.² Media vehicles disclose public price menus, but those are rarely the actual prices paid. Normally, the ad agency negotiates a discount, which is private information of both the agency and the media vehicle. The discounts depend mostly on the vehicle (discounts are usually lower for higher audience vehicles), but probably vary across agencies and advertisers too (there may be also quantity discounts). The agencies earn money through commission (e.g. 20% of total contract value) or fees (e.g. amount per campaign, fixed or according to the audience).

2.2

Media and Politics in Brazil

Unlike countries such as Russia, for instance, the media sector in Brazil, as in Latin America in general, is mostly dominated by privately owned companies. A few private TV networks get almost all audience and TV Globo is the most prominent player. As private media vehicles, radio stations in

¹In 2015, according to Kantar Ibope Media, a company that monitors ad spending in Brazil. See www.kantaribopemedia.com/anunciantes-2015.

²Until 2010, this was done under the Federal Procurement Law 8666/93, which regulates public procurement in Brazil. Since 2010, ad contracts are signed under the regulation of Federal Law 12232/2010, specific to this purpose and which is now more precise on the technical requirements of ad campaigns.

Brazil depend heavily on ad revenues.³ And, in the local level, politicians are remarkably known as owners of radio stations, for instance [see (26) for a broad description of the media sector in Latin America].

In this context, it is natural to see that the media plays an important role in Brazilian politics. Radio was already shown to be both an important tool to promote accountability and an asset desired by politicians to win elections. (27) report that voters punish corrupt incumbent more severely when a local radio station is available to divulge information. On the other hand, the ownership of media vehicles is an asset when disputing elections. (28) argue that incumbency increases sharply the probability that a politician gets a radio license approved and (28) and (29) show that the ownership of a local radio or TV station boosts the probability of winning an election. It is also known that TV plays an important role in elections in Brazil. (30) study the impact of TV advertising campaigns on election outcomes. They conclude, for gubernatorial races, that higher shares of TV time increases a candidate's vote share.

³See a survey conducted by the National Association of Radio Stations in 2014 at <http://www.abert.org.br/site/index.php/dados-do-setor/estatisticas/faturamento-do-setor>.

3 Data

3.1 Government Advertisement Spending

The *Instituto para Acompanhamento da Publicidade* (IAP), founded in 1997 and held by ad agencies and public advertisers, documents all *pedidos de inserção* (PI) or “insertion requests”, made by all federal entities to place ads on any media, and sends this information to the *Secretaria de Comunicação Social da Presidência da República* (SECOM), the Secretary responsible for Presidency Communications, that tabulates the data.

Data on the amount spent by the Brazilian federal government were made available through the *Lei de Acesso à Informação*, the law in Brazil analogous to the US Freedom of Information Act.¹ It allows us to track the amount (current value) spent per year by each federal entity that advertised, and where these public advertisers placed its ads in the period of 2000-2015². Public entities are public companies, secretaries, ministries, among others. Just like private companies, those entities run ad campaigns on the TV, newspapers, magazines, internet and other types of media vehicles (see Figure A1 for a visual description of the data).³

In 2000, the federal government, via its multiple entities, spent nearly USD 500 millions in ads, compared to almost USD 900 millions in 2013. Due to fiscal adjustments, this amount dropped to approximately USD 600 millions in 2015 (see Figure 3.1). Almost 70% of the amount was spent by public companies and the remaining was mainly spent by ministries and secretaries (see Figure 3.2). In 2015, 3 out of the top 10 advertisers in Brazil were public companies. Taking together all its entities, the federal government was the greatest advertiser in Brazil this year. By media type, almost 60% of all spending was on TV. As expected, the vast majority of ads are placed by the five main public companies in Brazil, namely Petrobras, Correios (postal

¹We would like to thank journalist Fernando Rodrigues, now in Poder360, for sharing the data and his assistant, Mateus Netzel, for all the help.

²Our data does not cover money spent on sponsorship deals, such as those involving Caixa and soccer teams, for instance.

³In Appendix A, we show sample ads placed by the federal government in a newspaper and in a magazine.

office), BNDES, Banco do Brasil and Caixa (the 3 main public banks in Brazil). In 2000, spending on printed media corresponded to almost 40% of the total amount, but this share has been declining over time, as the share spent on the internet has grown remarkably (see Figure 3.3). In our data, we have only the value of the amount spent by each entity in each media vehicle, so we cannot distinguish ad prices and quantities (number, size or length of placed ads). As TV ads are much more expensive than radio and other ads, the value spent on TV is naturally much higher, although we cannot say anything about how many ads were placed in each media. As a consequence, mean contract values of TV are much higher than the others (see Figures A5 and A6). And, as we can see in Figure A4, there is considerable variation in contract values. The mean contract value is approximately 10 times the median and this is probably due to prices too.

The main limitation of the data is that they only provide us with the total amount spent by the government, not specifying how much was paid to the advertising agency and how much was given to the media vehicle. The value, therefore, can be interpreted as the agencies' total revenue. As seen in Figure A7, the top 10 agencies in terms of revenue have been gathering most part of the ad money, concentrating more than 80% of the total amount spent by the federal government in 2015.

When regressing ad spending on past vote for the incumbent party, we use municipality level data, and to estimate the causal impact of ads on votes we use data on the level of polling stations. We describe how we assemble both data sets in what follows next.

3.2 Municipality Level Data

Each media vehicle's tax code number (CNPJ) is also available in the data, which allows us to retrieve the media vehicle's city based on where it was registered.⁴ In terms of territorial distribution, the federal government mainly spends on media companies registered in the capitals. Almost half of the money is poured into São Paulo, the biggest city in Brazil (see Table 3.2). This is probably due to the TV sector too. The main broadcasters in the country are located in São Paulo and, as mentioned before, TV ads are probably the most expensive ones.

Through the available period, the federal government spent advertising money on media vehicles located at 1,979 cities in Brazil, around one third of all municipalities in the country. As seen in Table 3.1, the media vehicles

⁴We are highly grateful to Dimitri Szerman for the help in this task.

chosen to receive ads money are registered in municipalities that are bigger in terms of population, more urban, richer, more unequal in terms of income and have a more educated population in the baseline year of 2000. This is probably expected since most companies are located in more populated areas and that the eyeballs aimed by advertisers are usually concentrated in the most important cities of the country. Still, even excluding TV spending, the aggregate spending per capita over the 3 relevant presidential cycles here are concentrated in the capitals of Brazil (see Figure 3.4).

The data on presidential elections are made available by the *Tribunal Superior Eleitoral* (TSE). Presidential elections in Brazil are held every four years, in two-round, first-past-the-post system and winners can be reelected only once. As our advertisement data span the 2000-2015 period, it covers only 3 full mandates, all won by PT, the Brazilian workers' party, in the second round. We therefore use outcomes of the 2006, 2010 and 2014 presidential races on the municipality level. In particular, we construct PT's vote share in every municipality in those 3 presidential elections. To capture a measure of PT's local power, we also use TSE data on municipal elections, which are also held every four years, in the second year of presidential mandates. As we look at PT's vote share, we also identify municipalities ran by mayors affiliated to PT in the year of presidential elections.

We also gather data on municipality characteristics using the 2000 Census and population estimates by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE). From the Census, we only use measures of income per capita in our regressions, but population education, income inequality, urbanization, among others, are also available.

In Table 3.3 we report the summary statistics of our municipality-level data. The mean ad spending (excluding TV) per municipality in each of the 3 election cycles analyzed is BRL 1.5 million. It is worth noting that there is considerable variation between municipalities across time. In particular, most of the total budget is spent in media vehicles registered in the main cities in Brazil, as mentioned before. Also as mentioned before, almost all the money spent goes through public companies (around 2/3, BRL 1.01). The rest is almost entirely spent by ministries (BRL 0.45) and a very small fraction is spent by other entities (foundations etc., BRL 0.03). The mean spending on TV ads per municipality (BRL 2.63) is more than two times the total spending on all other media taken together. Other than TV, the printed media is the one that gets more money in each cycle per municipality (BRL 0.71), followed by radio (BRL 0.36), other media (out-of-home, outdoors etc., BRL 0.27) and the internet (BRL 0.16). Again, this may also be due to prices. At the political

side, the PT candidates got, on average over the 2002, 2006 and 2010 elections, 55% of the votes in the first round and 63% in the second round. In each of the 3 elections, PT mayors ran around 10 percent of the cities in Brazil.

3.3

Polling Station Level Data

Voting data in polling station level is also provided by TSE. In the 2014 elections, there were approximately 90,000 polling station addresses in Brazil. In order to get their coordinates, we georeferenced them using Nokia's HERE service.⁵ We were able to confidently geocode only approximately 57,000 of those addresses. Non-geocoded addresses are typically associated with rural or isolated areas, so the address is too vague to be processed. In those cases, the software cannot either georeference the address or reports the municipality centroid. Each polling station has one or more voting sections. Data on electoral outcomes and electorate characteristics are available at the section, but not at the polling station level. Thus, we aggregate voting and demographics of all voting sections within the same polling station.

3.3.1

Radio Coverage

Radio data is provided by the *Agência Nacional de Telecomunicações* (ANATEL), the Brazilian telecommunications regulatory agency. It allows us to gather information on all current operating FM and AM radio stations. For each radio station, we get administrative data, such as the station's name and tax code number (CNPJ), and technical data, which is basically the antenna's specifications and coordinates. One important variable is the estimated signal range in kilometers for each radio station. ANATEL itself estimates what is called the protected contour, which we use as estimated radio signal range.⁶ This variable is only available for FM stations due to the nature of the FM signal.⁷ In our analysis, thus, we focus on FM radio stations. The main limitation here is that ANATEL only provides cross-sectional data

⁵To do that, we used Stata's `geocode` package. Google Maps could also be used, but the current API available to do that uses Google Places, which is suitable for addresses that correspond to identified places on Google's database.

⁶Protected contour is the area in which signal reception is protected from interference caused by other stations on the same channel or adjacent channels or frequencies. ANATEL classifies FM stations into 10 classes according to its technical features. Each class has an associated maximum and minimum protected contour. Here we conservatively use the minimum value. The precise estimation of the radio signal range using detailed antenna specifications and terrain features (such as done by (25)) would be a natural improvement.

⁷The main predictors of FM signal coverage are antenna's specs and terrain. On the other hand, AM signal coverage depends heavily on ground conductivity.

on the current operating radio stations. Data do not go back in time, so we cannot identify, for instance, stations that no longer operate, even though there may be some stations that were active during the period for which we have the ad data.

We collected the data from ANATEL's website on October 2016. As in our exercise we use 2014 election data, an important hypothesis here is that the operating stations in this date did not change much compared to those operating in 2014.⁸ In 2016, there were approximately 2,500 FM and 1,800 AM operating radio stations in Brazil. There were also 4,500 1km-range FM radio stations, called community radio stations (*rádios comunitárias*), which we will not use here. As it will become clear in Section 5, those stations have a very limited range to fit our empirical strategy.

Figure 3.5 plots all FM and AM stations in the Brazilian territory. It is important to notice that there is a great overlap of FM and AM antennas over the Brazilian territory. In particular, they are concentrated in the main metropolitan areas of Brazil, specially in the South, Southeast and in the Northeast of the country. A natural explanation for this is that most of the radio potential audience is located in the most populated areas of the country. It is important to notice that AM radio stations also get ad money from the federal government through the relevant period we analyze. However, as predicting coverage of AM radio station is a more complicated task, we focus on FM stations. As it will be clearer in Section 5, we try to overcome this issue.

The results in terms of signal coverage of polling stations are presented in Figure 3.6, in which we plot the polling stations we georeferenced over the territory. The gray circles are those that get no FM radio signal. The red ones are those that get FM signal from stations that did not receive federal government ad money over the 2011-2014 period (non-sponsored). The green ones are the sponsored ones and the size of each green dot is proportional to the number of sponsored signals the polling stations get. Due to the simultaneous concentration of polling stations and radio, the polling stations located at the most populated areas of Brazil end up receiving signals from multiple stations. As seen in the first part of this article, those are also the places where the federal government pours more money into, so there are few polling station that get only non-sponsored signal.

⁸Although this is probably not true, opening a radio station is costly, as it involves getting a public license.

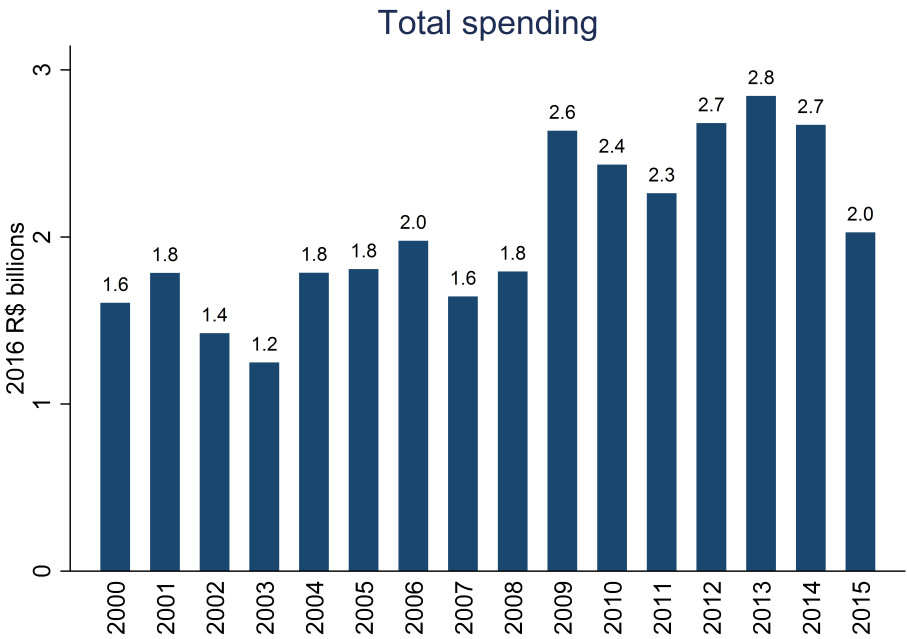


Figure 3.1: Total federal government spending on ads: 2000-2015

Notes: This figure plots the total amount spent on ads by the Brazilian federal government through all its entities, from 2000 to 2015. Values are in 2016 Brazilian Reais (R\$).

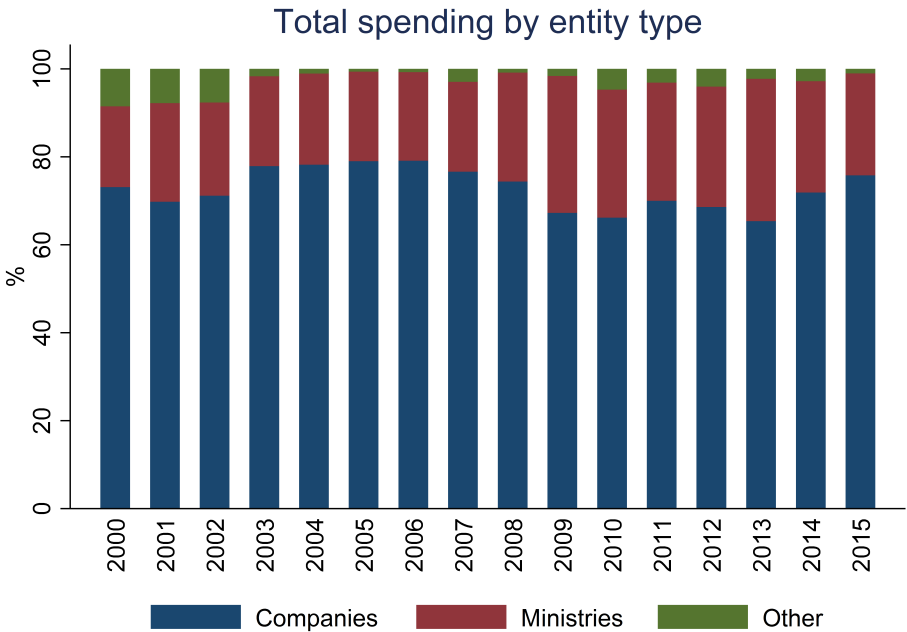


Figure 3.2: Federal government spending on ads, by entity type: 2000-2015

Notes: This figure plots the share of the total federal government advertisement budget spent by public companies, ministries and other entities.

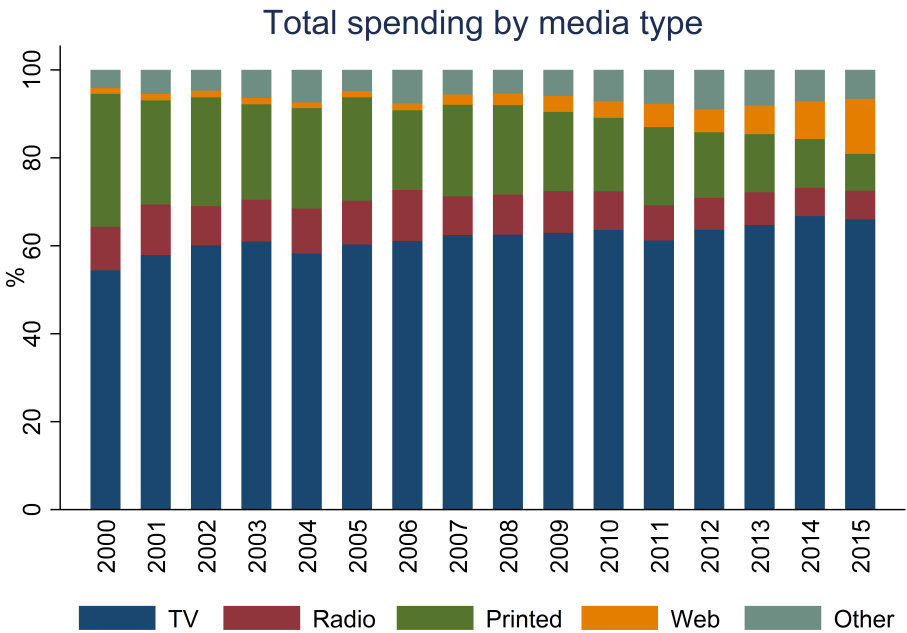


Figure 3.3: Federal government spending on ads, by media type: 2000-2015

Notes: This figure plots the share of total federal government advertisement budget spent on different types of media, namely TV, radio, printed media, internet and other media.

	No ads	Ads	diff. p-value
Total population (thousands)	9.03 (0.13)	69.44 (6.91)	0.00
Share of urban population	0.51 (0.00)	0.72 (0.00)	0.00
log (Income per capita)	5.50 (0.01)	5.95 (0.01)	0.00
Expected years of education	8.07 (0.03)	8.82 (0.03)	0.00
Gini coefficient	0.54 (0.00)	0.56 (0.00)	0.00
N	3586	1979	

Table 3.1: Characteristics of the municipalities where media vehicles chosen to receive advertising money are located at

Notes: This table reports the comparison of means of the characteristics between municipalities where media vehicles chosen to receive advertising money are located and all other municipalities in the 2000-2015 period. To do that, we use the 2000 Census to gather variables that report the total population (in thousands of people), share of urban population, log of income per capita, expected years of education of the population and the Gini coefficient. The last column reports the p-value of the t-test when comparing relevant means.

Rank	City	% total spending
1	São Paulo	49.2
2	Rio de Janeiro	13.8
3	Brasília	5.2
4	Belo Horizonte	2.8
5	Porto Alegre	2.7
6	Salvador	2.1
7	Curitiba	1.8
8	Recife	1.6
9	Fortaleza	1.5
10	Belém	0.7

Table 3.2: City ranking

Notes: This table reports the ranking of the Brazilian municipalities where media vehicles chosen to receive advertising money located at in terms of the share of the budget (excluding TV ads) poured into each city in the 2000-2015 period.

	mean	sd	min	max
Total cycle spending: 2003-06, 2007-10 and 2011-14 cycles (2016 BRL millions)				
Total cycle spending (exc TV)	1.50	34.88	0.00	1745.29
State company cycle spending (exc TV)	1.01	25.26	0.00	1167.57
Ministry cycle spending (exc TV)	0.45	9.21	0.00	521.67
Other entity cycle spending (exc TV)	0.03	0.97	0.00	56.05
TV cycle spending	2.63	69.85	0.00	2925.65
Printed media cycle spending	0.71	19.49	0.00	864.14
Radio cycle spending	0.36	5.86	0.00	252.34
Web cycle spending	0.16	6.32	0.00	445.15
Other media cycle spending	0.27	4.94	0.00	226.52
Presidential elections: 2002, 2006, 2010 and 2014 elections				
Total electorate (thousands)	53.00	239.17	1.18	8782.41
<i>Round 1</i>				
PT vote share	47.13	15.93	7.09	90.67
<i>Round 2</i>				
PT vote share	56.00	15.77	14.71	94.69
Local power variables (on presidential election years)				
=1 if PT mayor	0.10	0.30	0.00	1.00
Municipality characteristics at cycle start: 2002, 2006, 2010 and 2014				
Population at cycle start (thousands)	77.87	333.50	1.41	11895.89
GDP per capita at cycle start (2016 BRL thousands)	0.02	0.02	0.00	0.48

Table 3.3: Summary statistics

This table reports the summary statistics of the relevant variables of the municipality-level exercise. In particular, it contains the mean, standard deviation, minimum and maximum of (i) government spending on ads: total, split by entity and media type and spending of selected companies (Petrobras, Correios, Banco do Brasil and Caixa), in the 4-year cycles of 2003-2006, 2007-2010 and 2011-2014 in 2016 Brazilian reais; (ii) total electorate, in thousands of people; (iii) Rounds 1 and 2.

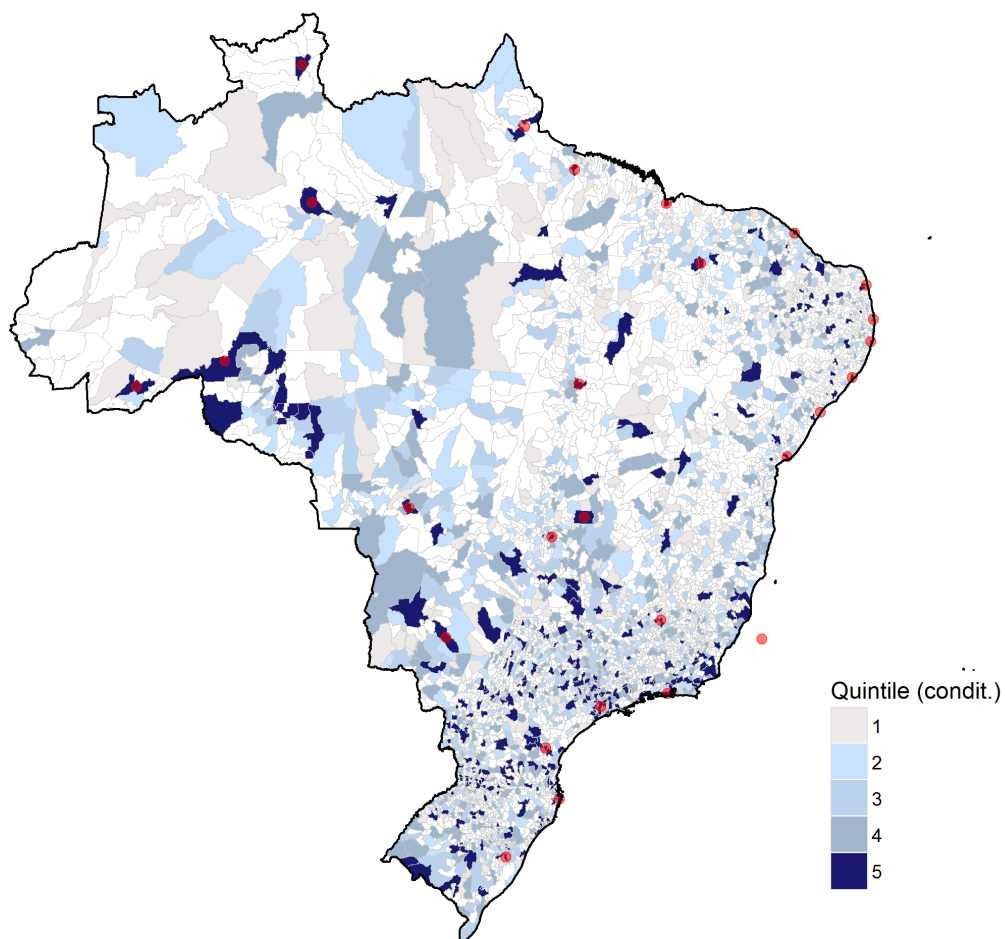


Figure 3.4: Spending per capita (2003-2014, excluding TV), capital centroids in red

Notes: This figure plots the total amount per capita (in 2016 Brazilian Reais, R\$, excluding TV) spent by federal government entities in each municipality over the Brazilian territory in 2003-2014. White areas correspond to zero spending, while the others are filled by quintiles. Red circles correspond to capital centroids.

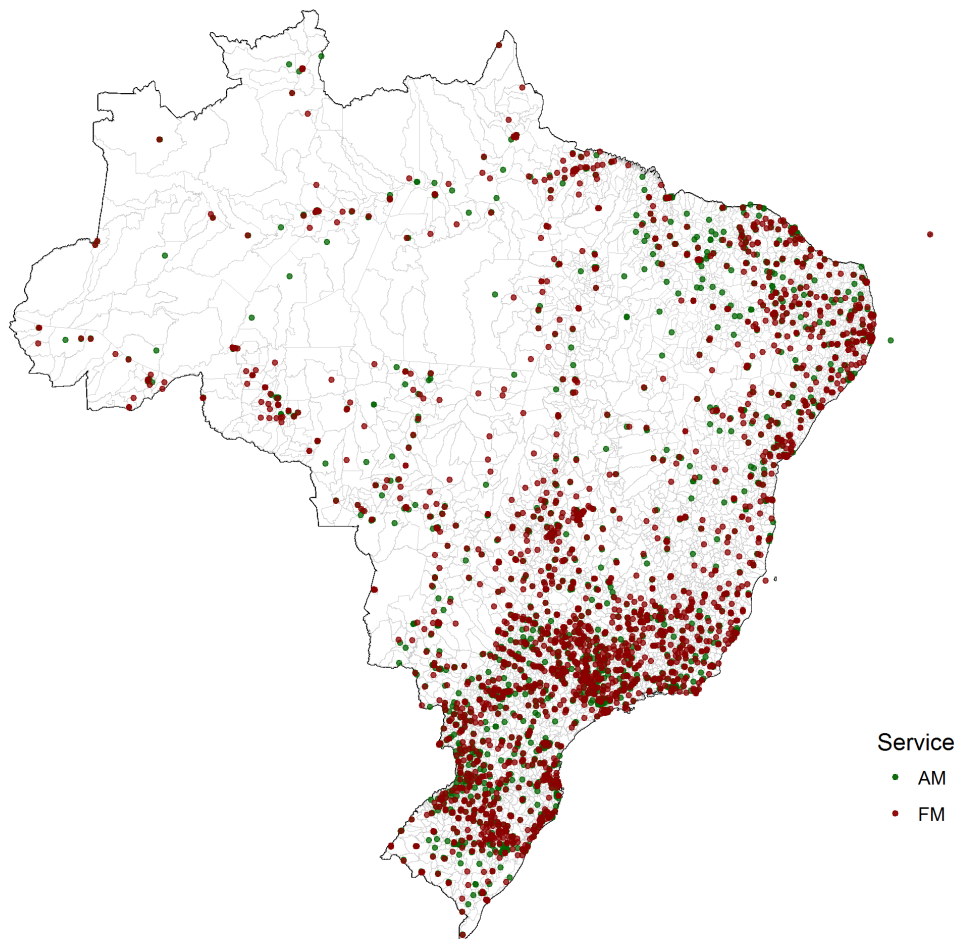


Figure 3.5: FM and AM radio stations

Notes: This figure plots FM and AM radio stations operating in the year of 2016. Red dots correspond to FM antennas and green to AM antennas. Data are provided by ANATEL and were retrieved on October 2016.

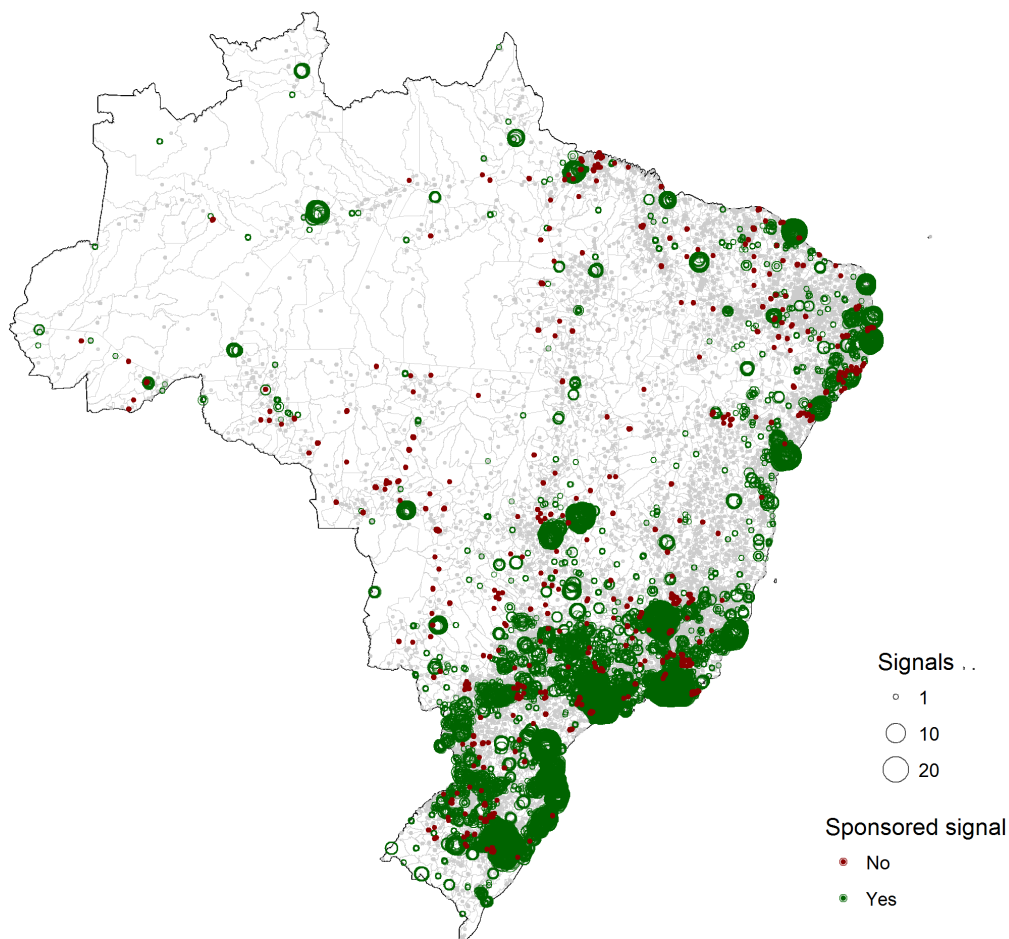


Figure 3.6: 2014 Polling stations and radio coverage

Notes: This figure plots all geocoded polling stations in the 2014 presidential election and their treatment status. Gray dots are polling stations that get no FM radio signal and the red ones are those that get non-sponsored signal. Green dots are polling stations that get at least one sponsored signal, and the size of the dots correspond to how many sponsored signal those polling stations get.

4.1

Empirical Strategy

In order to estimate how the allocation of the advertisement budget is related to (past) electoral outcomes, we regress (log of) ad spending per capita in each presidential cycle on (past) share of votes for PT in municipality level and municipality level controls. We also include municipality and time fixed effects. When doing so, we only capture spending variation over time within each municipality. The regressions we run, thus, take the following general form:

$$\begin{aligned} \log(\text{avg. spending per capita})_{it} = & \beta_0 + \beta_1 PTshare_{it} + \beta_2 PTmayor_{it} \\ & + X_{it} + \gamma_i + \eta_t + \epsilon_{it} \end{aligned} \quad (4-1)$$

where avg. spending per capita_{it} is the average ad spending per capita in municipality *i* over the subsequent 4-year cycle after election year *t*, *PTshare_{it}* is the share of votes for PT on presidential elections in year *t* in municipality *i*, *PTmayor* is a dummy variable that takes the value of 1 when, in municipality *i* in a given year *t*, the mayor is affiliated to PT, and *X_{it}* are time and municipality-varying controls, namely log of GDP per capita and log of population. We run regressions using only 3 election years (2002, 2006 and 2010) and aggregate spending in the subsequent 4-year cycle that corresponds to a presidential mandate. When constructing measures of spending per capita, we use the population in election years. As we use time and municipality fixed effects, we only keep in our database those cities that received money at some point of time and explore variation within cities over time.

We exclude TV ads when aggregating spending per municipality on most of our specifications due to the nature of the TV service. The range of the TV signal is much broader than the radio one; thus, the audience is much more limited than, say, the one newspapers and magazines. Although it is probably valid in some sense for all other media, aggregating TV spending per municipality probably does not capture money being poured in a local fashion.

Our main specification includes spending on all types of media outlets (except for TV in most cases) and spending by all public bodies. Additional specifications break the spending variable on the left-hand side of Equation 4-1, according to the type of media the money was spent on (printed media, radio, web, TV and others) and to the type of entity placed the ads, namely ministries, public companies and other entities.

Before presenting the results, it is worth discussing what to expect from the described exercises. First, if the goal of the federal government when choosing where to spend the ad money is to build local support, we should see more money being spent on media outlets located at municipalities with lower share of votes for PT in the past. In this case, β_1 in Equation 4-1 should be negative. If public companies try to maximize profit, we probably should not see them spending money based on election outcomes, once we control for municipality characteristics that may determine voting results. In this case, when only using public company spending, β_1 in Equation 4-1 should not be statistically different from zero. Finally, if the federal government wants to gather votes locally by pouring ad money into media outlets, low range media, such as radio, not TV, is probably more suitable to do that. Thus, when running regressions like Equation 4-1 for each type of media separately, β_1 should be indistinguishable from zero when using spending on TV, for instance.

4.2 Results

The results of the estimation of Equation 4-1 using our main specification are presented in Table 4.1. Columns 1-3 report the results using first round electoral outcomes. In column 1, the β_1 point estimate is -0.052. One standard deviation decrease in PT vote share in a municipality is associated with approximately 0.8% increase in ad spending per capita. Alternatively, moving from the 75th to the 25th percentile in the vote share distribution (which corresponds to a 30 p.p. drop in the first round) is associated with a 1.7% increase in spending per capita. In column 2, we include a dummy that assumes value of 1 for municipalities that had a PT mayor in the election year to capture PT local power (*PTmayor*). Still, the coefficient of interest remains unchanged and the one associated with the local power dummy cannot be distinguished from zero. In column 3, we include the local power dummy and drop the cities in the top 1% of the population distribution, aiming at excluding the main cities of Brazil. As seen before, those are the ones that get most of the ad budget. When dropping them from our sample in this specification, we test

whether the relation observed in previous specifications is driven by big city dynamics. The coefficients, however, remain virtually unchanged.

In columns 4-6, we run analogous regressions shown in columns 1-3 using only electoral outcomes of second round races. Our coefficient of interest reports a stronger relation between spending on advertising and past votes (-0.063). Now, one standard deviation decrease in PT vote share in a municipality is associated with approximately 1% increase in ad spending per capita in the second round. Alternatively, moving from the 75th to the 25th percentile in the vote share distribution (which corresponds to a 20 p.p. drop in the second round) is associated with a 1.8% increase in spending per capita in each round. Again, when including measures of local power and dropping the most populated cities of our sample, the point estimates remain virtually unchanged.

In Tables 4.2 and 4.3, we run separate regressions for spending by public companies, ministries and other public entities. The columns are analogous to those in Table 4.1. The relation between votes and ad spending captured by β_1 is weaker in regressions using just state company contracts (columns 1-6, Table 4.2). The coefficients of interest are around -0.02 or half the estimates using the main specification. Coefficients when using only money spent by ministries (columns 5-12, Table 4.2), on the other hand, are twice as big as the ones in state company regressions and closer to the coefficients presented in Table 4.1. One possible interpretation is that ministries are more subject to political interference and, thus, more likely to pour money into media outlets having in mind electoral outcomes. Public companies, on the other hand, may be more constrained when choosing where to place ads, taking decisions closer to what is expected to be a profit-maximizing behavior.

In Tables 4.4, 4.5 and 4.6, we break the spending according to media type (TV, radio, printed media, internet and others, such as out-of-home media etc.). In Table 4.4, columns 1-6 present the results using spending on printed media and columns 7-12 report the estimates using radio. Table 4.5 reports the web and TV specifications and Table 4.6 reports the estimates using other media. Column specifications are analogous to those presented in Table 4.1. As we expected, spending on printed media and specially radio is more strongly related to past voting outcomes than TV and other media spending. Printed media coefficients are -0.011 in the first round and around -0.016 in the second round. Radio estimates are -0.045 and around -0.055 in each round, respectively. Somewhat surprisingly, money spent on the internet is also strongly associated with past votes for PT. This is not expected since the internet can be accessed from anywhere, so the audience that accesses the

media outlets that get advertising money is more diffuse. Therefore, the web probably lacks the potential to be used as a local media to gather votes.

4.3

Spending on Election Years

Next, we assess the association between votes and ad spending in the election years. It may be the case, as argued by the literature on opportunistic political cycles (see e.g. (31)), that federal government increases spending prior to the election. To test this hypothesis using our (yearly) data, we use ad spending on election years. Two important caveats must be noticed. First, elections in Brazil are held in October and our data spans the total year spending. The value spent by year, thus, is overestimated in this exercise. Second, the federal government must not spend freely the ad budget on election years.¹

As we have data on government ad spending on the year of 2014, we are able to include this year in our exercises. We run the same regressions as those presented above, but now we use year spending on the right-hand side. The results are presented in Tables B1-B5. The conclusions are very similar to those obtained when using 4-year cycle spending, but the association seems to be weaker (the absolute values of the relevant coefficients are smaller).

In sum, we show that there is a significant negative relation between federal government spending on media vehicles and vote share for the incumbent party in the municipalities where those outlets are located. This relation is stronger when taking only the money spent by ministries and in printed media and radio. This is compatible with the incumbent party financing local, low-range media through ministries to gather votes locally. The estimates, however, are economically small. This is compatible with a situation in which the federal government does not aggressively allocate the ad budget aiming at gathering votes. This could happen, for instance, due other strategies being played when allocating ad money that are related to market characteristics. The small association between past votes and ad spending is, thus, compatible with the results found in the next session, in which we show that the ad money does not seem to increase vote share in a causal way.

¹Brazil's Fiscal Responsibility Law (101/2000) limits ad spending not to be greater than i) previous year spending or ii) average spending of previous 3 years. Electoral Law (9504/1997) only allow institutional campaigns up to 3 months prior to the first round of the race on election years.

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Spending per capita)					
PT vote share	-0.052 (0.004)***	-0.052 (0.004)***	-0.053 (0.004)***	-0.063 (0.005)***	-0.063 (0.005)***	-0.063 (0.005)***
=1 if PT mayor		-0.232 (0.178)	-0.244 (0.182)		-0.257 (0.178)	-0.261 (0.182)
Observations	5,937	5,930	5,876	5,937	5,930	5,876
R-squared	0.674	0.674	0.670	0.674	0.674	0.670
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table 4.1: Spending per capita (exc. TV) on cycle after the election: total

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads (exc. TV) and municipality controls. In particular, in columns 1-3 we regress the log of cycle spending per capita on PT's vote share in round 1. In columns 4-6, we use round 2 outcomes. In columns 2 and 5, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 3 and 6, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		log (State company spending per capita)						log (Ministry spending per capita)				
PT vote share	-0.021 (0.004)***	-0.021 (0.004)***	-0.021 (0.004)***	-0.023 (0.005)***	-0.023 (0.005)***	-0.023 (0.005)***	-0.048 (0.004)***	-0.048 (0.004)***	-0.059 (0.005)***	-0.060 (0.005)***	-0.060 (0.005)***	-0.060 (0.005)***
=1 if PT mayor		-0.037 (0.185)	-0.044 (0.190)		-0.041 (0.185)	-0.044 (0.190)	-0.284 (0.181)	-0.290 (0.186)			-0.310 (0.181)*	-0.309 (0.185)*
Observations	5,937	5,930	5,876	5,937	5,930	5,876	5,930	5,876	5,937	5,937	5,930	5,876
R-squared	0.719	0.718	0.713	0.718	0.718	0.713	0.694	0.691	0.695	0.695	0.695	0.692
Round	1	1	1	2	2	2	1	1	2	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	56	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.77	15.77	15.77	15.77

Table 4.2: Spending per capita (exc. TV) on cycle after election: by entity type

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level by entity type. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads (exc. TV) by entity type and municipality controls. In particular, in columns 1-6 we regress the log of cycle spending per capita by companies on PT's vote share. In columns 7-12, we use the log of cycle spending per capita by ministries as the dependent variable. In columns 1-3 and 7-9, we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12, we use round 2 outcomes. In columns 2, 5, 8 and 11, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Other entity spending per capita)					
PT vote share	-0.001 (0.003)	-0.001 (0.003)	-0.000 (0.003)	-0.003 (0.003)	-0.003 (0.003)	-0.003 (0.003)
=1 if PT mayor		0.103 (0.152)	0.124 (0.155)		0.098 (0.152)	0.119 (0.155)
Observations	5,937	5,930	5,876	5,937	5,930	5,876
R-squared	0.589	0.587	0.561	0.589	0.587	0.561
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table 4.3: Spending per capita (exc. TV) on cycle after election: by entity type

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level by entity type. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads (exc. TV) by entity type and municipality controls. In particular, in columns 1-6 we regress log of cycle spending per capita by other entities (foundations etc.) on PT's vote share. In columns 1-3, we use PT's vote share in round 1 as electoral outcome. In columns 4-6, we use round 2 outcomes. In columns 2 and 5, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in column 6 we exclude top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		log (Spending per capita on radio)		log (Spending per capita on printed media)				log (Spending per capita on radio)				
PT vote share	-0.011 (0.003)***	-0.011 (0.003)***	-0.011 (0.003)***	-0.016 (0.004)***	-0.016 (0.004)***	-0.017 (0.004)***	-0.045 (0.004)***	-0.045 (0.004)***	-0.046 (0.004)***	-0.055 (0.004)***	-0.056 (0.004)***	-0.055 (0.004)***
=1 if PT mayor		-0.124 (0.170)	-0.134 (0.174)		-0.135 (0.170)	-0.145 (0.174)	-0.318 (0.167)*	-0.318 (0.167)*	-0.330 (0.171)*		-0.341 (0.167)**	-0.345 (0.171)**
Observations	5,937	5,930	5,876	5,937	5,930	5,876	5,937	5,930	5,876	5,937	5,930	5,876
R-squared	0.793	0.793	0.787	0.793	0.793	0.788	0.793	0.794	0.791	0.794	0.794	0.792
Round	1	1	1	2	2	2	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.93	15.77	15.77	15.77

Table 4.4: Spending per capita (exc. TV) on cycle after election: by media type

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level by media type. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads (exc. TV) by media type and municipality controls. In particular, in columns 1-6, we regress log of cycle spending per capita on printed media on PT's vote share. In columns 7-12, we use the log of cycle spending per capita on radio as the dependent variable. In columns 1-3 and 7-9, we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12, we use round 2 outcomes. In columns 2, 5, 8 and 11 we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
			log (Spending per capita on web)					log (Spending per capita on TV)				
PT vote share	-0.011 (0.002)***	-0.011 (0.002)***	-0.011 (0.002)***	-0.012 (0.002)***	-0.013 (0.002)***	-0.012 (0.002)***	-0.006 (0.002)***	-0.005 (0.002)***	-0.005 (0.002)***	-0.006 (0.002)***	-0.006 (0.002)***	-0.006 (0.002)***
=1 if PT mayor		-0.349 (0.127)***	-0.334 (0.130)**		-0.352 (0.127)***	-0.335 (0.130)**		0.079 (0.098)	0.083 (0.101)		0.077 (0.098)	0.081 (0.100)
Observations	5,937	5,930	5,876	5,937	5,930	5,876	5,937	5,930	5,876	5,937	5,930	5,876
R-squared	0.680	0.677	0.634	0.679	0.676	0.634	0.903	0.902	0.892	0.903	0.902	0.892
Round	1	1	1	2	2	2	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.93	15.77	15.77	15.77

Table 4.5: Spending per capita (exc. TV) on cycle after election: by media type

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level by media type. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads by media type and municipality controls. In particular, in columns 1-6, we regress log of cycle spending per capita on the internet on PT's vote share. In columns 7-12, we use the log of cycle spending per capita on TV as the dependent variable. In columns 1-3, and 7-9 we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12 we use round 2 outcomes. In columns 2, 5, 8 and 11, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Spending per capita on other media)					
PT vote share	-0.002 (0.002)	-0.002 (0.002)	-0.002 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.002 (0.002)
=1 if PT mayor		-0.050 (0.126)	-0.043 (0.129)		-0.053 (0.126)	-0.044 (0.129)
Observations	5,937	5,930	5,876	5,937	5,930	5,876
R-squared	0.786	0.784	0.756	0.786	0.784	0.756
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE cycle	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table 4.6: Spending per capita (exc. TV) on cycle after election: by media type

Notes: This table reports the relation between the federal government spending on ads and past voting in the municipality level by media type. It contains the output of regressions using 2002, 2006 and 2010 presidential election outcomes, subsequent 4-year cycle spending per capita on ads by media type and municipality controls. In particular, in columns 1-6, we regress the log of cycle spending per capita on other media (outdoors, out-of-home etc.) on PT's vote share. In columns 1-3 we use PT's vote share in round 1 as electoral outcome. In columns 4-6, we use round 2 outcomes. In columns 2 and 5, we include municipality controls, namely the log of GDP per capita and the log of population in election years. Finally, in column 6, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

5

Does Advertisement Affect Voters? Evidence from Radio

In Section 4, we show how spending on advertisement by the federal government is related to past voting patterns in the municipality level. As mentioned before, the relations we describe are not causal, but help drawing a motivating picture of where in the territory the government places ads and how this is related to electoral outcomes. Now we take a step further to answer empirically whether this money may actually help (in a causal way) the government gathering votes locally.

5.1

Empirical Strategy

When assessing the impact of the government advertising on voting, we explore the exogenous variation associated with the radio service. Intuitively, we can imagine that the government may target with advertising money radio stations that reach specific audiences. However, due to the way that radio signal is propagated, some audiences get the signal and some do not. The idea here is to compare audiences close enough to be similar in observable and non-observable characteristics, but one gets the radio signal and the other(s) does(do) not.

Specifically, we identify polling stations that get signal from a FM radio station that received federal ad money at some of point of time in the 2011-2014 period (we call this sponsored signal). To do tht, for each FM antenna in Brazil we take the furthest sponsored polling station within the covered range and look for close enough polling stations that either only get signals from FM radio stations that did not receive ad money (non-sponsored signal) or that get no signal at all (no signal). The idea behind taking only the furthest polling station that gets sponsored signal for each antenna is to explore the geographic features of our exercise similarly to what is done in Geographic Regression Discontinuity Design (see (32, 33, 34, 35, 36)). However, we take the treated polling stations that are closest to the “border” (coverage radius) and use as controls the ones that are close enough to the treated ones. Thus, our exercise differs from GRRD in a sense that it does not compare treated and control observations based on the distance to the border, but the distance

between treated and controls that are close to the border. The general equation we estimate takes the following form:

$$PTshare_i = \beta_0 + \beta_1 \cdot spons_i + X_i + \gamma_s + u_i \quad (5-1)$$

where $PTshare_i$ is the PT vote share in polling station i , $spons_i$ is the treatment variable, X_i is a vector of polling station characteristics and γ_s is a fixed effect for each treated polling station and its corresponding controls, located at a certain distance. An illustration of our empirical strategy is shown in Figure C1.

We propose different specifications for the treatment variable, $spons_i$. They may capture whether the polling station gets a sponsored signal, how many signals it gets and how much is spent on the FM radio stations it gets signals from. We also explore the fact that a polling station may get radio signals coming from other municipality. When doing this, we may fully explore the exogenous variation allowed by geography.

As the ad campaigns ran by the government do not carry explicit political or partisan content, the different treatment status we assemble probably captures media bias induced by the financing of media outlet. In the context of our empirical strategy design, then, β_1 captures the difference in the share of votes for PT observed in polling stations exposed to information propagated by radio stations financed by the government in comparison to polling stations in the control group. Thus, the mechanism we have in mind is similar to what was highlighted by Di (22) when studying Argentina: money spent by the government may be a relevant source of revenue to media outlets, and the threat to lose it may induce media bias.

As mentioned briefly before, there are two types of polling stations that can be used to construct the control group: (i) the ones that get no FM radio signal; and (ii) those that only get non-sponsored FM radio signal. Our preferred specifications are those that use as control group the polling stations that get no radio signal and are located within 5 kilometers from the treated ones. As mentioned before, the radio stations are geographically concentrated in the Southeast and Northeast, which correspond to most urban areas of Brazil. When using the no-signal control group, we are probably on more solid grounds to explore the exogenous variation of radio signal coverage that comes from geography. The reason that one polling station does not get any radio signal but is close to one that gets is probably mostly driven by geographic factors.

Finally, one additional advantage of using polling stations that get no FM radio signal as a control group is the number of observations. As seen

in Figure 3.6, there are very few polling stations that get non-sponsored FM radio signal, so the number of observations when we compare treatment and control groups within a short distance is small, and inference may be harder. On the other hand, when choosing the no-signal control group over the non-sponsored one, we focus on polling stations located at not so urban areas of the country and that are potentially very different in terms of both observed and non-observed characteristics from those that are covered by radio. However, polling stations that get at least one sponsored signal and those that get no signal look very similar in a number of observable characteristics when taking a sufficient small distance. Moreover, as almost all polling stations that receive FM signal also are the ones that get sponsored FM signals, we can't clearly distinguished our estimates from the impact of simply getting FM radio signal on votes. However, it will become clear that our results are robust to choosing different control groups.

In Table 5.1 we compare treatment and control groups within 5 kilometers of distance. It can be seen that polling stations in each group look very similar in terms of past vote share, size of electorate and gender, age, education and marital status profiles. The same comparison is done for distance greater than 5 kilometers and presented in Tables C1-C7, in Appendix B. As expected, when we increase the distance to build control groups, treated and non-treated polling stations start to differ significantly, and our empirical strategy is not valid.

In the next section, we present the results using our preferred specifications. Analogous arguments can be used looking at alternative specifications, which we present in the following section.

5.2

Main Results

In Table 5.2, we report the estimates of Equation 5-1 using different treatment status. In Panel A, we report estimates using treatment variables built by taking polling stations that get sponsored FM radio signal coming from any municipality, either the municipality where the polling stations are located or not. In these exercises, we first use a dummy that indicates whether the polling station gets at least one sponsored signal. We report the results in columns 1 and 2. Using this same treatment variable, we estimate the coefficient of interest using matching, reporting the results in column 3. We match each sponsored polling station to all polling stations in the control group within 5 kilometers. We also do the matching using the same variables we include as controls in Equation 5-1. Next, we use as a treatment variable

one that indicates how many sponsored signals the polling station gets. The results are reported in columns 4 and 5. Lastly, in columns 6 and 7, we report the estimates using the mean spending per voter in each FM radio station the polling station gets signal from. In columns 2, 5 and 7, we include polling station level controls in the right-hand side of the regression.

In Panel B of Table 5.2, we report analogous estimates using only radio signals that come from another municipality, except for the spending per capita specification. In all specifications mentioned above, we use as dependent variable the share (0 to 1) of votes for PT in the first round of the 2014 presidential election.

From the proposed exercises, we can conclude that there seems to be no impact of financing radio stations through advertising on votes. When using as treatment variable a dummy for any sponsored signal and sponsored signal from another municipality, looking at specifications that include polling station level controls, the regression estimates are -0.016 and 0.01 respectively, both statistically non-distinguishable from zero. When using matching, the analogous coefficients are -0.01 and 0.015, also statistically not different from zero.

When using as a treatment variable the number of signals received, the results stand. The coefficients are very similar and, again, not statistically different from zero when including polling station characteristics in the regressions.

Finally, when using spending per capita, the effect we estimate is positive and statistically significant. In particular, in column 7, the coefficient is approximately 0.88. which means that one thousand additional Brazilian reais per capita on average buy 88 percentage points of vote share for the government. As the mean spending per capita in our sample is around R\$ 0.1, the size of this effect is considerably small.

5.3

Robustness Checks

In the section above, we presented our preferred specifications, which use as control group the polling stations that get no radio signal and are up to 5km apart from the sponsored ones. Here we briefly present the same exercises proposed before, but now using other control groups, namely the one with polling station that gets non-sponsored FM radio signal and the one that combines the two previous control groups, and gathering control observations using greater distances.

In Tables C9-C15, we compare characteristics of sponsored and non-sponsored polling stations 5, 10, 15, 20, 25, 30, 40 and 50km apart from each

other, respectively. In Tables C16-C23, we do the same taking both control groups (no signal and non-sponsored) together. As before, for small distances, control and treated groups look similar in observables, but as we gather control observations further and further away from the treated ones, they start to differ significantly.

In Tables C24 and C26, we report regression estimates using as treatment a dummy for any sponsored signal and control group non-sponsored and both no signal and non-sponsored polling stations respectively. In Tables C27 and C29 we do the analogous using as a treatment variable a dummy for signal from other municipality. In Tables C30, C32, C33 and C35, we use the total number of signals. Finally, in C36 we report regressions estimates using the mean spending per capita.

In all those tables, even columns contain estimates using polling station controls and in columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14 and 15-16 we report the regressions using no-signal controls within 5, 10, 15, 20, 25, 30, 40 and 50 kilometers from the treated polling stations respectively.

In Tables C39 and C40, we report the matching estimates using different control groups and distances. In those tables, columns 1, 4, 7, 10, 13, 16, 19 and 22 report the estimates using as a control group polling stations that get non-sponsored signal. In columns 2, 5, 8, 11, 14, 17, 20 and 23, we use only polling stations that get no signal as controls. Finally, in columns 3, 6, 9, 12, 15, 18, 21 and 24, we use both control groups together. The conclusions are very similar to those presented above, using regression estimates.

Using different control groups under short distances does not change our conclusions. As mentioned before, when gathering control observations further away from the treated ones, treatment and control groups start to systematically differ in observables, which indicates that the two groups are not comparable and the regression and matching estimates are not the causal impact of ads on votes we wish to retrieve, so the coefficients of interest start to be (still mostly negative and) statistically different from zero. We interpret these specifications as capturing something similar to what was presented in our first exercise using municipality level data: when using invalid control groups, there are probably other (potentially both observable and non-observable) factors that determine PT's vote share and ad placement decisions.

	Within 5km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.512 (0.008)	0.523 (0.021)	0.626
PT vote share in 2010 (round 2)	0.573 (0.007)	0.583 (0.020)	0.674
Distance to closest sponsored AM station	15.324 (0.908)	23.637 (3.123)	0.004
Total electorate	1814.546 (48.824)	1606.584 (133.720)	0.173
Male share of electorate	0.481 (0.001)	0.480 (0.004)	0.860
16-17 year old share of electorate	0.017 (0.001)	0.021 (0.003)	0.040
18-24 year old share of electorate	0.173 (0.003)	0.194 (0.013)	0.071
25-34 year old share of electorate	0.233 (0.003)	0.235 (0.008)	0.800
35-44 year old share of electorate	0.190 (0.002)	0.186 (0.006)	0.595
45-59 year old share of electorate	0.222 (0.002)	0.207 (0.007)	0.041
60-69 year old share of electorate	0.089 (0.001)	0.085 (0.004)	0.338
Illiterate share of electorate	0.078 (0.002)	0.071 (0.006)	0.342
Literate share of electorate	0.478 (0.005)	0.494 (0.014)	0.300
Complete elementary school share of electorate	0.243 (0.003)	0.247 (0.009)	0.654
Complete high-school share of electorate	0.163 (0.004)	0.153 (0.010)	0.426
Married share of electorate	0.299 (0.003)	0.303 (0.011)	0.688
Divorced share of electorate	0.023 (0.001)	0.023 (0.002)	0.772
Single share of electorate	0.660 (0.003)	0.657 (0.012)	0.809
N	800	89	

Table 5.1: Polling station characteristics: balance test. Control group: no signal within 5km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 5 kilometers apart from each other. For each treated polling station, there may be more than one associated control. The last column reports the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high-school) and complete high-school (or incomplete college), married, divorced and single.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: any sponsored signal(s)</i>							
			PT vote share in 2014 (round 1)				
=1 if polling station gets any sponsored signal	-0.0163 (0.0102)	-0.0039 (0.0079)	-0.0102 (0.0137)				
Number of sponsored signals received by polling station				-0.0134 (0.0101)	-0.0026 (0.0072)		
Mean spending per capita (thousands)						1.4344 (0.8578)	0.8784 (0.1920)***
Observations	889	884	884	889	884	126	126
R-squared	0.8089	0.9285	-	0.8088	0.9285	0.9565	0.9997
<i>Panel B: sponsored signal(s) from other municipality</i>							
=1 if polling station gets sponsored signal from other municipality	0.0109 (0.0193)	0.0164 (0.0123)	0.0152 (0.0235)				
Number of sponsored signals from other municipality received by polling station				0.0091 (0.0163)	0.0101 (0.0107)		
Observations	131	129	129	131	129		
R-squared	0.7443	0.9594	-	0.7443	0.9590		
Round	1	1	1	1	1	1	1
FE sponsored	Y	Y	-	Y	Y	Y	Y
PS controls	N	Y	Y	N	Y	N	Y
Max dist km	5	5	5	5	5	5	5
Method	Regression	Regression	Matching	Regression	Regression	Regression	Regression

Table 5.2: Impact of ads on voting: main specifications

Notes: This table reports estimates of the impact of sponsored FM radio signal availability on votes using polling station level data. In all specifications we use the share of votes for PT in the first round of the 2014 presidential election. In Panel A, column 1, we report the estimates of the regression of our dependent variable on a dummy that indicates whether the polling station gets at least one sponsored FM radio signal. In column 2, we include polling station level controls, namely past vote share (2010), distance to the closest sponsored AM radio's antenna, total electorate, electorate shares of male, age ranges of 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high-school and complete high-school or incomplete college, married, divorced and single. In column 3, we use a matching estimator. In columns 4 and 5 we do the analogous regressions of columns 1 and 2 using as treatment variable one that indicates how many sponsored FM signals the treated polling station gets and in columns 6 and 7 we use the mean spending per capita on all sponsored FM radio stations the polling station gets signal from. In Panel B we do the same thing as in Panel A, but using only FM radio signals that come from other municipalities. Robust standard errors are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Many governments around the world advertise, but there is little evidence about the motivations and the effects of advertising decisions by public bodies. In this paper, we assemble a unique and extensive data set on advertising spending by the Brazilian federal government to shed light on the behavior of public advertisers and on the impacts of advertising on electoral outcomes.

We first regress federal spending on ads with past votes in the local level. Based on the literature on distributive politics, we investigate whether the incumbent party on the presidency spends more money on municipalities where it received fewer votes in the past. Our findings suggest that this is what happens and the relation is stronger when taking money spent by ministries and on low range media. This is compatible with public bodies more subject to political interference (ministries in comparison to public companies) trying to gather votes in the local level using media vehicles more suitable for that.

Next, we explore features of radio technology to estimate the effect of advertising on voting. The party that holds the presidency may want to explore its incumbency advantage by using the official ad budget to finance media outlets and induce media bias. Using a cross-sectional subset of our data and running the analysis on the polling station level, we find no impact of public advertising on voting for the incumbent party. Our findings are robust to different specifications and control groups.

Although we argue that pouring money into media vehicles may induce media bias, we do not provide any explicit evidence on that. Thus, our story is close to what Di (22) document when studying the case of Argentinian newspapers. Besides having an empirical strategy that helps us state the causal effect of being exposed to sponsored media on electoral outcomes, the lack of content analysis prevent us from stating that media bias is actually in place. In this dimension, our work also differs from the one of (13), as we cannot point out specific bias or ideology alignment of media outlets and its role on voter persuasion. We also argue that the ads placed by the government are not able to persuade the voters directly, as the campaigns promoted by the federal government do not carry explicit political or partisan content.

Some limitations in this last exercise, however, should be mentioned and

properly addressed in the near future. The prediction of FM radio coverage is an obvious issue that can be improved using more sophisticated models that take into account terrain profile (e.g., the Longley-Rice, commonly used in similar applications). There is also space for improving the geocoding process, although there are some important data limitations.

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A Appendix

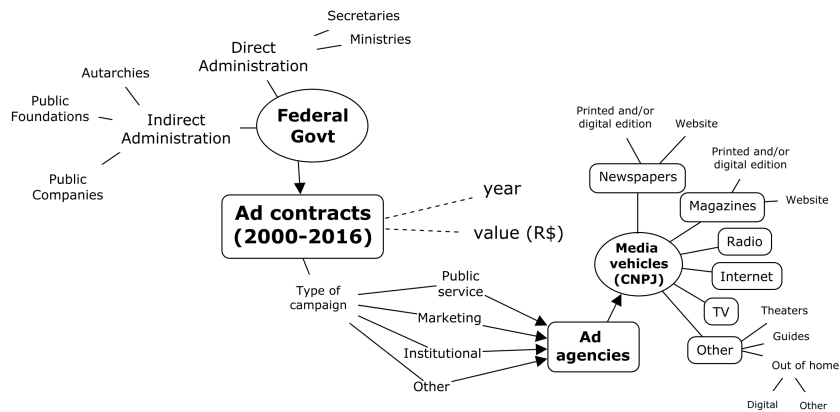


Figure A1: Government advertising data

Notes: This figure displays a visual scheme of the *Instituto para Acompanhamento de Publicidade* (IAP) data on federal government advertising in Brazil



Figure A2: Ad sample: Ministry of Education

Notes: This figure displays a sample of a piece of advertisement place by the Ministry of Education's training program, PRONATEC, on Folha de S. Paulo newspaper (April 12th, 2016 edition)

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Figure A3: Ad sample: Caixa

Notes: This figure displays a sample of a piece of advertisement place by Caixa Econômica Federal, a public bank, on Carta Capital magazine (July 13th, 2016 edition)

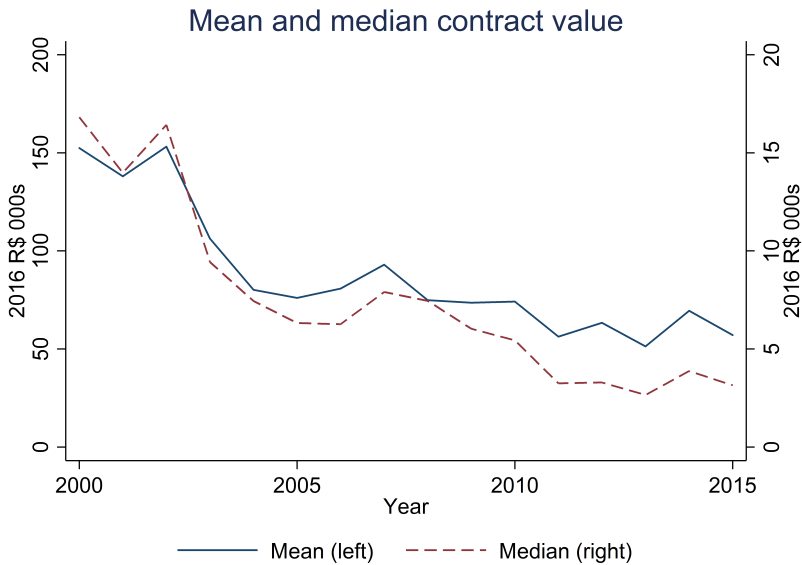


Figure A4: Mean and median contract values, all media: 2000-2015

Notes: This figure plots mean and median values spent by federal government entities on media vehicles yearly from 2000 to 2015. The values are in thousands of 2016 Brazilian Reais (R\$). The mean is plotted on the left side and the median on the right one.

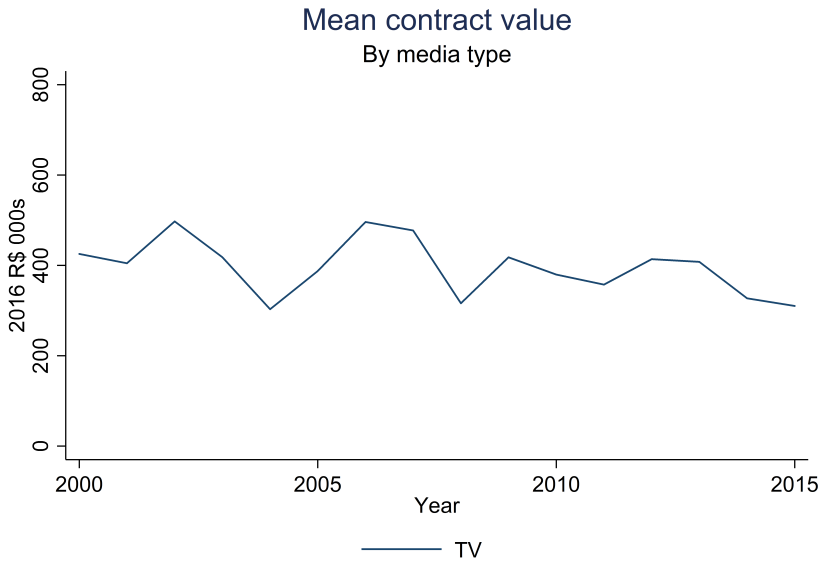


Figure A5: TV mean and median contract values: 2000-2015

Notes: This figure plots mean values spent by federal government entities on TV media vehicles yearly from 2000 to 2015. The values are in thousands of 2016 Brazilian Reais (R\$).

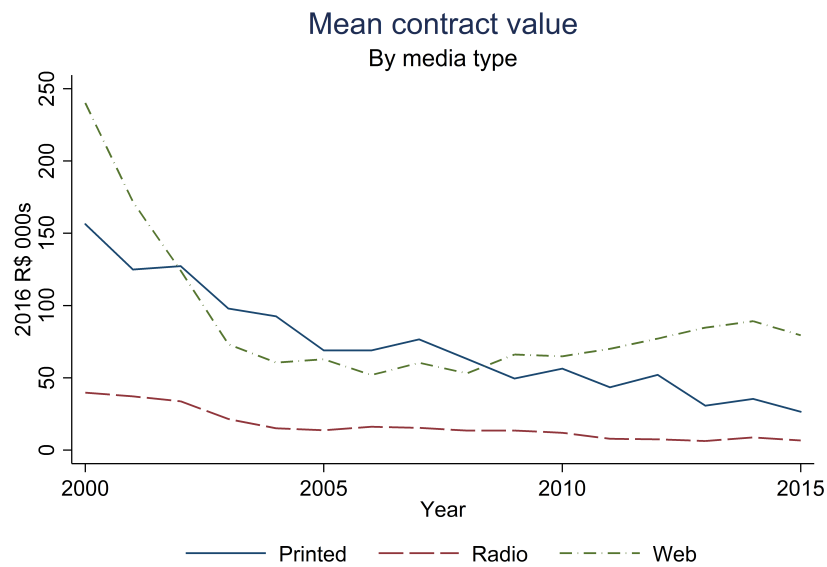


Figure A6: Printed, radio and web mean and median contract values: 2000-2015

Notes: This figure plots mean values spent by federal government entities on printed media, radio and internet vehicles yearly from 2000 to 2015. The values are in thousands of 2016 Brazilian Reais (R\$).

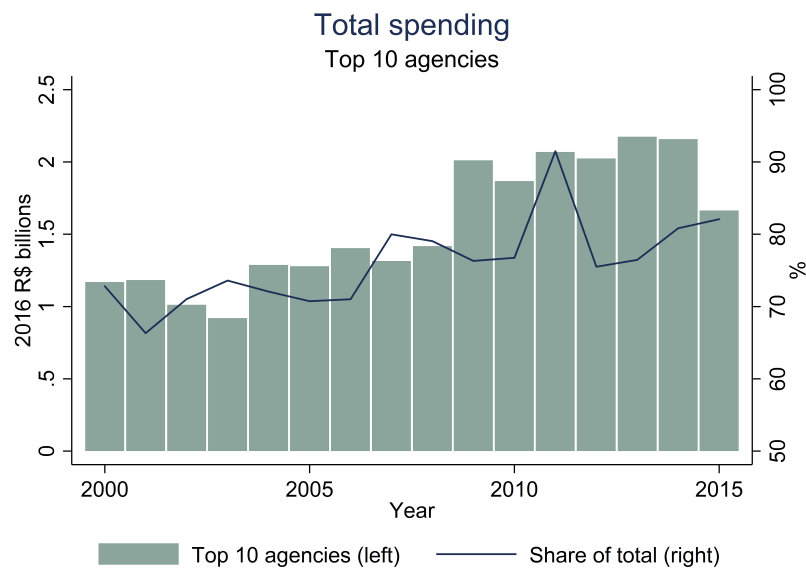


Figure A7: Spending on revenue top 10 ad agencies: 2000-2015

Notes: This figure plots total (in billions of 2016 Brazilian Reais, R\$) and share of total spent by federal government entities in the top 10 ad agencies in each year from 2000 to 2015.

B Appendix

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Total year spending (exc TV) per capita)					
PT vote share	-0.046 (0.004)***	-0.046 (0.004)***	-0.046 (0.004)***	-0.049 (0.004)***	-0.049 (0.004)***	-0.050 (0.004)***
=1 if PT mayor		-0.006 (0.154)	-0.036 (0.156)		-0.034 (0.154)	-0.060 (0.156)
Observations	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.648	0.648	0.642	0.647	0.646	0.641
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table B1: Spending per capita (exc. TV) on election year: total

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads (exc. TV) and municipality controls. In particular, in columns 1-3, we regress log of the year spending per capita on PT's vote share in round 1. In columns 4-6, we use round 2 outcomes. In columns 2 and 5 we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 3 and 6 we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	log (State company year spending (exc. TV) per capita)			log (Ministry year spending (exc. TV) per capita)			log (Ministry year spending (exc. TV) per capita)					
PT vote share	-0.033 (0.003)***	-0.033 (0.003)***	-0.033 (0.003)***	-0.034 (0.004)***	-0.034 (0.004)***	-0.034 (0.004)***	-0.042 (0.004)***	-0.042 (0.004)***	-0.043 (0.004)***	-0.045 (0.004)***	-0.045 (0.004)***	-0.045 (0.004)***
=1 if PT mayor		-0.118 (0.145)	-0.141 (0.148)		-0.136 (0.145)	-0.156 (0.148)		0.063 (0.149)	0.036 (0.152)		0.039 (0.149)	0.015 (0.152)
Observations	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.623	0.622	0.610	0.621	0.620	0.609	0.641	0.640	0.636	0.639	0.639	0.634
Round	1	1	1	2	2	2	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.93	15.77	15.77	15.77

Table B2: Spending per capita (exc. TV) on election year: by entity type

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level by entity type. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads (exc. TV) by entity type and municipality controls. In particular, in columns 1-6, we regress the log of year spending per capita by companies on PT's vote share. In columns 7-12, we use the log of year spending per capita by ministries as the dependent variable. In columns 1-3 and 7-9, we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12, we use round 2 outcomes. In columns 2, 5, 8 and 11, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Other entity year spending (exc TV) per capita)					
PT vote share	-0.014 (0.002)***	-0.014 (0.002)***	-0.013 (0.002)***	-0.018 (0.002)***	-0.018 (0.002)***	-0.017 (0.002)***
=1 if PT mayor		-0.144 (0.099)	-0.093 (0.095)		-0.159 (0.099)	-0.106 (0.095)
Observations	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.416	0.411	0.383	0.417	0.412	0.385
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table B3: Spending per capita (exc. TV) on election year: by entity type

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level by entity type. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads (exc. TV) by entity type and municipality controls. In particular, in columns 1-6, we regress the log of year spending per capita by other entities (foundations etc.) on PT's vote share. In columns 1-3, we use PT's vote share in round 1 as electoral outcome. In columns 4-6, we use round 2 outcomes. In columns 2 and 5 we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in column 6, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		log (Printed media year spending per capita)						log (Radio year spending per capita)				
PT vote share	-0.029 (0.003)***	-0.029 (0.003)***	-0.030 (0.003)***	-0.032 (0.003)***	-0.032 (0.003)***	-0.033 (0.003)***	-0.043 (0.003)***	-0.043 (0.003)***	-0.043 (0.003)***	-0.048 (0.004)***	-0.048 (0.004)***	-0.048 (0.004)***
=1 if PT mayor		-0.130 (0.146)	-0.151 (0.149)		-0.150 (0.147)	-0.168 (0.149)		-0.014 (0.139)	-0.047 (0.141)		-0.044 (0.138)	-0.073 (0.140)
Observations	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.617	0.615	0.600	0.616	0.615	0.599	0.701	0.701	0.698	0.700	0.700	0.698
Round	1	1	1	2	2	2	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.93	15.77	15.77	15.77

Table B4: Spending per capita (exc. TV) on election year: by media type

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level by media type. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads (exc. TV) by media type and municipality controls. In particular, in columns 1-6, we regress the log of year spending per capita on printed media on PT's vote share. In columns 7-12, we use the log of year spending per capita on radio as the dependent variable. In columns 1-3 and 7-9, we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12, we use round 2 outcomes. In columns 2, 5, 8 and 11, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		log (Web year spending per capita)						log (TV year spending per capita)				
PT vote share	-0.011 (0.001)***	-0.011 (0.001)***	-0.009 (0.001)***	-0.013 (0.002)***	-0.013 (0.002)***	-0.011 (0.002)***	-0.005 (0.001)***	-0.005 (0.001)***	-0.005 (0.001)***	-0.005 (0.002)***	-0.005 (0.002)***	-0.005 (0.002)***
=1 if PT mayor		-0.118 (0.079)	-0.109 (0.075)		-0.127 (0.079)	-0.116 (0.075)		0.025 (0.085)	0.020 (0.086)		0.022 (0.085)	0.018 (0.086)
Observations	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.581	0.576	0.550	0.581	0.576	0.550	0.836	0.834	0.813	0.836	0.834	0.813
Round	1	1	1	2	2	2	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77	15.93	15.93	15.93	15.77	15.77	15.77

Table B5: Spending per capita (exc. TV) on election year: by media type

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level by media type. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads by media type and municipality controls. In particular, in columns 1-6, we regress the log of year spending per capita on the internet on PT's vote share. In columns 7-12, we use log of year spending per capita on TV as the dependent variable. In columns 1-3 and 7-9, we use PT's vote share in round 1 as electoral outcome. In columns 4-6 and 10-12, we use round 2 outcomes. In columns 2, 5, 8 and 11 we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in columns 6 and 12, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Other media year spending per capita)					
PT vote share	-0.004	-0.004	-0.004	-0.005	-0.005	-0.004
	(0.002)***	(0.002)***	(0.002)**	(0.002)***	(0.002)***	(0.002)**
=1 if PT mayor		0.046	0.032		0.042	0.030
		(0.085)	(0.085)		(0.085)	(0.085)
Observations	7,916	7,907	7,831	7,916	7,907	7,831
R-squared	0.643	0.638	0.585	0.643	0.638	0.585
Round	1	1	1	2	2	2
FE Mun	Y	Y	Y	Y	Y	Y
Mun. controls	Y	Y	Y	Y	Y	Y
FE year	Y	Y	Y	Y	Y	Y
Big cities	Y	Y	N	Y	Y	N
PT vote share mean	47.13	47.13	47.13	56	56	56
PT vote share sd	15.93	15.93	15.93	15.77	15.77	15.77

Table B6: Spending per capita (exc. TV) on election year: by media type

Notes: This table reports the relation between the federal government spending on ads and voting in the municipality level by media type. It contains the output of regressions using 2002, 2006, 2010 and 2014 presidential election outcomes, election year spending per capita on ads by media type and municipality controls. In particular, in columns 1-6, we regress the log of year spending per capita on other media (outdoors, out-of-home etc.) on PT's vote share. In columns 1-3, we use PT's vote share in round 1 as electoral outcome. In columns 4-6, we use round 2 outcomes. In columns 2 and 5, we include municipality controls, namely the log of GDP per capita and the log of the population in election years. Finally, in column 6, we exclude the top 1% most populated cities. All regressions include time and municipality fixed effects. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

C Appendix

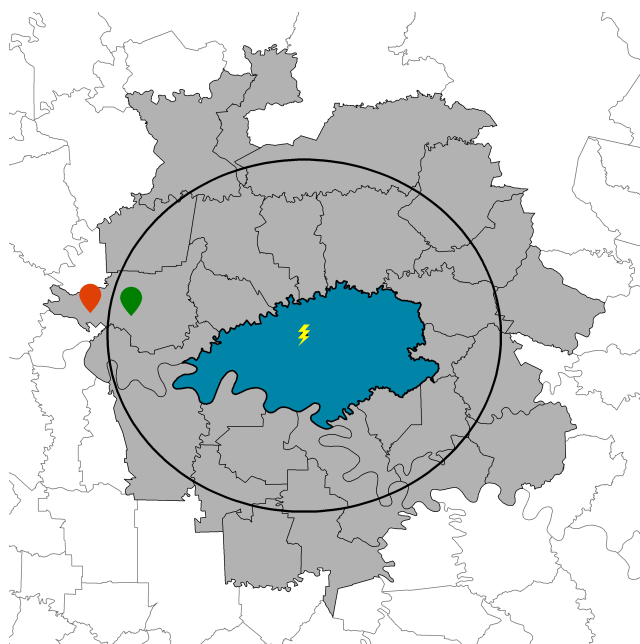


Figure C1: Ads on voting: empirical strategy illustration

Notes: This figure illustrates the general idea of our empirical strategy to assess the impact of government radio ads on voting. For each FM radio station (the yellow lighting in the center of the figure), we know the estimated range of signal coverage (dark circle). Treated polling stations are the furthest away from sponsored station that still get the signal. The associated control polling stations are those (potentially more than one) within a certain distance from the treated polling stations that do not get any sponsored signal.

	Within 10km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.506 (0.006)	0.513 (0.017)	0.717
PT vote share in 2010 (round 2)	0.568 (0.006)	0.566 (0.016)	0.898
Distance to closest sponsored AM station	16.306 (0.633)	21.203 (2.004)	0.013
Total electorate	1735.159 (39.300)	1567.662 (106.859)	0.162
Male share of electorate	0.483 (0.001)	0.485 (0.003)	0.471
16-17 years old share of electorate	0.017 (0.001)	0.018 (0.002)	0.346
18-24 years old share of electorate	0.170 (0.003)	0.180 (0.009)	0.236
25-34 years old share of electorate	0.231 (0.002)	0.234 (0.007)	0.664
35-44 years old share of electorate	0.191 (0.002)	0.187 (0.004)	0.415
45-59 years old share of electorate	0.225 (0.002)	0.217 (0.005)	0.182
60-69 years old share of electorate	0.091 (0.001)	0.090 (0.003)	0.813
Illiterate share of electorate	0.075 (0.002)	0.072 (0.005)	0.522
Literate share of electorate	0.489 (0.004)	0.500 (0.010)	0.375
Complete elementary school share of electorate	0.239 (0.002)	0.240 (0.006)	0.848
Complete high school share of electorate	0.161 (0.003)	0.155 (0.008)	0.479
Married share of electorate	0.305 (0.003)	0.322 (0.009)	0.043
Divorced share of electorate	0.024 (0.001)	0.023 (0.001)	0.733
Single share of electorate	0.653 (0.003)	0.636 (0.010)	0.081
N	1222	145	

Table C1: Polling stations characteristics: balance test. Control group: no signal within 10km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 10 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 15km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.517 (0.004)	0.519 (0.011)	0.857
PT vote share in 2010 (round 2)	0.576 (0.004)	0.573 (0.011)	0.800
Distance to closest sponsored AM station	17.553 (0.388)	18.513 (1.171)	0.419
Total electorate	1655.416 (27.909)	1603.758 (76.568)	0.541
Male share of electorate	0.488 (0.001)	0.492 (0.003)	0.190
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.795
18-24 years old share of electorate	0.166 (0.002)	0.169 (0.006)	0.593
25-34 years old share of electorate	0.229 (0.002)	0.227 (0.004)	0.774
35-44 years old share of electorate	0.190 (0.001)	0.188 (0.003)	0.499
45-59 years old share of electorate	0.228 (0.001)	0.228 (0.004)	0.874
60-69 years old share of electorate	0.095 (0.001)	0.095 (0.002)	0.914
Illiterate share of electorate	0.079 (0.001)	0.073 (0.003)	0.155
Literate share of electorate	0.503 (0.003)	0.509 (0.007)	0.501
Complete elementary school share of electorate	0.233 (0.002)	0.241 (0.005)	0.090
Complete high school share of electorate	0.152 (0.002)	0.147 (0.006)	0.396
Married share of electorate	0.317 (0.002)	0.335 (0.006)	0.005
Divorced share of electorate	0.024 (0.000)	0.023 (0.001)	0.761
Single share of electorate	0.641 (0.002)	0.623 (0.007)	0.018
N	2318	281	

Table C2: Polling stations characteristics: balance test. Control group: no signal within 15km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 15 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 20km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.522 (0.003)	0.503 (0.009)	0.055
PT vote share in 2010 (round 2)	0.580 (0.003)	0.556 (0.009)	0.014
Distance to closest sponsored AM station	18.632 (0.242)	17.252 (0.827)	0.084
Total electorate	1604.494 (19.491)	1620.107 (61.789)	0.807
Male share of electorate	0.490 (0.001)	0.493 (0.002)	0.176
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.373
18-24 years old share of electorate	0.163 (0.001)	0.175 (0.005)	0.004
25-34 years old share of electorate	0.227 (0.001)	0.228 (0.003)	0.902
35-44 years old share of electorate	0.190 (0.001)	0.189 (0.002)	0.549
45-59 years old share of electorate	0.228 (0.001)	0.225 (0.003)	0.368
60-69 years old share of electorate	0.096 (0.001)	0.094 (0.002)	0.169
Illiterate share of electorate	0.080 (0.001)	0.068 (0.003)	0.000
Literate share of electorate	0.514 (0.002)	0.506 (0.006)	0.158
Complete elementary school share of electorate	0.231 (0.001)	0.247 (0.004)	0.000
Complete high school share of electorate	0.144 (0.001)	0.151 (0.004)	0.163
Married share of electorate	0.320 (0.002)	0.336 (0.005)	0.002
Divorced share of electorate	0.022 (0.000)	0.024 (0.001)	0.026
Single share of electorate	0.639 (0.002)	0.621 (0.006)	0.001
N	4547	468	

Table C3: Polling stations characteristics: balance test. Control group: no signal within 20km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 20 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 25km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.533 (0.002)	0.500 (0.008)	0.000
PT vote share in 2010 (round 2)	0.587 (0.002)	0.553 (0.008)	0.000
Distance to closest sponsored AM station	19.706 (0.178)	17.004 (0.715)	0.000
Total electorate	1538.308 (14.521)	1633.035 (52.466)	0.076
Male share of electorate	0.492 (0.000)	0.492 (0.002)	0.910
16-17 years old share of electorate	0.016 (0.000)	0.016 (0.001)	0.614
18-24 years old share of electorate	0.160 (0.001)	0.176 (0.004)	0.000
25-34 years old share of electorate	0.226 (0.001)	0.230 (0.003)	0.201
35-44 years old share of electorate	0.190 (0.001)	0.189 (0.002)	0.550
45-59 years old share of electorate	0.229 (0.001)	0.225 (0.002)	0.106
60-69 years old share of electorate	0.098 (0.000)	0.093 (0.001)	0.001
Illiterate share of electorate	0.082 (0.001)	0.067 (0.002)	0.000
Literate share of electorate	0.527 (0.001)	0.502 (0.005)	0.000
Complete elementary school share of electorate	0.230 (0.001)	0.250 (0.003)	0.000
Complete high school share of electorate	0.134 (0.001)	0.152 (0.004)	0.000
Married share of electorate	0.323 (0.001)	0.329 (0.004)	0.180
Divorced share of electorate	0.021 (0.000)	0.025 (0.001)	0.000
Single share of electorate	0.638 (0.001)	0.628 (0.005)	0.050
	N		
	7833	630	

Table C4: Polling stations characteristics: balance test. Control group: no signal within 25km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 25 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 30km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.534 (0.002)	0.491 (0.007)	0.000
PT vote share in 2010 (round 2)	0.586 (0.002)	0.546 (0.007)	0.000
Distance to closest sponsored AM station	20.076 (0.136)	16.232 (0.610)	0.000
Total electorate	1552.611 (11.493)	1629.599 (46.648)	0.104
Male share of electorate	0.493 (0.000)	0.493 (0.002)	0.880
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.572
18-24 years old share of electorate	0.160 (0.001)	0.179 (0.004)	0.000
25-34 years old share of electorate	0.226 (0.001)	0.228 (0.003)	0.418
35-44 years old share of electorate	0.190 (0.000)	0.189 (0.002)	0.487
45-59 years old share of electorate	0.229 (0.001)	0.224 (0.002)	0.031
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.001)	0.000
Illiterate share of electorate	0.082 (0.001)	0.066 (0.002)	0.000
Literate share of electorate	0.527 (0.001)	0.494 (0.005)	0.000
Complete elementary school share of electorate	0.230 (0.001)	0.254 (0.003)	0.000
Complete high school share of electorate	0.133 (0.001)	0.156 (0.003)	0.000
Married share of electorate	0.323 (0.001)	0.326 (0.004)	0.583
Divorced share of electorate	0.022 (0.000)	0.025 (0.001)	0.000
Single share of electorate	0.637 (0.001)	0.631 (0.004)	0.183
N	12655	793	

Table C5: Polling stations characteristics: balance test. Control group: no signal within 30km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 30 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 40km		diff.p-value
	No-signal	Sponsored	
PT vote share in 2010 (round 1)	0.537 (0.001)	0.478 (0.006)	0.000
PT vote share in 2010 (round 2)	0.588 (0.001)	0.537 (0.006)	0.000
Distance to closest sponsored AM station	21.294 (0.096)	15.084 (0.525)	0.000
Total electorate	1532.887 (8.027)	1698.695 (42.948)	0.000
Male share of electorate	0.494 (0.000)	0.492 (0.002)	0.201
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.049
18-24 years old share of electorate	0.160 (0.001)	0.177 (0.003)	0.000
25-34 years old share of electorate	0.226 (0.000)	0.228 (0.002)	0.318
35-44 years old share of electorate	0.190 (0.000)	0.192 (0.002)	0.385
45-59 years old share of electorate	0.228 (0.000)	0.226 (0.002)	0.151
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.001)	0.000
Illiterate share of electorate	0.085 (0.000)	0.062 (0.002)	0.000
Literate share of electorate	0.531 (0.001)	0.488 (0.004)	0.000
Complete elementary school share of electorate	0.228 (0.000)	0.257 (0.003)	0.000
Complete high school share of electorate	0.129 (0.001)	0.161 (0.003)	0.000
Married share of electorate	0.322 (0.001)	0.328 (0.003)	0.102
Divorced share of electorate	0.021 (0.000)	0.027 (0.001)	0.000
Single share of electorate	0.639 (0.001)	0.627 (0.004)	0.002
N	26265	1061	

Table C6: Polling stations characteristics: balance test. Control group: no signal within 40km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 40 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 50km		
	No-signal	Sponsored	diff.p-value
PT vote share in 2010 (round 1)	0.541 (0.001)	0.473 (0.006)	0.000
PT vote share in 2010 (round 2)	0.591 (0.001)	0.532 (0.006)	0.000
Distance to closest sponsored AM station	22.112 (0.074)	14.931 (0.521)	0.000
Total electorate	1513.365 (6.095)	1742.648 (41.256)	0.000
Male share of electorate	0.495 (0.000)	0.492 (0.002)	0.019
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.042
18-24 years old share of electorate	0.160 (0.000)	0.177 (0.003)	0.000
25-34 years old share of electorate	0.225 (0.000)	0.230 (0.002)	0.018
35-44 years old share of electorate	0.190 (0.000)	0.191 (0.002)	0.557
45-59 years old share of electorate	0.228 (0.000)	0.226 (0.002)	0.108
60-69 years old share of electorate	0.098 (0.000)	0.091 (0.001)	0.000
Illiterate share of electorate	0.086 (0.000)	0.060 (0.002)	0.000
Literate share of electorate	0.533 (0.001)	0.483 (0.004)	0.000
Complete elementary school share of electorate	0.228 (0.000)	0.258 (0.002)	0.000
Complete high school share of electorate	0.127 (0.000)	0.166 (0.003)	0.000
Married share of electorate	0.321 (0.001)	0.327 (0.003)	0.062
Divorced share of electorate	0.021 (0.000)	0.028 (0.001)	0.000
Single share of electorate	0.639 (0.001)	0.626 (0.003)	0.000
N	44411	1192	

Table C7: Polling stations characteristics: balance test. Control group: no signal within 50km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get no signal (control), conditional on treated and control being up to 50 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 5km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.595 (0.016)	0.476 (0.052)	0.052
PT vote share in 2010 (round 2)	0.662 (0.016)	0.572 (0.050)	0.137
Distance to closest sponsored AM station	11.368 (1.282)	20.601 (5.626)	0.066
Total electorate	1478.876 (77.693)	2164.882 (451.384)	0.029
Male share of electorate	0.484 (0.004)	0.466 (0.008)	0.245
16-17 years old share of electorate	0.017 (0.001)	0.019 (0.004)	0.700
18-24 years old share of electorate	0.173 (0.005)	0.218 (0.031)	0.032
25-34 years old share of electorate	0.244 (0.006)	0.226 (0.016)	0.472
35-44 years old share of electorate	0.199 (0.004)	0.199 (0.009)	0.963
45-59 years old share of electorate	0.221 (0.004)	0.205 (0.011)	0.269
60-69 years old share of electorate	0.085 (0.002)	0.084 (0.007)	0.854
Illiterate share of electorate	0.091 (0.005)	0.064 (0.016)	0.166
Incomplete elementary school share of electorate	0.435 (0.010)	0.367 (0.037)	0.078
Complete elementary school share of electorate	0.206 (0.005)	0.230 (0.021)	0.197
Complete high school share of electorate	0.205 (0.009)	0.262 (0.032)	0.090
Married share of electorate	0.335 (0.006)	0.324 (0.014)	0.598
Divorced share of electorate	0.027 (0.002)	0.037 (0.006)	0.141
Single share of electorate	0.618 (0.007)	0.616 (0.020)	0.939
N	235	17	

Table C8: Polling stations characteristics: balance test. Control group: non-sponsored signal within 5km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 5 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 10km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.543 (0.012)	0.474 (0.032)	0.085
PT vote share in 2010 (round 2)	0.612 (0.012)	0.537 (0.032)	0.062
Distance to closest sponsored AM station	12.439 (0.933)	15.658 (3.191)	0.306
Total electorate	1563.846 (66.093)	2048.353 (280.500)	0.034
Male share of electorate	0.486 (0.003)	0.482 (0.006)	0.637
16-17 years old share of electorate	0.016 (0.001)	0.016 (0.002)	0.802
18-24 years old share of electorate	0.168 (0.005)	0.195 (0.019)	0.085
25-34 years old share of electorate	0.236 (0.005)	0.216 (0.010)	0.211
35-44 years old share of electorate	0.197 (0.003)	0.195 (0.008)	0.836
45-59 years old share of electorate	0.228 (0.003)	0.220 (0.008)	0.423
60-69 years old share of electorate	0.089 (0.002)	0.094 (0.006)	0.465
Illiterate share of electorate	0.077 (0.004)	0.056 (0.009)	0.098
Literate share of electorate	0.439 (0.008)	0.421 (0.025)	0.496
Complete elementary school share of electorate	0.224 (0.004)	0.244 (0.014)	0.138
Complete high school share of electorate	0.201 (0.007)	0.219 (0.021)	0.410
Married share of electorate	0.340 (0.005)	0.343 (0.013)	0.869
Divorced share of electorate	0.029 (0.001)	0.038 (0.004)	0.055
Single share of electorate	0.610 (0.006)	0.594 (0.017)	0.410
N	346	34	

Table C9: Polling stations characteristics: balance test. Control group: non-sponsored signal within 10km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 10 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 15km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.502 (0.008)	0.464 (0.023)	0.148
PT vote share in 2010 (round 2)	0.574 (0.008)	0.522 (0.024)	0.048
Distance to closest sponsored AM station	13.754 (0.516)	14.583 (1.814)	0.644
Total electorate	1659.916 (45.286)	1688.000 (171.838)	0.860
Male share of electorate	0.488 (0.002)	0.487 (0.004)	0.936
16-17 years old share of electorate	0.015 (0.001)	0.015 (0.002)	0.751
18-24 years old share of electorate	0.167 (0.003)	0.191 (0.013)	0.032
25-34 years old share of electorate	0.232 (0.003)	0.222 (0.008)	0.340
35-44 years old share of electorate	0.195 (0.002)	0.185 (0.006)	0.147
45-59 years old share of electorate	0.229 (0.002)	0.225 (0.007)	0.620
60-69 years old share of electorate	0.092 (0.001)	0.097 (0.005)	0.313
Illiterate share of electorate	0.069 (0.002)	0.063 (0.007)	0.449
Literate share of electorate	0.464 (0.005)	0.452 (0.017)	0.490
Complete elementary school share of electorate	0.239 (0.003)	0.244 (0.011)	0.609
Complete high school share of electorate	0.181 (0.004)	0.195 (0.014)	0.322
Married share of electorate	0.328 (0.003)	0.341 (0.012)	0.267
Divorced share of electorate	0.028 (0.001)	0.032 (0.003)	0.191
Single share of electorate	0.623 (0.004)	0.604 (0.014)	0.145
N	748	68	

Table C10: Polling stations characteristics: balance test. Control group: non-sponsored signal within 15km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 15 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 20km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.504 (0.005)	0.464 (0.019)	0.038
PT vote share in 2010 (round 2)	0.569 (0.005)	0.521 (0.020)	0.013
Distance to closest sponsored AM station	14.711 (0.313)	13.891 (1.198)	0.505
Total electorate	1564.592 (31.455)	1583.063 (126.705)	0.881
Male share of electorate	0.489 (0.001)	0.486 (0.003)	0.449
16-17 years old share of electorate	0.015 (0.001)	0.017 (0.002)	0.316
18-24 years old share of electorate	0.164 (0.002)	0.182 (0.009)	0.038
25-34 years old share of electorate	0.232 (0.002)	0.228 (0.007)	0.662
35-44 years old share of electorate	0.191 (0.001)	0.187 (0.005)	0.455
45-59 years old share of electorate	0.227 (0.002)	0.224 (0.006)	0.589
60-69 years old share of electorate	0.094 (0.001)	0.094 (0.004)	0.852
Illiterate share of electorate	0.071 (0.002)	0.060 (0.005)	0.067
Literate share of electorate	0.484 (0.003)	0.458 (0.013)	0.037
Complete elementary school share of electorate	0.244 (0.002)	0.257 (0.008)	0.114
Complete high school share of electorate	0.163 (0.002)	0.184 (0.010)	0.030
Married share of electorate	0.320 (0.002)	0.335 (0.010)	0.111
Divorced share of electorate	0.026 (0.000)	0.030 (0.002)	0.023
Single share of electorate	0.635 (0.003)	0.613 (0.011)	0.043
N	1612	112	

Table C11: Polling stations characteristics: balance test. Control group: non-sponsored signal within 20km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 20 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 25km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.508 (0.004)	0.475 (0.015)	0.037
PT vote share in 2010 (round 2)	0.567 (0.004)	0.532 (0.015)	0.032
Distance to closest sponsored AM station	15.877 (0.221)	13.273 (0.911)	0.008
Total electorate	1499.999 (23.041)	1566.503 (107.585)	0.517
Male share of electorate	0.492 (0.001)	0.489 (0.003)	0.282
16-17 years old share of electorate	0.015 (0.000)	0.016 (0.001)	0.616
18-24 years old share of electorate	0.162 (0.002)	0.179 (0.007)	0.016
25-34 years old share of electorate	0.227 (0.001)	0.228 (0.005)	0.897
35-44 years old share of electorate	0.192 (0.001)	0.191 (0.004)	0.982
45-59 years old share of electorate	0.229 (0.001)	0.224 (0.005)	0.404
60-69 years old share of electorate	0.097 (0.001)	0.093 (0.003)	0.267
Illiterate share of electorate	0.076 (0.001)	0.059 (0.004)	0.001
Literate share of electorate	0.505 (0.002)	0.470 (0.011)	0.001
Complete elementary school share of electorate	0.240 (0.001)	0.257 (0.007)	0.007
Complete high school share of electorate	0.147 (0.002)	0.176 (0.008)	0.000
Married share of electorate	0.324 (0.002)	0.338 (0.008)	0.099
Divorced share of electorate	0.024 (0.000)	0.030 (0.002)	0.000
Single share of electorate	0.633 (0.002)	0.612 (0.009)	0.025
N	2970	159	

Table C12: Polling stations characteristics: balance test. Control group: non-sponsored signal within 25km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 25 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 30km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.509 (0.003)	0.469 (0.012)	0.002
PT vote share in 2010 (round 2)	0.565 (0.003)	0.522 (0.012)	0.001
Distance to closest sponsored AM station	16.905 (0.176)	13.282 (0.784)	0.000
Total electorate	1536.916 (17.860)	1671.102 (89.767)	0.119
Male share of electorate	0.492 (0.001)	0.490 (0.002)	0.390
16-17 years old share of electorate	0.015 (0.000)	0.017 (0.002)	0.365
18-24 years old share of electorate	0.163 (0.001)	0.179 (0.007)	0.004
25-34 years old share of electorate	0.227 (0.001)	0.225 (0.005)	0.661
35-44 years old share of electorate	0.191 (0.001)	0.190 (0.004)	0.841
45-59 years old share of electorate	0.228 (0.001)	0.227 (0.004)	0.756
60-69 years old share of electorate	0.097 (0.001)	0.094 (0.003)	0.195
Illiterate share of electorate	0.077 (0.001)	0.057 (0.003)	0.000
Literate share of electorate	0.512 (0.002)	0.479 (0.008)	0.000
Complete elementary school share of electorate	0.237 (0.001)	0.258 (0.005)	0.000
Complete high school share of electorate	0.142 (0.001)	0.170 (0.006)	0.000
Married share of electorate	0.322 (0.001)	0.335 (0.007)	0.072
Divorced share of electorate	0.024 (0.000)	0.029 (0.001)	0.000
Single share of electorate	0.635 (0.002)	0.617 (0.007)	0.018
N	5206	235	

Table C13: Polling stations characteristics: balance test. Control group: non-sponsored signal within 30km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 30 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 40km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.517 (0.002)	0.468 (0.010)	0.000
PT vote share in 2010 (round 2)	0.571 (0.002)	0.526 (0.010)	0.000
Distance to closest sponsored AM station	18.910 (0.125)	12.524 (0.588)	0.000
Total electorate	1508.749 (11.847)	1694.997 (75.435)	0.007
Male share of electorate	0.494 (0.000)	0.493 (0.003)	0.580
16-17 years old share of electorate	0.016 (0.000)	0.017 (0.001)	0.355
18-24 years old share of electorate	0.163 (0.001)	0.189 (0.006)	0.000
25-34 years old share of electorate	0.225 (0.001)	0.223 (0.004)	0.512
35-44 years old share of electorate	0.190 (0.001)	0.187 (0.003)	0.238
45-59 years old share of electorate	0.228 (0.001)	0.225 (0.003)	0.297
60-69 years old share of electorate	0.097 (0.000)	0.093 (0.002)	0.028
Illiterate share of electorate	0.079 (0.001)	0.057 (0.003)	0.000
Literate share of electorate	0.521 (0.001)	0.477 (0.007)	0.000
Complete elementary school share of electorate	0.235 (0.001)	0.262 (0.005)	0.000
Complete high school share of electorate	0.136 (0.001)	0.168 (0.005)	0.000
Married share of electorate	0.321 (0.001)	0.330 (0.005)	0.124
Divorced share of electorate	0.022 (0.000)	0.029 (0.001)	0.000
Single share of electorate	0.638 (0.001)	0.622 (0.006)	0.011
N	12364	380	

Table C14: Polling stations characteristics: balance test. Control group: non-sponsored signal within 40km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 40 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 50km		diff. p-value
	Non-sponsored	Sponsored	
PT vote share in 2010 (round 1)	0.535 (0.001)	0.468 (0.008)	0.000
PT vote share in 2010 (round 2)	0.589 (0.001)	0.535 (0.008)	0.000
Distance to closest sponsored AM station	20.125 (0.085)	12.279 (0.506)	0.000
Total electorate	1527.545 (8.021)	1725.618 (62.079)	0.000
Male share of electorate	0.493 (0.000)	0.491 (0.002)	0.137
16-17 years old share of electorate	0.016 (0.000)	0.016 (0.001)	0.836
18-24 years old share of electorate	0.162 (0.001)	0.184 (0.005)	0.000
25-34 years old share of electorate	0.225 (0.000)	0.221 (0.003)	0.215
35-44 years old share of electorate	0.191 (0.000)	0.190 (0.002)	0.610
45-59 years old share of electorate	0.228 (0.000)	0.227 (0.003)	0.765
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.002)	0.001
Illiterate share of electorate	0.084 (0.000)	0.058 (0.002)	0.000
Literate share of electorate	0.528 (0.001)	0.479 (0.006)	0.000
Complete elementary school share of electorate	0.230 (0.000)	0.261 (0.004)	0.000
Complete high school share of electorate	0.131 (0.000)	0.167 (0.004)	0.000
Married share of electorate	0.320 (0.001)	0.330 (0.004)	0.026
Divorced share of electorate	0.022 (0.000)	0.029 (0.001)	0.000
Single share of electorate	0.640 (0.001)	0.622 (0.005)	0.000
N	27045	571	

Table C15: Polling stations characteristics: balance test. Control group: non-sponsored signal within 50km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal (control), conditional on treated and control being up to 50 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 5km		
	Both	Sponsored	diff. p-value
PT vote share in 2010 (round 1)	0.512 (0.007)	0.512 (0.020)	1.000
PT vote share in 2010 (round 2)	0.577 (0.007)	0.578 (0.019)	0.996
Distance to closest sponsored AM station	13.920 (0.782)	22.449 (2.801)	0.001
Total electorate	1782.474 (43.874)	1719.782 (138.983)	0.658
Male share of electorate	0.480 (0.001)	0.479 (0.004)	0.831
16-17 years old share of electorate	0.017 (0.000)	0.020 (0.003)	0.046
18-24 years old share of electorate	0.174 (0.003)	0.200 (0.013)	0.011
25-34 years old share of electorate	0.234 (0.003)	0.233 (0.008)	0.922
35-44 years old share of electorate	0.193 (0.002)	0.187 (0.006)	0.397
45-59 years old share of electorate	0.223 (0.002)	0.207 (0.006)	0.020
60-69 years old share of electorate	0.088 (0.001)	0.084 (0.003)	0.290
Illiterate share of electorate	0.074 (0.002)	0.068 (0.006)	0.327
Literate share of electorate	0.461 (0.005)	0.471 (0.014)	0.518
Complete elementary school share of electorate	0.237 (0.002)	0.245 (0.008)	0.329
Complete high school share of electorate	0.181 (0.004)	0.174 (0.011)	0.539
Married share of electorate	0.306 (0.003)	0.306 (0.010)	0.994
Divorced share of electorate	0.025 (0.001)	0.025 (0.002)	0.996
Single share of electorate	0.650 (0.003)	0.650 (0.011)	0.952
N	948	101	

Table C16: Polling stations characteristics: balance test. Control group: non-sponsored signal or no signal within 5km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 5 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 10km		
	Both	Sponsored	diff. p-value
PT vote share in 2010 (round 1)	0.501 (0.005)	0.502 (0.015)	0.993
PT vote share in 2010 (round 2)	0.567 (0.005)	0.556 (0.015)	0.532
Distance to closest sponsored AM station	15.101 (0.541)	19.520 (1.730)	0.009
Total electorate	1722.254 (35.072)	1678.833 (105.021)	0.688
Male share of electorate	0.482 (0.001)	0.485 (0.003)	0.401
16-17 years old share of electorate	0.016 (0.000)	0.018 (0.002)	0.359
18-24 years old share of electorate	0.170 (0.002)	0.184 (0.008)	0.056
25-34 years old share of electorate	0.231 (0.002)	0.231 (0.006)	0.978
35-44 years old share of electorate	0.193 (0.002)	0.188 (0.004)	0.277
45-59 years old share of electorate	0.227 (0.002)	0.218 (0.004)	0.074
60-69 years old share of electorate	0.091 (0.001)	0.091 (0.003)	0.900
Illiterate share of electorate	0.071 (0.002)	0.068 (0.004)	0.441
Literate share of electorate	0.474 (0.004)	0.482 (0.010)	0.480
Complete elementary school share of electorate	0.237 (0.002)	0.242 (0.006)	0.395
Complete high school share of electorate	0.175 (0.003)	0.169 (0.008)	0.490
Married share of electorate	0.312 (0.003)	0.326 (0.008)	0.085
Divorced share of electorate	0.026 (0.001)	0.026 (0.001)	0.779
Single share of electorate	0.643 (0.003)	0.628 (0.009)	0.107
N	1474	174	

Table C17: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 10km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 10 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 15km		diff. p-value
	Both	Sponsored	
PT vote share in 2010 (round 1)	0.510 (0.004)	0.507 (0.010)	0.775
PT vote share in 2010 (round 2)	0.572 (0.004)	0.561 (0.010)	0.344
Distance to closest sponsored AM station	16.865 (0.335)	17.549 (1.028)	0.509
Total electorate	1664.631 (24.934)	1635.117 (72.540)	0.700
Male share of electorate	0.488 (0.001)	0.491 (0.002)	0.188
16-17 years old share of electorate	0.016 (0.000)	0.016 (0.001)	0.883
18-24 years old share of electorate	0.167 (0.002)	0.174 (0.005)	0.124
25-34 years old share of electorate	0.229 (0.001)	0.227 (0.004)	0.622
35-44 years old share of electorate	0.192 (0.001)	0.187 (0.003)	0.138
45-59 years old share of electorate	0.228 (0.001)	0.227 (0.003)	0.748
60-69 years old share of electorate	0.094 (0.001)	0.095 (0.002)	0.813
Illiterate share of electorate	0.076 (0.001)	0.071 (0.003)	0.229
Literate share of electorate	0.493 (0.003)	0.496 (0.007)	0.750
Complete elementary school share of electorate	0.234 (0.001)	0.243 (0.004)	0.033
Complete high school share of electorate	0.161 (0.002)	0.157 (0.005)	0.493
Married share of electorate	0.318 (0.002)	0.335 (0.006)	0.006
Divorced share of electorate	0.025 (0.000)	0.025 (0.001)	0.902
Single share of electorate	0.637 (0.002)	0.621 (0.006)	0.015
N	2798	332	

Table C18: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 15km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 15 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 20km		
	Both	Sponsored	diff. p-value
PT vote share in 2010 (round 1)	0.516 (0.003)	0.492 (0.009)	0.009
PT vote share in 2010 (round 2)	0.574 (0.003)	0.545 (0.009)	0.002
Distance to closest sponsored AM station	17.922 (0.222)	16.482 (0.756)	0.050
Total electorate	1603.443 (18.234)	1627.881 (58.498)	0.684
Male share of electorate	0.490 (0.001)	0.492 (0.002)	0.390
16-17 years old share of electorate	0.016 (0.000)	0.016 (0.001)	0.742
18-24 years old share of electorate	0.163 (0.001)	0.176 (0.004)	0.001
25-34 years old share of electorate	0.228 (0.001)	0.227 (0.003)	0.973
35-44 years old share of electorate	0.190 (0.001)	0.188 (0.002)	0.413
45-59 years old share of electorate	0.228 (0.001)	0.225 (0.003)	0.308
60-69 years old share of electorate	0.096 (0.001)	0.094 (0.002)	0.205
Illiterate share of electorate	0.078 (0.001)	0.067 (0.002)	0.000
Literate share of electorate	0.509 (0.002)	0.498 (0.006)	0.063
Complete elementary school share of electorate	0.234 (0.001)	0.251 (0.004)	0.000
Complete high school share of electorate	0.148 (0.001)	0.155 (0.004)	0.130
Married share of electorate	0.321 (0.001)	0.335 (0.005)	0.002
Divorced share of electorate	0.023 (0.000)	0.025 (0.001)	0.040
Single share of electorate	0.637 (0.002)	0.621 (0.005)	0.002
N	5109	523	

Table C19: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 20km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 20 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 25km		
	Both	Sponsored	diff. p-value
PT vote share in 2010 (round 1)	0.528 (0.002)	0.492 (0.008)	0.000
PT vote share in 2010 (round 2)	0.581 (0.002)	0.545 (0.008)	0.000
Distance to closest sponsored AM station	19.082 (0.168)	16.472 (0.664)	0.000
Total electorate	1541.218 (13.924)	1645.247 (50.502)	0.042
Male share of electorate	0.493 (0.000)	0.491 (0.002)	0.409
16-17 years old share of electorate	0.016 (0.000)	0.016 (0.001)	0.777
18-24 years old share of electorate	0.160 (0.001)	0.176 (0.004)	0.000
25-34 years old share of electorate	0.226 (0.001)	0.229 (0.003)	0.291
35-44 years old share of electorate	0.190 (0.001)	0.190 (0.002)	0.795
45-59 years old share of electorate	0.229 (0.001)	0.225 (0.002)	0.078
60-69 years old share of electorate	0.098 (0.000)	0.093 (0.001)	0.000
Illiterate share of electorate	0.081 (0.001)	0.066 (0.002)	0.000
Literate share of electorate	0.522 (0.001)	0.496 (0.005)	0.000
Complete elementary school share of electorate	0.231 (0.001)	0.252 (0.003)	0.000
Complete high school share of electorate	0.137 (0.001)	0.156 (0.004)	0.000
Married share of electorate	0.324 (0.001)	0.329 (0.004)	0.232
Divorced share of electorate	0.022 (0.000)	0.026 (0.001)	0.000
Single share of electorate	0.636 (0.001)	0.627 (0.004)	0.062
N	8546	689	

Table C20: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 25km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 25 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 30km		diff. p-value
	Both	Sponsored	
PT vote share in 2010 (round 1)	0.530 (0.002)	0.486 (0.007)	0.000
PT vote share in 2010 (round 2)	0.582 (0.002)	0.540 (0.007)	0.000
Distance to sponsored AM station	19.844 (0.132)	15.845 (0.571)	0.000
Total electorate	1549.276 (11.215)	1643.010 (45.446)	0.040
Male share of electorate	0.493 (0.000)	0.492 (0.002)	0.439
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.566
18-24 years old share of electorate	0.160 (0.001)	0.179 (0.004)	0.000
25-34 years old share of electorate	0.226 (0.001)	0.228 (0.003)	0.474
35-44 years old share of electorate	0.190 (0.000)	0.190 (0.002)	0.711
45-59 years old share of electorate	0.229 (0.001)	0.225 (0.002)	0.039
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.001)	0.000
Illiterate share of electorate	0.082 (0.001)	0.064 (0.002)	0.000
Literate share of electorate	0.526 (0.001)	0.491 (0.005)	0.000
Complete elementary school share of electorate	0.231 (0.001)	0.256 (0.003)	0.000
Complete high school share of electorate	0.134 (0.001)	0.158 (0.003)	0.000
Married share of electorate	0.324 (0.001)	0.327 (0.004)	0.511
Divorced share of electorate	0.022 (0.000)	0.026 (0.001)	0.000
Single share of electorate	0.635 (0.001)	0.629 (0.004)	0.115
N	13317	857	

Table C21: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 30km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 30 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 40km		
	Both	Sponsored	diff. p-value
PT vote share in 2010 (round 1)	0.536 (0.001)	0.476 (0.006)	0.000
PT vote share in 2010 (round 2)	0.586 (0.001)	0.534 (0.006)	0.000
Distance to closest sponsored AM station	21.222 (0.095)	14.871 (0.507)	0.000
Total electorate	1534.764 (7.943)	1714.480 (42.487)	0.000
Male share of electorate	0.494 (0.000)	0.493 (0.002)	0.199
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.071
18-24 years old share of electorate	0.160 (0.001)	0.176 (0.003)	0.000
25-34 years old share of electorate	0.226 (0.000)	0.228 (0.002)	0.405
35-44 years old share of electorate	0.190 (0.000)	0.192 (0.002)	0.335
45-59 years old share of electorate	0.228 (0.000)	0.226 (0.002)	0.222
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.001)	0.000
Illiterate share of electorate	0.085 (0.000)	0.062 (0.002)	0.000
Literate share of electorate	0.531 (0.001)	0.487 (0.004)	0.000
Complete elementary school share of electorate	0.228 (0.000)	0.257 (0.003)	0.000
Complete high school share of electorate	0.130 (0.000)	0.162 (0.003)	0.000
Married share of electorate	0.322 (0.001)	0.328 (0.003)	0.065
Divorced share of electorate	0.021 (0.000)	0.027 (0.001)	0.000
Single share of electorate	0.639 (0.001)	0.626 (0.003)	0.001
N	26804	1106	

Table C22: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 40km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 40 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

	Within 50km		diff. p-value
	Both	Sponsored	
PT vote share in 2010 (round 1)	0.539 (0.001)	0.470 (0.006)	0.000
PT vote share in 2010 (round 2)	0.590 (0.001)	0.531 (0.006)	0.000
Distance to closest sponsored AM station	22.107 (0.074)	14.787 (0.506)	0.000
Total electorate	1515.133 (6.064)	1750.035 (40.744)	0.000
Male share of electorate	0.495 (0.000)	0.492 (0.002)	0.012
16-17 years old share of electorate	0.016 (0.000)	0.015 (0.001)	0.026
18-24 years old share of electorate	0.160 (0.000)	0.176 (0.003)	0.000
25-34 years old share of electorate	0.225 (0.000)	0.230 (0.002)	0.024
35-44 years old share of electorate	0.191 (0.000)	0.192 (0.002)	0.407
45-59 years old share of electorate	0.228 (0.000)	0.226 (0.002)	0.175
60-69 years old share of electorate	0.098 (0.000)	0.092 (0.001)	0.000
Illiterate share of electorate	0.086 (0.000)	0.059 (0.002)	0.000
Literate share of electorate	0.533 (0.001)	0.483 (0.004)	0.000
Complete elementary school share of electorate	0.228 (0.000)	0.258 (0.002)	0.000
Complete high school share of electorate	0.128 (0.000)	0.166 (0.003)	0.000
Married share of electorate	0.321 (0.001)	0.328 (0.003)	0.038
Divorced share of electorate	0.021 (0.000)	0.028 (0.001)	0.000
Single share of electorate	0.640 (0.001)	0.625 (0.003)	0.000
N	44886	1232	

Table C23: Polling stations characteristics: balance test. Control group: non-sponsored or no signal within 50km

Notes: This table compares characteristics of polling stations that get any sponsored signal (treated) to those of ones that get non-sponsored signal or no signal (control), conditional on treated and control being up to 50 kilometers apart from each other. For each treated, there may be more than one associated control. The last column report the p-value of the mean difference t-test. The variables are past PT vote share (2010, rounds 1 and 2), polling station distance from closest sponsored AM radio station's antenna, total electorate and polling station's electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school (or incomplete high school) and complete high school (or incomplete college), married, divorced and single.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0456 (0.0216)**	0.0027 (0.0148)	-0.0210 (0.0169)	0.0059 (0.0114)	-0.0130 (0.0119)	0.0012 (0.0108)	-0.0147 (0.0096)	-0.0044 (0.0080)
Observations	252	251	380	379	816	814	1,724	1,721
R-squared	0.8303	0.9625	0.8360	0.9557	0.8203	0.9278	0.7999	0.8971
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0116 (0.0089)	0.0021 (0.0069)	-0.0149 (0.0074)**	0.0008 (0.0060)	-0.0224 (0.0061)***	-0.0030 (0.0049)	-0.0359 (0.0052)***	-0.0082 (0.0042)*
Observations	3,129	3,126	5,441	5,437	12,744	12,732	27,616	27,591
R-squared	0.7515	0.8580	0.7373	0.8397	0.7086	0.8276	0.6751	0.8027
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C24: Polling stations that get any sponsored signal. Control group: polling stations that get non-sponsored signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0163 (0.0102)	-0.0039 (0.0079)	-0.0137 (0.0086)	-0.0027 (0.0069)	-0.0076 (0.0072)	-0.0035 (0.0056)	-0.0113 (0.0058)*	0.0011 (0.0045)
Observations	889	884	1,367	1,362	2,599	2,594	5,015	5,009
R-squared	0.8089	0.9285	0.7910	0.8987	0.7766	0.8734	0.7658	0.8644
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0150 (0.0051)***	0.0003 (0.0039)	-0.0232 (0.0046)***	-0.0037 (0.0036)	-0.0301 (0.0039)***	-0.0043 (0.0031)	-0.0319 (0.0038)***	-0.0037 (0.0029)
Observations	8,463	8,457	13,448	13,437	27,326	27,303	45,603	45,572
R-squared	0.7456	0.8479	0.7295	0.8395	0.7042	0.8202	0.6757	0.8005
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C25: Polling stations that get any sponsored signal. Control group: polling stations that get no signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0227 (0.0095)**	-0.0043 (0.0072)	-0.0157 (0.0078)**	-0.0009 (0.0062)	-0.0085 (0.0064)	-0.0006 (0.0050)	-0.0132 (0.0055)**	0.0007 (0.0042)
Observations	1,049	1,043	1,648	1,642	3,130	3,124	5,632	5,625
R-squared	0.7958	0.9290	0.7859	0.9047	0.7774	0.8794	0.7618	0.8645
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0182 (0.0048)***	-0.0014 (0.0037)	-0.0247 (0.0044)***	-0.0041 (0.0034)	-0.0300 (0.0039)***	-0.0038 (0.0030)	-0.0327 (0.0037)***	-0.0046 (0.0029)
Observations	9,235	9,228	14,174	14,163	27,910	27,886	46,118	46,080
R-squared	0.7428	0.8473	0.7300	0.8387	0.7028	0.8190	0.6762	0.8005
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C26: Polling stations that get any sponsored signal. Control group: polling stations that get non-sponsored or no signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored or no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	-0.0855 (0.0283)***	0.0007 (0.0539)	-0.0247 (0.0225)	-0.0101 (0.0205)	-0.0122 (0.0136)	-0.0063 (0.0119)	-0.0127 (0.0115)	-0.0004 (0.0091)
Observations	37	37	140	140	502	501	1,185	1,183
R-squared	0.8511	0.9655	0.7962	0.9103	0.8044	0.9066	0.7793	0.8861
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	-0.0081 (0.0107)	0.0074 (0.0080)	-0.0149 (0.0085)*	0.0025 (0.0072)	-0.0222 (0.0071)***	-0.0021 (0.0058)	-0.0382 (0.0062)***	-0.0095 (0.0051)*
Observations	2,167	2,165	3,861	3,859	9,275	9,266	20,122	20,102
R-squared	0.7348	0.8614	0.7193	0.8320	0.6976	0.8242	0.6651	0.7960
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C27: Polling stations that get sponsored signal from other municipality. Control group: polling stations that get non-sponsored signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	0.0109 (0.0193)	0.0164 (0.0123)	-0.0013 (0.0123)	0.0002 (0.0098)	0.0044 (0.0096)	-0.0031 (0.0076)	-0.0036 (0.0076)	0.0028 (0.0058)
Observations	131	129	369	367	1,161	1,159	2,721	2,718
R-squared	0.7443	0.9594	0.7926	0.9086	0.7911	0.8706	0.7848	0.8660
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	-0.0101 (0.0066)	0.0013 (0.0050)	-0.0202 (0.0057)***	-0.0031 (0.0044)	-0.0294 (0.0048)***	-0.0032 (0.0037)	-0.0300 (0.0045)***	-0.0015 (0.0034)
Observations	4,934	4,931	8,263	8,257	17,636	17,620	30,122	30,102
R-squared	0.7568	0.8495	0.7337	0.8364	0.6981	0.8134	0.6710	0.7940
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C28: Polling stations that get sponsored signal from other municipality. Control group: polling stations that get no signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	-0.0094 (0.0175)	0.0030 (0.0092)	-0.0071 (0.0109)	-0.0014 (0.0081)	0.0017 (0.0083)	-0.0009 (0.0066)	-0.0067 (0.0069)	0.0024 (0.0053)
Observations	168	166	503	501	1,512	1,510	3,226	3,223
R-squared	0.7606	0.9513	0.8063	0.9094	0.7970	0.8761	0.7778	0.8649
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal from other municipality	-0.0142 (0.0062)**	-0.0003 (0.0047)	-0.0223 (0.0054)***	-0.0040 (0.0042)	-0.0292 (0.0047)***	-0.0028 (0.0036)	-0.0312 (0.0044)***	-0.0027 (0.0034)
Observations	5,520	5,517	8,800	8,794	18,101	18,084	30,600	30,575
R-squared	0.7517	0.8492	0.7338	0.8375	0.6964	0.8129	0.6711	0.7939
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C29: Polling stations that get sponsored signal from other municipality. Control group: polling stations that get non-sponsored or no signal

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored or no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0216 (0.0182)	0.0085 (0.0103)	-0.0124 (0.0135)	0.0037 (0.0066)	-0.0055 (0.0075)	-0.0017 (0.0063)	-0.0057 (0.0050)	0.0004 (0.0041)
Observations	252	251	380	379	816	814	1,724	1,721
R-squared	0.8291	0.9626	0.8359	0.9557	0.8202	0.9278	0.7998	0.8971
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0064 (0.0029)**	0.0023 (0.0023)	-0.0071 (0.0020)***	-0.0002 (0.0015)	-0.0072 (0.0016)***	-0.0023 (0.0011)**	-0.0078 (0.0011)***	-0.0018 (0.0009)**
Observations	3,129	3,126	5,441	5,437	12,744	12,732	27,616	27,591
R-squared	0.7517	0.8580	0.7376	0.8397	0.7089	0.8277	0.6751	0.8027
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C30: Polling stations that get any sponsored signal and how many signals get. Control group: polling stations that get non-sponsored signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0134 (0.0101)	-0.0026 (0.0072)	-0.0103 (0.0076)	-0.0015 (0.0053)	-0.0034 (0.0045)	-0.0037 (0.0035)	-0.0049 (0.0028)*	0.0001 (0.0019)
Observations	889	884	1,367	1,362	2,599	2,594	5,015	5,009
R-squared	0.8088	0.9285	0.7909	0.8987	0.7766	0.8734	0.7658	0.8644
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0072 (0.0020)***	-0.0001 (0.0013)	-0.0075 (0.0014)***	-0.0014 (0.0009)	-0.0076 (0.0010)***	-0.0012 (0.0007)*	-0.0064 (0.0008)***	-0.0003 (0.0006)
Observations	8,463	8,457	13,448	13,437	27,326	27,303	45,603	45,572
R-squared	0.7459	0.8479	0.7296	0.8395	0.7042	0.8202	0.6756	0.8004
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C31: Polling stations that get any sponsored signal and how many signals get. Control group: polling stations that get no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0190 (0.0089)**	-0.0024 (0.0063)	-0.0122 (0.0067)*	-0.0002 (0.0044)	-0.0037 (0.0041)	-0.0016 (0.0031)	-0.0053 (0.0027)**	0.0005 (0.0018)
Observations	1,049	1,043	1,648	1,642	3,130	3,124	5,632	5,625
R-squared	0.7957	0.9290	0.7859	0.9047	0.7774	0.8794	0.7618	0.8645
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals received by polling station	-0.0082 (0.0018)***	-0.0005 (0.0012)	-0.0078 (0.0013)***	-0.0014 (0.0008)*	-0.0073 (0.0010)***	-0.0010 (0.0007)	-0.0061 (0.0008)***	-0.0005 (0.0006)
Observations	9,235	9,228	14,174	14,163	27,910	27,886	46,118	46,080
R-squared	0.7431	0.8473	0.7301	0.8387	0.7028	0.8191	0.6760	0.8005
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C32: Polling stations that get any sponsored signal and how many signals get. Control group: polling stations that get non-sponsored or no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored or no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	-0.0320 (0.0109)***	0.0017 (0.0194)	-0.0125 (0.0100)	-0.0062 (0.0068)	-0.0068 (0.0053)	-0.0073 (0.0041)*	-0.0052 (0.0046)	-0.0020 (0.0038)
Observations	37	37	140	140	502	501	1,185	1,183
R-squared	0.8484	0.9655	0.7987	0.9108	0.8049	0.9075	0.7793	0.8862
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	-0.0056 (0.0027)**	0.0014 (0.0021)	-0.0059 (0.0016)***	-0.0006 (0.0014)	-0.0038 (0.0015)***	-0.0016 (0.0011)	-0.0056 (0.0012)***	-0.0017 (0.0009)**
Observations	2,167	2,165	3,861	3,859	9,275	9,266	20,122	20,102
R-squared	0.7351	0.8613	0.7197	0.8320	0.6974	0.8243	0.6647	0.7960
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C33: Polling stations that get sponsored signal from other municipality and how many signals get. Control group: polling stations that get non-sponsored signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal(s) from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	0.0091 (0.0163)	0.0101 (0.0107)	0.0005 (0.0076)	0.0016 (0.0062)	0.0004 (0.0047)	-0.0035 (0.0039)	-0.0021 (0.0025)	-0.0003 (0.0020)
Observations	131	129	369	367	1,161	1,159	2,721	2,718
R-squared	0.7443	0.9590	0.7926	0.9086	0.7911	0.8707	0.7849	0.8660
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	-0.0040 (0.0017)**	-0.0002 (0.0014)	-0.0054 (0.0013)***	-0.0019 (0.0009)**	-0.0054 (0.0009)***	-0.0014 (0.0007)**	-0.0042 (0.0008)***	-0.0004 (0.0006)
Observations	4,934	4,931	8,263	8,257	17,636	17,620	30,122	30,102
R-squared	0.7569	0.8495	0.7338	0.8365	0.6978	0.8134	0.6707	0.7940
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C34: Polling stations that get sponsored signal from other municipality and how many signals get. Control group: polling stations that get no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal(s) from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	-0.0144 (0.0099)	-0.0038 (0.0060)	-0.0067 (0.0067)	-0.0009 (0.0041)	-0.0013 (0.0038)	-0.0027 (0.0030)	-0.0025 (0.0024)	-0.0001 (0.0019)
Observations	168	166	503	501	1,512	1,510	3,226	3,223
R-squared	0.7620	0.9514	0.8067	0.9094	0.7970	0.8762	0.7778	0.8649
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Number of sponsored signals from other municipality received by polling station	-0.0050 (0.0016)***	-0.0004 (0.0013)	-0.0055 (0.0012)***	-0.0018 (0.0009)**	-0.0049 (0.0009)***	-0.0011 (0.0007)*	-0.0039 (0.0008)***	-0.0004 (0.0006)
Observations	5,520	5,517	8,800	8,794	18,101	18,084	30,600	30,575
R-squared	0.7517	0.8492	0.7337	0.8375	0.6961	0.8129	0.6707	0.7939
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C35: Polling stations that get sponsored signal from other municipality and how many signals get. Control group: polling stations that get non-sponsored or no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the number of sponsored signals received. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored or no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal(s) from other municipality (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Mean Total cycle spending per capita (thousands)	0.0729 (0.4066)	0.3128 (0.2804)	-0.0017 (0.0003)***	-0.0012 (0.0004)***	-0.0002 (0.0010)	-0.0004 (0.0008)	-0.0003 (0.0009)	-0.0009 (0.0005)*
Observations	201	201	325	325	677	677	1,204	1,204
R-squared	0.7890	0.9560	0.7947	0.9431	0.7937	0.9146	0.7713	0.8879
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Mean Total cycle spending per capita (thousands)	-0.0002 (0.0008)	-0.0008 (0.0005)	-0.0005 (0.0009)	-0.0007 (0.0006)	-0.0015 (0.0005)***	-0.0023 (0.0005)***	-0.0033 (0.0012)***	-0.0032 (0.0010)***
Observations	1,827	1,827	2,673	2,673	4,646	4,646	7,938	7,938
R-squared	0.7597	0.8768	0.7570	0.8686	0.7321	0.8512	0.7287	0.8471
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C36: Polling stations that get any sponsored signal and how much is spent per capita. Control group: polling stations that get non-sponsored signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the mean spending per capita on all radio stations the polling station gets signal from. For each radio station, spending per capita equals the total 2011-2014 cycle spending in 2016 Brazilian reais over the corresponding polling station's electorate. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)							
Mean Total cycle spending per capita (thousands)	1.4344 (0.8578)	0.8784 (0.1920)***	1.3071 (0.8062)	0.9623 (0.2508)***	0.0009 (0.0015)	0.0016 (0.0019)	0.0007 (0.0010)	0.0002 (0.0010)
Observations	126	126	191	191	424	424	1,025	1,025
R-squared	0.9565	0.9997	0.9632	0.9989	0.9424	0.9804	0.8895	0.9469
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	5	5	10	10	15	15	20	20

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)							
Mean Total cycle spending per capita (thousands)	0.0007 (0.0004)*	-0.0006 (0.0006)	0.0003 (0.0007)	-0.0006 (0.0006)	-0.0015 (0.0006)***	-0.0022 (0.0005)***	-0.0032 (0.0013)**	-0.0030 (0.0010)***
Observations	1,626	1,626	2,631	2,631	4,862	4,862	8,165	8,165
R-squared	0.8663	0.9328	0.8301	0.9147	0.7907	0.8877	0.7582	0.8657
Round	1	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	N	Y
Max dist km	25	25	30	30	40	40	50	50

Table C37: Polling stations that get any sponsored signal, how much is spent per capita. Control group: polling stations that get no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the mean spending per capita on all radio stations the polling station gets signal from. For each radio station, spending per capita equals the total 2011-2014 cycle spending in 2016 Brazilian reais over the corresponding polling station's electorate. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	PT vote share in 2014 (round 1)						
Mean Total cycle spending per capita (thousands)	0.0729 (0.4842)	0.3128 (0.3339)	-0.0017 (0.0004)***	-0.0012 (0.0005)***	-0.0002 (0.0012)	-0.0004 (0.0009)	-0.0003 (0.0011)
Observations	285	285	469	469	949	949	1,632
R-squared	0.8423	0.9671	0.8543	0.9594	0.8533	0.9392	0.9183
Round	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	Y
Max dist km	5	5	10	10	15	15	20

(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	PT vote share in 2014 (round 1)						
Mean Total cycle spending per capita (thousands)	-0.0002 (0.0009)	-0.0008 (0.0006)	-0.0005 (0.0010)	-0.0007 (0.0007)	-0.0015 (0.0006)**	-0.0023 (0.0006)***	-0.0032 (0.0013)**
Observations	2,384	2,384	3,333	3,333	5,427	5,427	8,656
R-squared	0.8169	0.9069	0.8061	0.8951	0.7713	0.8734	0.8606
Round	1	1	1	1	1	1	1
FE sponsored	Y	Y	Y	Y	Y	Y	Y
PS controls	N	Y	N	Y	N	Y	Y
Max dist km	25	25	30	30	40	40	50

Table C38: Polling stations that get any sponsored signal and how much is spent per capita. Control group: polling stations that get non-sponsored or no signal.

Notes: This table reports the effect of receiving sponsored FM radio signal on PT's 2014 vote share using as treatment variable the mean spending per capita on all radio stations the polling station gets signal from. For each radio station, spending per capita equals the total 2011-2014 cycle spending in 2016 Brazilian reais over the corresponding polling station's electorate. Cross-section regressions on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Even columns include additional polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Columns 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, 13-14, 15-16 use as controls polling stations that get non-sponsored or no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal(s) (treated). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
					PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0544 (0.0350)	-0.0102 (0.0137)	-0.0159 (0.0126)	-0.0363 (0.0240)	-0.0081 (0.0112)	-0.0092 (0.0103)	-0.0259 (0.0173)	0.0013 (0.0087)	-0.0004 (0.0080)	-0.0140 (0.0140)	0.0046 (0.0068)	0.0019 (0.0064)
Observations	251	884	1,043	379	1,362	1,642	814	2,594	3,124	1,721	5,009	5,625
Round	1	1	1	1	1	1	1	1	1	1	1	1
Matching	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Max dist km	5	5	5	10	10	10	15	15	15	20	20	20
Control	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
					PT vote share in 2014 (round 1)							
=1 if polling station gets any sponsored signal	-0.0094 (0.0124)	-0.0001 (0.0060)	-0.0041 (0.0056)	0.0057 (0.0107)	-0.0042 (0.0053)	-0.0047 (0.0051)	0.0045 (0.0088)	-0.0048 (0.0049)	-0.0050 (0.0048)	-0.0064 (0.0073)	-0.0043 (0.0049)	-0.0047 (0.0048)
Observations	3,126	8,457	9,228	5,437	13,437	14,163	12,732	27,303	27,886	27,591	45,572	46,080
Round	1	1	1	1	1	1	1	1	1	1	1	1
Matching	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Max dist km	25	25	25	30	30	30	40	40	40	50	50	50
Control	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both

Table C39: Matching: polling stations that get any sponsored signal, all control groups and distances

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share using matching; on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Matching variables include polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school or incomplete high school and complete high school or incomplete college, married, divorced and single. Exact match is required on the region fixed effects of the corresponding regressions. Columns 1, 4, 7, 10, 13, 16, 19 and 22 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal (treated). Columns 2, 5, 8, 11, 14, 17, 20 and 23 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get any sponsored signal (treated). Columns 3, 6, 9, 12, 15, 18, 21 and 24 use both control groups. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
						PT vote share in 2014 (round 1)						
=1 if polling station gets any sponsored signal from other municipality	-0.0737 (0.0319)**	0.0152 (0.0235)	-0.0020 (0.0206)	-0.0412 (0.0253)	0.0152 (0.0153)	0.0003 (0.0136)	-0.0233 (0.0208)	0.0171 (0.0119)	0.0125 (0.0104)	-0.0021 (0.0151)	0.0139 (0.0091)	0.0092 (0.0084)
Observations	37	129	166	140	367	501	501	1,159	1,510	1,183	2,718	3,223
Round	1	1	1	1	1	1	1	1	1	1	1	1
Matching	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Max dist km	5	5	5	10	10	10	15	15	15	20	20	20
Control	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
						PT vote share in 2014 (round 1)						
=1 if polling station gets any sponsored signal from other municipality	0.0005 (0.0139)	0.0075 (0.0080)	0.0028 (0.0074)	0.0031 (0.0119)	-0.0006 (0.0070)	-0.0017 (0.0067)	0.0005 (0.0103)	-0.0004 (0.0063)	-0.0009 (0.0062)	-0.0152 (0.0090)*	-0.0021 (0.0062)	-0.0027 (0.0061)
Observations	2,165	4,931	5,517	3,859	8,257	8,794	9,266	17,620	18,084	20,102	30,102	30,575
Round	1	1	1	1	1	1	1	1	1	1	1	1
Matching	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Max dist km	25	25	25	30	30	30	40	40	40	50	50	50
Control	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both	Non sponsored	No signal	Both

Table C40: Matching: polling stations that get sponsored signal from other municipality, all control groups and distances

Notes: This table reports the effect of receiving at least one sponsored FM radio signal on PT's 2014 vote share using matching: on the polling station level using only 2014 election outcomes (PT's vote share) in the first round as dependent variable. Matching variables include polling stations controls, namely past vote share (2010), distance to closest sponsored AM radio's antenna, total electorate, electorate shares of male, 16-17, 18-24, 25-34, 35-44, 45-59 and 60-69 years old, illiterate, incomplete elementary school, complete, elementary school and complete high school or incomplete college, married, divorced and single. Exact match is required on the region fixed effects of the corresponding regressions. Columns 1, 4, 7, 10, 13, 16, 19 and 22 use as controls polling stations that get non-sponsored signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal from other municipality (treated). Columns 2, 5, 8, 11, 14, 17, 20 and 23 use as controls polling stations that get no signal within 5, 10, 15, 20, 25, 30, 40 and 50 km from polling stations that get sponsored signal from other municipality (treated). Columns 3, 6, 9, 12, 15, 18, 21 and 24 use both control groups. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.