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Punishing Mayors Who Fail the Test:

How do Voters Respond to Information on Educational Outcomes?

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Abstract*

This paper explores the role of providing information on the educational outcomes of municipal schools to voters on their electoral behavior in elections in which the incumbent mayor is running for reelection in Chile. We designed and implemented a randomized experiment whereby we sent 128,033 letters to voters with: (i) information on past test scores for local public schools (levels and changes), and (ii) different yardsticks, specifically the average and maximum test scores for comparable municipalities. We find that providing information of the relative performance affects turnout, which translates almost one-to-one into votes for the incumbent mayor, and produces spillovers on the election of local councilors. Results are concentrated in polling stations where most voters had already participated in previous elections. They are especially strong when educational results are bad and in stations that had stronger support for the incumbent mayor in the previous election, reducing turnout and thus votes for the incumbent. JEL Codes: D72, H75, I25.

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Introduction

The idea that citizens may electorally punish politicians who do a poor job is considered a key feature of democracy. However, poor governance abounds around the world, and it often does so with electoral support. Why this happens is still an open question in the literature (for a review of this see Olken and Pande 2013 and World Bank 2016). A relevant hypothesis for explaining poor governance is that citizens may lack information to adequately assess politicians. Several experimental papers study this hypothesis, often with a focus on corruption (e.g. Ferraz and Finan 2008, de Figuereido et al. 2011, Chong et al. 2015, Larreguy et al. 2020), and mainly in low-income countries (e.g. Banerjee et al. 2011, Humphreys and Weinstein 2012, Adida et al. 2016, Buntaine et al. 2018). The first motivation of this paper is to explore the electoral effect of providing voters with information about local governmental outcomes — in particular, educational outcomes — in an emerging country with a consolidated democracy where local governments oversee the management of public schools. To this end, we designed and implemented a randomized intervention, whereby we sent voters a letter containing information about education outcomes (test scores) in their municipality under the current mayor.[1]

The impact of providing voters with information may also depend on how information is presented. Thus, the second motivation of this paper is, more generally, to better understand the role of that presentation. For this purpose, each letter presents information on two indicators: test scores in levels (corrected to make them comparable across municipalities, given differences in socioeconomic conditions) and changes. In addition, we varied the benchmark used to compare the outcomes of the municipality for both indicators by randomly assigning whether voters received an average benchmark (local results compared to the outcomes of the average municipality) or a tougher benchmark (compared to the outcomes of the best performing municipality). While the average treatment provides a reference, we expect the maximum treatment to be a more stringent benchmark. Indeed, Gottlieb (2016) finds that raising citizens' expectations by providing information on the government's

[1] Exploring the role of providing information to voters regarding education outcomes is especially important because of relevant informational frictions in educational outcomes. For instance, parents are usually misinformed about schools' results (see recent evidence for Chile in Allende et al., 2019). This point reinforces this paper's motivation.

capacity and responsibility increases the chances of sanctioning poor performance (Cruz et al., 2018 find similar results). However, at the same time, previous research suggests that providing "too good" yardsticks may be counter-productive, as it may reinforce the idea of underlying heterogeneity in individual outcomes (e.g. Nguyen, 2007).

We focus on a sample of 59 large, urban municipalities in Chile, where the incumbent mayor is running for reelection.[2] The database includes 22,385 polling stations with an average of 334 registered voters each. We randomize the treatments at the polling station level, considering strata composed by the municipality and the gender composition of polling stations. We allocated 200 stations to the "average" benchmark and 200 to the "maximum" benchmark, leaving 21,985 polling stations in the control group. Nearly 20% of the stations were created after an electoral reform in 2012, which changed voting from mandatory to voluntary, and voter registration from voluntary to automatic. Non-registered citizens as of 2012 were mostly assigned to new polling stations. These voters had no previous electoral experience as of 2012. We study whether our results vary by old and new polling stations, to identify whether the treatments have different effects for people with different histories of voting behavior (e.g., see Plutzer, 2002, Gerber et al. 2003, and de Kadt 2017 on habitual versus non-habitual voters). Relatedly, we also explore whether the impact of the treatment is different based on the station's support for the incumbent in the previous election.

We have five main sets of results. First, voters from old and new polling stations react differently to information. In old polling stations, were voters have more electoral experience, we find that being informed of the relative performance affects turnout, which translates almost one-to-one into votes for the incumbent. Results are especially strong when educational results are bad, reducing turnout and the incumbent's vote. In other words, voters punish mayors with poor outcomes by not going to vote for them. There are also spillovers to the election of local councilors, where we find equivalent results. The size of the effect is important: moving from the 50th to the 75th percentile in educational performance increases

[2] There are 345 municipalities in Chile. We select municipalities with at least 50,000 people, less than 20% of them living in rural areas, and with a mayor who is running again. We focus on this sample because educational data is more reliable as the number of students grows and we needed a minimum number of polling stations per municipality to minimize the chances of altering the election results.

turnout by about 2 percentage points and support for the incumbent by around 1.5 percentage points.

Second, these results are concentrated in the treatment group that received average performance letters. This suggests that too stringent standards may not be relevant for voters. As well, voters respond to educational results in levels, and not to changes in results. Third, we control for perceptions of public school quality at the polling station level taken from a universal survey of parents of students of certain degrees and find that our results are driven by "news" (i.e. the part that is orthogonal to priors), as expected. Fourth, while we lack the statistical power to find statistically significant heterogeneities in treatment effects, results for old polling stations seem to be mainly driven by stations with older people, ones with previously high support for the incumbent, and in poor municipalities. In turn, we do not find relevant differences by the station's gender composition, incumbent's coalition, municipality size, the share of students in public schools, or the incumbent's campaign spending. Finally, our results for voters in new polling stations, e.g. newer voters, are less clear. Nevertheless, they seem to suggest that, if anything, voters react more to reciving letters, than to the information contained. Differences between old and new polling stations are consistent with previous research on differences in behavior between habitual voters and nonvoters (e.g., Gerber and Green, 2017).

Our paper makes several contributions to the literature. First, we identify the causal impacts of providing voters with information on performance in terms of outcomes (and not just inputs) produced by local politicians. This is one of the first experimental papers providing information on measures of outcomes of locally elected politicians; in particular, regarding education performance. A few papers exploit disclosure of public school outcomes in Brazil and present quasi-experimental evidence on the effects of this on local elections (Dias and Ferraz, 2019; Firpo et al., 2017; and Toral, 2016). Relatedly, de Kadt and Lieberman (2017) present negative correlations between public service delivery and support for the incumbent, also in a quasi-experimental setting.[3]

[3] In a related result, Romero et al. (2017) find that informing voters on the outcomes of a "successful" education reform in Liberia, plus the presidential and legislative candidates' stands on this policy, lead voters in competitive districts to be more likely to report voting for candidates from parties that supported the policy.

Second, we present evidence from Chile, a country with relatively strong democratic institutions — stronger than Brazil, Liberia, or Uganda, countries that are often studied in the articles mentioned above — so this research provides evidence on accountability for educational outcomes in a more consolidated democracy. Third, we add to the literature on the effects of how information is provided to voters in two dimensions: (i) on whether information is in levels or changes and (ii) on what are the relevant benchmarks considered by voters. This is a key topic because, from a conceptual perspective, voters' responses to new information depend on the yardsticks they have available.[4] It is even possible that some of the null results of information found in the literature (e.g. Dunning et al. 2019) arise out of not providing information that is relevant to or easily understood by voters, and not because people do not care about information overall. Fourth, intervening at the polling station level implies a clear advantage with respect to most papers in the literature, which intervene at more aggregate levels, such as the precinct, slum, or village level (Banerjee, A. et al., 2011; De Figueiredo, M. et al., 2011; Chong, A. et al., 2015; Gottlieb, J., 2016; and Arias, E. et al., 2018). Similarly, we use a polling-station-level measure of voters prior beliefs about educational outcomes, which is more fine-grained than in previous research. Finally, we also contribute to the literature on different effects for voters based on their previous voting experience by showing that those who have voted in the past respond the most to information on the incumbent's performance. A possible explanation for this finding may be that previous voters are more likely to be part of the incumbent's constituency, which we show is more responsive to their elected mayor's performance.

The paper is organized as follows: Section 2 provides background on the electoral and education systems in Chile. Section 3 presents the experimental design including the treatments, data, randomization, take up, and spillovers. Section 4 presents the empirical strategy, and Section 5 presents the main findings including robustness checks and extensions. Finally, Section 6 concludes.

[4] It is worth noticing that, in contrast to information on corruption, which is bad news per se, in our case the information may be good or bad news depending on the actual outcomes. In this sense, our work is related to the papers by Buntaine et al. (2016) and Arias et al. (2015) included in the Metaketa project by Dunning et al. (2019).

2. Background

a. Mayors and Public Education in Chile

With a population of around 18 million people, Chile is organized at the local level into 345 municipalities. The mayor is the head of the local government, and her responsibilites include managing financial resources; provision of municipal and national public goods in the municipality including public schools; plus strategic planning including building permits, garbage collection, and implementing some health and education policies. Local elections are held every four years. The mayor is directly elected by a majority system.

Municipalities also have a council of six to ten members, depending on their population, who are elected by a proportional system.[5] As shown in Table 1, a large majority of mayors run for reelection (over 80%), and over 60% of rerunning mayors are reelected.

Table 1: Incumbent advantage

Local election	Percentage of mayors who run for reelection	Percentage of running incumbent mayors who are reelected
2004	88%	67%
2008	80%	63%
2012	84%	60%
2016	86%	73%

Chile has a school choice system with public and private providers with public funding, where 35% of students attend public schools, 56% voucher schools, and 9% to private schools that do not receive public funds (Mineduc, 2018). Mayors oversee public schools, which are known as "municipal schools." The mayor appoints the head of the municipal school system, from a shortlist selected by the Public Service Commission via a public

[5] After the recovery of democracy in 1990, Chilean politics was generally organized around two main coalitions: Concertación, then Nueva Mayoría, in the center-left, and Alianza por Chile, then Chile Vamos, in the center-right. Figure 1 in the Appendix shows the support for each coalition in the mayoral elections. The percentage of mayors from these two coalitions historically was above 70%. Thus, the analysis of results in this paper focuses on those coalitions.

contest. The mayor choses the requirements for the candidate, sets the objectives and goals for the municipal school system, and assesses its performance annually. The head of the municipal school system is responsible for the administration of human, material and financial resources of public schools, and the design and implementation of a strategy for the improvement of local public education.[6]

Since 1988, Chile has a yearly nationwide a test to assess the quality of education, which is called SIMCE (in Spanish, an acronym for System of measurement of the quality of education). SIMCE is administered to more than 90% of students, annually to 4th graders, and depending on the year, to 6th, 8th, or 10th graders. It includes math, Spanish, natural sciences and history and social sciences.

Since almost 90% of parents have to answer the SIMCE parent survey at least once in a child's school life, it is safe to assume that most parents know of the SIMCE. Despite being aware of the existence of SIMCE and considering it a reliable instrument, parents are generally misinformed about schools' outcomes (Allende et al., 2019). [7] In fact, according to a CEP survey, 60% of respondents with a school-age child report knowing the most recent SIMCE scores of their child's school, but when asked about the rough score, 80% do not actually know (CEP Survey, June-July 2011). Likewise, the VI National Survey "Actors of the Educational System," from 2006 (CIDE, 2006), reveals that 73% of parents know what the SIMCE is, but only 21% say they know the score for their child's school. Therefore, it is unlikely that voters are precisely informed of education test scores at the municipality level.

In this paper, we report voters math and language results because these subjects are the only ones assessed annually and thus for which we have data for all the years in our period of analysis. As well, we only consider 4th grade results, because this is the only grade assessed annually for the period of our study and because younger children usually go to schools near their homes and thus municipality plays a larger role in potential educational outcomes.

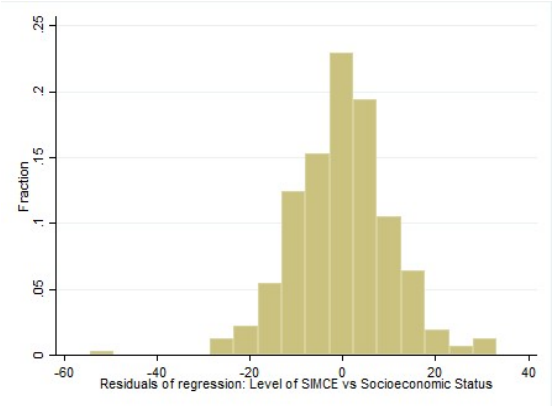
[6] There is an ongoing reform in which the management of local public schools will transfer from the 345 municipalities to 70 school districts by 2025, according to the Ministerio de Educación, Chile (2017). However the implementation is currently delayed and the projection is that the transition will not be finished until 2027 at the earliest.

[7] Results in Allende et al. (2019) confirm that parents are not fully informed on their children's school results. This paper shows that the provision of information about schools' test scores changed the primary school choices of treated households, improving the education outcomes of their children six years after the intervention took place.

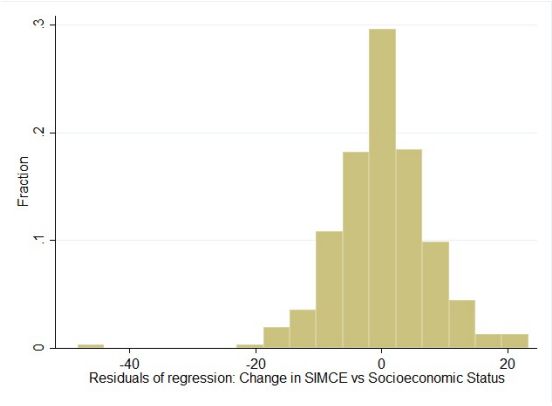
SIMCE results reveal there is great variation in public school results at the municipality level. Figure 1 presents the average test scores after controlling for socioeconomic status proxies for municipalities both in levels and in changes with respect to the previous mayoral period.[8] There is a notably high level of heterogeneity across municipalities and time. Finally, it is important to note that educational results at the municipality level might be considered as a proxy of the general quality of the mayor. Notably there are strong correlations between SIMCE test scores and other measures of municipal performance, such as the risk of crime or the maintenance of parks (see Table 1 in the Appendix).

Figure 1: Variation in Education across Municipalities

Panel A: Levels



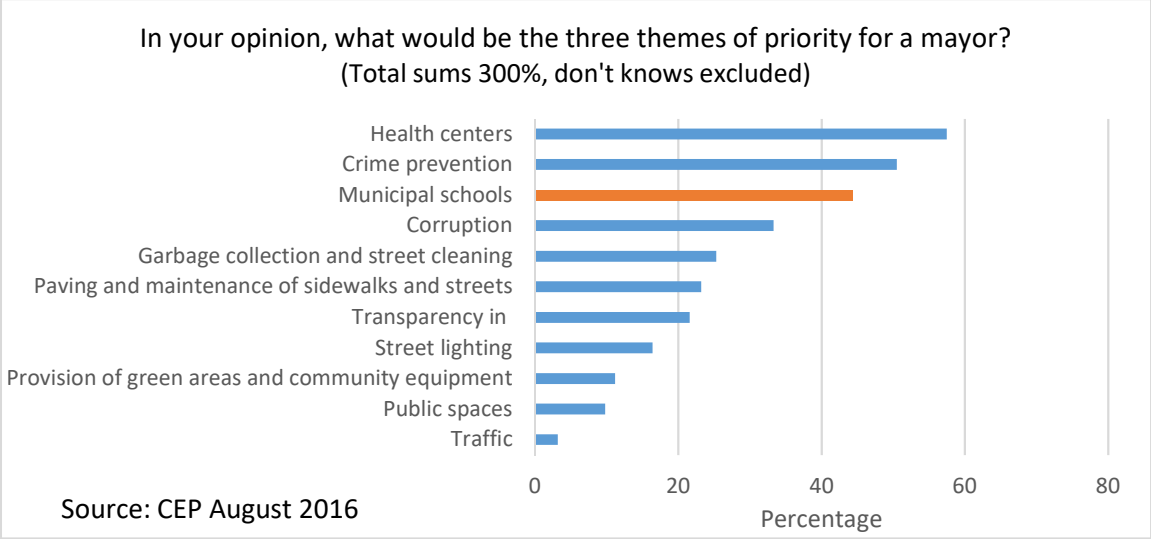
Panel B: Changes



Education is a top priority issue in Chilean politics at both the national level and at the local one. For example at the national level education ranked fourth on Chilean's main priorities for the government, and at the local level, it ranked third among the priorities for a mayor, only after health and crime prevention (see Figure 2).

[8] SIMCE's scale has a mean of 250 points and a standard deviation of 50 points.

Figure 2: Voters' priorities



b. 2016 Municipal Elections in Chile

During the 2010s there were two reforms that affect the election studied in this paper. First, in 2012, Chile moved from a system with mandatory voting and voluntary registration to a system with voluntary voting and automatic registration. At that point, 32% of the adult population was not registered to vote. Most of them were young people, given that 89% of the population eligible to vote registered to participate in the 1988 national referendum, in which people voted for or against the continuity of Augusto Pinochet's regime. Registration rates among new generations of adults decreased after that, leading to a strongly age-biased electoral roll. For the 2009 election, only 20% of citizens between 20 and 24 were registered to vote. Under the previous system, especially among the young, registration was a strong sign of political interest.

When automatic registration was introduced, non-registered people were assigned to existing polling stations, according to the order of their national ID number, with the restriction that no polling station could have more than 350 voters. When all existing polling stations were full, new stations were created, and for the 2016 election, they represented 20% of total

polling stations.[9] In addition, under the old system polling stations were segregated by gender, whereas under the new system, they are mixed.[10]

As a result, old and new polling stations are strikingly different in terms of whether their voters registered voluntarily (before 2012) or automatically (after 2012), and in terms of age and gender composition. Appendix Figure 2 presents the differences in the composition of old and new polling stations in these three dimensions. In sum, in old polling stations, most voters registered voluntarily, there are fewer young people, and it is more likely that they have a large majority of voters of a single gender; meanwhile new polling stations are mostly composed of young people who were automatically registered and are generally mixed in terms of gender. Also, generally voters in old polling stations have a much longer personal electoral history.

Second, the local election we study in this paper was the first after stringent restrictions of political campaigns were applied in April 2016. The new law shortened the campaign period, reduced the limits for electoral spending and for contributions to each candidate, increases transparency for electoral campaign contributions and electoral spending, regulates political signage (where it can be placed and the size of posters and signs), and imposes higher sanctions against electoral offences (Ministerio del Interior, 2016). Thus, it is likely that information in this election was relatively more valuable, given the context of less information than in previous elections. Indeed, the Espacio Público and Ipsos surveys in 2017 revealed, respectively, that 45% and 50% of respondents considered there was less information about candidates and their programs than in previous campaigns.

The electoral roll is public, including the names and addresses of all voters in each electoral booth. As well, the National Electoral Office (SERVEL) publishes electoral results at the polling station level. We use these two sources of information in this paper.

[9] When a voter from an old polling station changed her electoral address to a new municipality, she could be assigned to a new station. However, changing municipalities is not common. Between the 2012 and the 2016 local elections, within the treated municipalities, on average 9% of 2012 voters changed their registration to another municipality. The change rate at the municipality level in our sample ranges from 6 to 22%, with a standard deviation of 2.7 percentage points.

[10] When non-registered voters were assigned to existing booths after the 2012 reform, women were assigned to men's booths and vice versa, thus, the gender distribution of old booths is also mixed, but with a gender composition that varies widely depending on the number of new voters assigned to each polling station (see below).

Overall, Chile is a great case for studying accountability in education. Since the electoral roll is public, and election results are published at the polling station level, we can reach voters and study their behavior at the polling station level, a much smaller unit than in most studies. Meanwhile public education depends on the local government and voters consider it as a main priority, and there is a reliable instrument that annually measures the quality of schools (SIMCE), which shows great variation across municipalities, and is generally understood by the public.

3. Research Design

a. The treatments

The intervention consisted of providing voters with information on educational outcomes of local public schools to assess how that affected electoral outcomes in Chilean local elections in 2016. Information was provided in a letter to arrive one week before Election Day (October 23). It was sent to all voters in 400 randomly selected polling stations (out of 22,385) in urban municipalities where the incumbent mayor was running for reelection. The letter included information on the test scores of local municipal schools in both levels and changes. The letters included one of two different benchmarks for both levels and changes: the outcomes of the average municipality (average treatment, T^{ave} hereafter), or those of the best municipality (maximum treatment, and T^{max} hereafter), which was randomized at the polling station level. In total, we sent 128,033 letters.

On average, polling stations have 334 registered voters, whose addresses are public. *Correos de Chile*, the national post office, printed and mailed the letters.[11] They were delivered in a 5-business day window, starting on October 12, i.e. eleven days before Election Day.

The appendix presents two examples of the letters sent to voters (in Spanish), one for the average treatment and one for the maximum treatment (Appendix Figures 3 and 4). The letters included the voter's name and address. The heading of the letter reads: *"Sunday, October 23 is Election Day. The municipality is responsible for the administration of*

[11] *Correos de Chile* is an autonomous public firm, with a politically independent board.

municipal schools. These are the results of municipal schools in your municipality in SIMCE 4th grade test, which measures learning outcomes." Thus, in the first place, the letter informs there are elections. It also showed two figures of relative performance of the voter's municipality, one for levels and one for changes. We decided to provide information on these two dimensions, because both seem relevant to assess a mayor's performance, and this was confirmed in the pre-testing of the letter.

In the case of levels of SIMCE results, the scores of the 4th grade test were corrected to reflect the value added by schools by controlling for a set of socioeconomic outcomes. For this purpose, we estimated the following equation:

$$Score_i = \beta_0 + \beta_4 Pop_i^2 + \beta_5 Rur_i + \beta_6 Rur_i^2 + \beta_7 Poor_i + \beta_8 Poor_i^2 + \sum \beta_{9k} Type_k + e_i,$$

where, for municipality i, Vul_i corresponds to the students' vulnerability index, Pop_i to population, Rur_i to the percentage of rural population, $Poor_i$ to the number of poor students in public schools, and $Type_i$ to the municipality type according to the central government's classification k. We proxy school's "value-added" using the residuals of this regression: e_i. Residuals from this regression are a measure of the performance of local public schools after controlling for municipality socioeconomic and demographic characteristics in order to make it comparable across municipalities.[12] Throughout the paper, we call this measure "corrected SIMCE." In the letter, when we use this measure, the benchmark refers to "comparable municipalities."

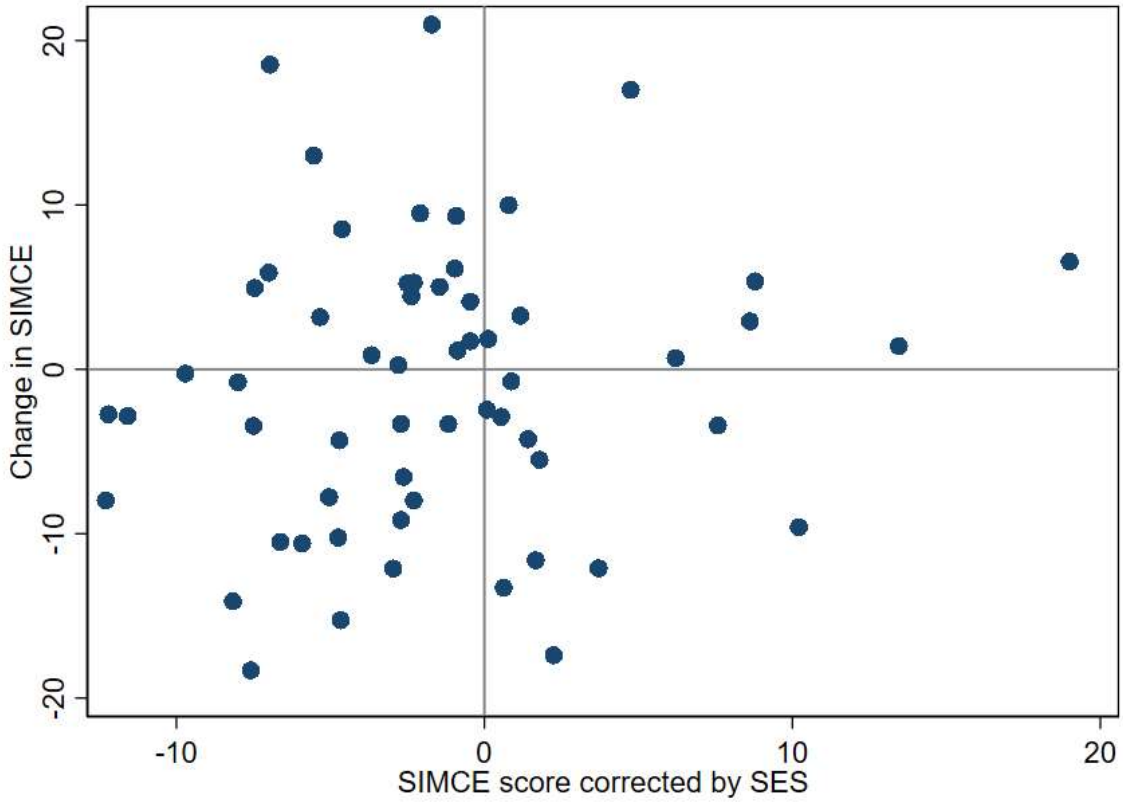
As for the changes, we take the SIMCE 4th grade average score of 2013-2015, i.e. three fourths of the current electoral period in 2016 and subtract the average of the previous mayoral period (2009-2012).[13] This is a measure of improvement in the quality of education provided by the local government.

Figure 3 shows the distribution of corrected SIMCE and SIMCE score changes for the municipalities in the sample. It is visually clear that the two measures provide different types of information. It is also relevant to note that both of these measures are uncorrelated to the

[12] Appendix Table 2 presents the results of the regression used to generate the residuals. The R^2 of the regression is 0.22.
[13] Data for the last year of the current mayoral period was not available at the time of the experiment.

political coalition of the municipality's mayor (see Appendix Figure 4). Therefore, there is no political bias in providing information on these measures.

Figure 3: Correlations between changes and levels



The average treatment (see Appendix Figure 3) included a graph showing the performance of the municipality plus that of the average (comparable) municipality. The maximum treatment (Appendix Figure 4) included a graph showing the performance of the municipality plus that of the best (comparable) municipality. Certainly, the maximum treatment offers a more demanding benchmark.

The letter was pretested with focus groups and in surveys focusing on people with a low educational level, in collaboration with an independent consulting agency (MANO A MANO Consulting). There were several iterations until the letter reached a level where people understood the information in it and also seemed to care about it. As well, people trusted the

source of the information that appeared in the letter (the Pontifical Catholic University of Chile)trusted.

b. Data

The main source of data for this research is the Chilean electoral office, SERVEL. Data is at the polling station level and includes whether polling stations are new or old. It also includes the results of the 2016 local elections, and the age[14] and gender composition of polling stations. Results of the 2012 local election are available for 94% of the polling stations; the rest of the polling stations were created after 2012 to include new voters who turned 18 since then and people who changed from one municipality to another. We also use data from the 2013 and 2017 presidential elections in some robustness checks.[15]

The SIMCE test scores come from the Chilean Quality of Education Agency. Regarding the data used for the value-added correction, population, the percentage of rurality, the municipal students' vulnerability index, and the number of poor students in public schools come from the National System of Municipal Information, SINIM;[16] and the municipality type comes from SUBDERE (2005). Data used to measure voters' prior beliefs on the quality of education at the polling station level come from the SIMCE parent surveys and was merged with the electoral roll data by the Chilean Quality of Education Agency. Finally, data on electoral campaign spending comes from SERVEL.

Appendix Table 3 presents selected summary statistics.

[14] The age composition of booths is in 5-year ranges.

[15] The electoral law establishes that when two or more booths have fewer than 175 registered voters each, and no more than 350 in total, they may be merged, and work as one single booth. Electoral results of merged booths are only calculated aggregately. Our sample contains 1,072 merged booths, and we treat them as single booths. Whenever a treated polling station is merged, we deal with the treatment variable as an intensity of treatment (i.e. ½ if one of two merged booths was treated). Merged booths in 2016 do not necessarily correspond to merged booths in 2012. Thus, to construct the 2012 results for merged booths in 2016, we assume that the results in merged booths in 2012 were distributed evenly among the single booths that were merged, and then sum up the results of the single booths that were merged in 2016. In any case, the results are robust to excluding merged booths (see the robustness checks section).

[16] Available at www.sinim.gov.cl.

c. Sample: selection of municipalities

The study focuses on urban municipalities where the incumbent mayor was running for reelection in 2016. We define urban municipalities as those with a population greater than 50,000 and with less than 20% of the population living in a rural area. The purpose of focusing on urban municipalities was twofold: education data is more reliable for larger municipalities, and they have a larger number of polling stations, making spillovers less of an issue. With these requirements, the total sample amounts to 59 municipalities out of 346.[17] The number of polling stations in a municipality ranges from 101 to 1,168 in our sample, with an average of 379.[18]

d. Randomization and Estimation

Assignment of treatment was at the polling station level, stratified by municipality and by the gender composition of polling stations (in terciles of the percentage who are female).[19]

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[17] We excluded one additional municipality because value-added estimations of test scores were not robust to different specifications. Formally, the condition was that the maximum difference across specifications could not be greater than 10 test score points (i.e., 20% of a standard deviation of the score at the student level). The specifications considered at this stage excluded the different controls sequentially, keeping the students' vulnerability index across all specifications.

[18] Municipalities in the sample are: Alto Hospicio, Antofagasta, Buin, Calama, Calera, Cerrillos, Cerro Navia, Chiguayante, Chillán, Colina, Concepción, Concón, Copiapó, Coronel, Coyhaique, Curicó, El Bosque, Estación Central, Huechuraba, La Cisterna, La Florida, La Granja, La Reina, La Serena, Lo Barnechea, Lo Espejo, Macul, Maipú, Osorno, Padre Hurtado, Pedro Aguirre Cerda, Penco, Peñaflor, Peñalolén, Providencia, Pudahuel, Puente Alto, Puerto Montt, Punta Arenas, Quilicura, Quillota, Quilpué, Quinta Normal, Rancagua, Recoleta, San Antonio, San Bernardo, San Felipe, San Joaquín, San Miguel, San Pedro de la Paz, San Ramón, Temuco, Tomé, Valdivia, Valparaíso, Villa Alemana, Viña del Mar, and Vitacura.

[19] Specifically, the randomization was implemented considering two different dimensions in order to define the strata:

1. First, we treat at least three polling stations for each treatment in each municipality (the maximum integer divisor of 200 — the total number of polling stations assigned to each treatment arm — among 59 is three). By this procedure, we assigned treatment status to 354 polling stations.
2. In each municipality, we define three strata based on the voting booth's gender composition. One polling station from each treatment arm was assigned to each stratum in every municipality.
3. The 46 remaining booths were assigned according to the following procedure:

i) No more than one extra polling station was assigned to any municipality.

ii) We ensured balance across the three gender-composition strata defined at the national level, so that two of the gender strata received eight extra booths in each treatment arm, and one received only seven. The strata that received one less polling station was selected randomly.

iii) We ensured balance across educational performance at the municipality level. We classified municipalities into four groups according to whether performance was above or below

In each municipality in the sample, there are six or seven treated polling stations with three or four in each treatment arm.

We adopt the standard specification to analyze randomized experiments by separately identifying the impacts of each treatment on outcomes. In our case, we also want to study whether the content of the letters affects the treatment's effect. Thus our main estimating equation is:

$$y_{sm} = \alpha + \theta * T_{sm}^{ave} + \kappa * T_{sm}^{max} + \beta * SIMCE_m * T_{sm}^{ave} + \gamma SIMCE_m * T_{sm}^{max} + \sigma \Delta SIMCE_m * T_{sm}^{ave} + \Psi * \Delta SIMCE_m * T_{sm}^{max} + X'_{sm}\mu + \tau_m + \varepsilon_{sm} \quad (1)$$

where y is the relevant outcome in polling station s in municipality m, T_{sm}^{ave} is a treatment indicator for receiving information on mayor outcomes using the average performance as benchmark, T_{sm}^{max} is a treatment indicator for receiving the maximum performance as benchmark, SIMCE is corrected SIMCE (as defined in Section 3.a), ΔSIMCE is the change in SIMCE in the mayoral term, X is a vector of control variables (including the age and gender composition, and the number of registered voters in the booth), and τ captures municipality fixed effects.

This specification allows testing several implications. θ and κ capture the direct effects of receiving the letter with the average and maximum treatments respectively (i.e., when *SIMCE* and *ΔSIMCE* are equal to 0). In turn, β and σ (γ and ψ) capture the effects of the content of the letter when receiving the average (maximum) treatment. Then, we can test different hypotheses. For example whether people react differently to *SIMCE* and *ΔSIMCE* (i.e. whether β is different from σ, and γ is different from ψ) or whether, given the same type of information, people react differently to the benchmarks provided by the two treatments (i.e. whether β is different from γ, and σ is different from ψ).

In terms of interpretation, estimates from equation (1) correspond to intention to treat (ITT) estimates, as they capture the effect of sending the letter to voters in the relevant polling stations. Note that some of the addresses may have been incorrect and some of the letters

average in both performance level and changes. Each of these groups received the eight extra booths except for one randomly selected group that received seven.

As for the sequence, we first selected municipality-gender strata to receive the extra booth, and then we randomized the assignment within each selected stratum.

may have been received by other persons or simply not read.[20] In addition, we are aware of some limited degree of spillovers.[21] Both phenomena, i.e. possible problems with take up and spillovers imply the estimates are not the same as the effects of the actual letter, although spillovers are probably not large enough to importantly affect the estimation (Sävje et al. 2019). In any case, both problems imply attenuation bias, meaning that estimates from equation (1) probably correspond to lower bounds of the true effects.

4. Results

This section starts by analyzing balance across the experimental groups and then separately describes our main results for old and new polling stations. In both cases, we present regressions for three dependent variables at the polling station level: voter turnout, support

[20] In fact, for the 2016 election there was a public controversy between the Electoral Office and the Civil Registrar Service, which provides the Electoral Office with information on address changes because 3.5% of registered people were subject of involuntary electoral address change. See http://www.t13.cl/noticia/politica/registro-civil-atribuye-cambios-involuntarios-domicilio-electoral-ajustes-informaticos. Unfortunately, the Chilean Postal Service was unable to provide data on the actual delivery of letters to treated voters. To try to quantify the relevance of this phenomenon, we use data from other sources to document that address changes are not very frequent in Chile; 78% of the population in the municipalities in the experiment have lived in the same house for at least five years, and 58% have done so for at least ten years (Minvu 2015). Importantly, there are no relevant differences in these figures by the income level of the municipality, nor by gender, although differences by age are somewhat larger (Minvu 2015 and Casen 2017). The relative similarity across key variables reduces the concern of possible biases due to selective take up. As well, this gives strength to the heterogeneity analyses in Section 5.d. Finally, probably a relevant part of the household mobility was correctly reflected by the electoral roll. As said above, between 2012 and 2016, within the treated municipalities, on average 9% of 2012 voters changed their registration to another municipality. All in all, these exercises suggest that the partial take up of the treatment due to changes of address is probably a minor issue and is not strongly related to observable characteristics of the voters.

[21] It is worth noting that we sent the letters to a small share of booths within each municipality (from 0.6 to 7%, with a mean of 1.8%) and just a few days before the election in order to isolate the intervention from possible candidates' reactions to the treatment and to avoid spillovers. Still, we are aware that in a few municipalities the report cards were disseminated through social networks. There must have been some extent of word of mouth dissemination as well, especially between individuals living in the same home. This implies that part of the voters in the control group may have actually received treatment. We should note, however, that only 9% of Chilean people often follow political issues in social networks; and 60% say they never talk about politics, neither with family nor with friends (CEP 2018). Plus, an analysis of a sample of 40,000 tweets for the period of our intervention using the Harvard CGA Geotweet Archive revealed no tweets with references to our experiment.

for the incumbent, and support for the main challenger,[22] all of them measured in number of votes.[23] Finally, we present a few robustness checks, extensions, and heterogeneity exercises.

a. Balance across Treatment Arms

Table 2 presents balance tests in the main variables for our sample across each of our treatment arms, T^{ave} and T^{max}, and the control group. The F-tests presented at the bottom of columns (4) to (6) do not reject overall balance in any of the cases. In terms of individual balance, no variable is unbalanced between T^{ave} and T^{max}. For two variables, the average of T^{ave} is different from the control group: the number of registered votes and turnout in 2012. In turn, the average of T^{max} is different from the control group in the number of registered votes and support of the Alianza coalition. Still, the differences in averages for these variables across groups do not seem to be substantially relevant.

Table 2: Balance

	(1)	(2)	(3)	(4)	(5)	(6)
	Control	T: Benchmark Max	T: Benchmark Average	(1) vs. (2) p-value	(1) vs. (3) p-value	(2) vs. (3) p-value
Registered voters	333.86	337.76	337.37	0.012	0.024	0.875
Turnout in 2012	0.379	0.390	0.396	0.281	0.098	0.814
Incumbent votes in 2012	0.516	0.516	0.519	0.971	0.666	0.824
Alianza share in 2012	0.359	0.336	0.345	0.078	0.290	0.628
Concertacion share in 2012	0.422	0.430	0.427	0.476	0.637	0.871
Ratio of men	0.482	0.480	0.464	0.892	0.188	0.397
Ratio age 18-30	0.250	0.263	0.266	0.529	0.415	0.896
Ratio age 30-59	0.534	0.518	0.525	0.323	0.585	0.756
Ratio age 60 or older	0.216	0.220	0.209	0.729	0.515	0.467
Corrected SIMCE	-0.483	-0.810	-0.947	0.533	0.377	0.875
Change in SIMCE	-1.305	-1.467	-1.450	0.679	0.712	0.977
F-test of global balance p-value				0.9996	0.9999	1.0000

[22] Appendix Table 4 shows that there are no effects of the treatments on the sum of void and blank votes. This implies that support for *all* the challengers can be recovered as the difference of the effect on turnout minus the effect on support for the incumbent.

[23] Unsurprisingly, results are robust to measuring these variables as percentages of total registered voters or total votes cast.

Notice that the estimation of equation (1) implies identifying the effects of variables that vary both within municipalities (such as T^{ave} and T^{max}) and across municipalities (like *SIMCE* and *ΔSIMCE*). Thus, in Table 3 we present the results of a test of running equation (1) for the 2012 municipal election (notice we can do this for old polling stations only since 32% of new polling stations were created after 2012). Results reveal that one coefficient (β) is different from zero, meaning that the control and treatment groups are not balanced in this dimension, which combines a variable that varies within municipalities (T_{sm}^{ave}) and another that varies across municipalities (*SIMCE*). Specifically the random assignment of treatment resulted in treated polling stations in municipalities with higher average SIMCE scores, having significantly lower turnout and votes for the incumbent.

Table 3: Effect of treatment on 2012's election outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	All polling stations			Excluding merged polling stations		
	Turnout	Incumbent votes	Challenger votes	Turnout	Incumbent votes	Challenger votes
Maximum Treatment	0.167	-0.684	0.722	0.356	-0.587	0.838
	(3.070)	(1.967)	(1.053)	(3.057)	(1.962)	(1.047)
Average Treatment	-0.856	-0.367	-0.256	-0.671	-0.231	-0.194
	(2.835)	(1.687)	(1.082)	(2.852)	(1.704)	(1.089)
Average Treatment ×	-0.614*	-0.483**	-0.0545	-0.583*	-0.470**	-0.0552
corrected SIMCE	(0.328)	(0.213)	(0.135)	(0.336)	(0.221)	(0.139)
Average Treatment ×	-0.248	-0.0928	-0.0885	-0.317	-0.119	-0.103
SIMCE change	(0.505)	(0.339)	(0.181)	(0.512)	(0.346)	(0.183)
Maximum Treatment ×	-0.122	-0.0655	0.0351	-0.108	-0.0601	0.0442
corrected SIMCE	(0.305)	(0.205)	(0.119)	(0.305)	(0.205)	(0.119)
Maximum Treatment ×	0.265	0.104	0.0764	0.166	0.0512	0.0352
SIMCE change	(0.641)	(0.464)	(0.185)	(0.645)	(0.468)	(0.184)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,948	20,948	20,948	20,773	20,773	20,773
R-squared	0.409	0.470	0.525	0.401	0.466	0.524

Robust standard errors in parentheses. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. From columns (4) to (6) merged polling stations in 2012 elections are excluded. *** p<0.01, ** p<0.05, * p<0.1

Next, we investigate whether this is a specific feature of the 2012 municipal election or something more permanent. Thus we also estimate equation (1) but for the 2013 and 2017 presidential elections (not included in our experiment) and for the 2016 municipal elections (included in our experiment).[24] Certainly, elections before 2016 were not possibly affected

[24] We construct a proxy for the share of support for the incumbent mayor in the presidential election by imputing the support for presidential candidate from the mayor's political coalition. For this purpose, we focus on municipalities with an incumbent mayor from the two main political coalitions in Chile, we

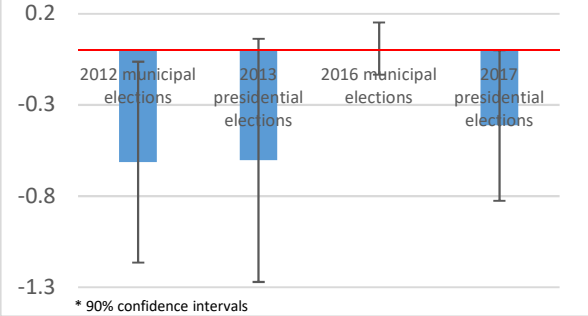
by our treatment, and it is unlikely that a letter received in 2016 informing about municipal schools quality in the context of local elections had an effect on the presidential election one year later.

Figure 4 presents the results for these estimates of β. There seems to be a kind of permanent feature of our randomly selected treatment polling stations present in all the elections in which the treatment was not applied — we were truly unlucky. The 2016 municipal election, our case study, is clearly different. Results in all elections, except for 2016 are large, negative, and generally statistically significant at the 90% level, whereas in 2016 there is a clear change in the results with the estimated coefficient moving upwards. In other words, treated polling stations have a kind of permanent feature implying lower turnout and support for the incumbent in face of higher SIMCE, and this feature disappears due to our treatment in 2016.

Figure 4: Effect of Treatment times corrected SIMCE in several Elections, all polling stations

Panel A:

Effects on Turnout



Panel B:

Effects on Support for the Incumbent

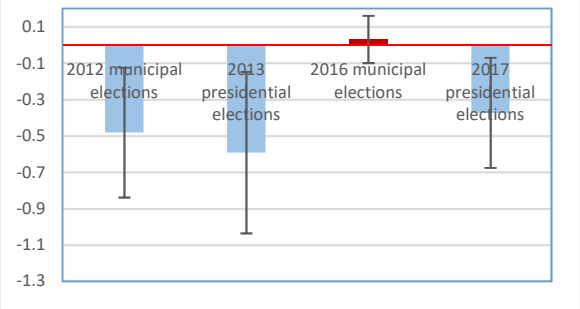


Figure 4 suggests that we are in a context of parallel trends in which there is a systematic imbalance in the non-experimental years. For this reason, in our estimations for old polling

classify presidential candidates into these two coalitions, and define voting for the incumbent coalition as voting for a presidential candidate from the same coalition as the incumbent mayor.

stations we estimate equation (1) using the change in y between 2016 and 2012 as the left-hand side variable.[25] Note that this imbalance arises out of luck and, therefore is not a signal of any kind of selection bias.

b. Results for old polling stations

Table 3 presents the main results. We start analyzing the effects on voter turnout in columns (1) to (4). Instead of estimating all the effects included in equation (1), we start by estimating the direct effects of sending the letters without considering the effects of their content (i.e. assuming that $\beta=\gamma=\sigma=\Psi=0$) in column (1). We do not find statistically significant effects for either the average and the maximum treatment. Next, we study the effects of T^{max} in column (2) considering both its direct effects and the effects of the letter content. Again, we find no effects. The case of T^{ave} is different, we find that voters react to the information of corrected SIMCE by increasing turnout as SIMCE results increase. This result is confirmed in column (4) where we estimate all the elements of equation (1) together. Results imply that voters only react to the information when provided with an average benchmark and considering levels of test scores (and not changes). Overall, these results imply that the extensive margin of voter turnout responds to the educational outcomes of the incumbent mayor.

Table 4: Effects of treatments on turnout, votes for the incumbent and for the challenger (in differences), old polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Difference in turnout				Difference in incumbent votes				Difference in challenger votes			
Maximum Treatment	-1.458	-1.379		-1.368	-0.235	-0.194		-0.188	-0.744	-0.453		-0.448
	(1.426)	(1.445)		(1.445)	(1.023)	(1.104)		(1.104)	(0.819)	(0.931)		(0.931)
Maximum Treatment ×		0.0130		0.0180		-0.0135		-0.00962		0.0512		0.0523
corrected SIMCE		(0.150)		(0.150)		(0.112)		(0.112)		(0.0891)		(0.0891)
Maximum Treatment ×		0.0454		0.0471		0.0316		0.0327		0.151		0.152
SIMCE change		(0.253)		(0.253)		(0.241)		(0.241)		(0.183)		(0.183)
Average Treatment	0.596		1.132	1.115	0.282		0.641	0.639	0.345		0.421	0.416
	(1.365)		(1.392)	(1.393)	(0.949)		(1.067)	(1.067)	(0.831)		(0.916)	(0.916)
Average Treatment ×			0.354***	0.355***			0.271***	0.271***			0.0861	0.0871
corrected SIMCE			(0.119)	(0.119)			(0.0950)	(0.0951)			(0.0927)	(0.0927)
Average Treatment ×			0.0956	0.0961			0.0541	0.0545			-0.00457	-0.00264
SIMCE change			(0.245)	(0.245)			(0.200)	(0.200)			(0.169)	(0.169)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,920	17,920	17,920	17,920	17,920	17,920	17,920	17,920	17,920	17,920	17,920	17,920
R-squared	0.373	0.373	0.373	0.373	0.636	0.636	0.637	0.637	0.694	0.694	0.694	0.694

Robust standard errors in parentheses. Old polling stations are those created before the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters.*** p<0.01, ** p<0.05, * p<0.1.

[25] Notice that as we use two municipal elections, this is equivalent to a difference-in-difference estimator, except because the control variables are not in changes.

Columns (5) to (12) present results for the treatments' effects on support for the incumbent and the main challenger. This allows for decomposing the effect on the extensive margin in support for the two main candidates. Results for the incumbent's support mainly match the effect on turnout, implying that almost all the effects on the extensive margin translate into more or fewer votes for the incumbent without a clear effect on support for the main challenger. In order to get a sense of the orders of magnitude, Figure 5 visually presents the results in differences. An increase of 10 points in the corrected SIMCE score (note that 14 municipalities in our sample experienced SIMCE changes of a magnitude of at least 10 points in the last mayoral term) increases turnout by about 3.5 votes (corresponding to about 1.1 p.p. increase in turnout) and increases support for the incumbent by about 2.7 votes (corresponding to about 1.9 percent in support for the incumbent among valid votes). These are important effects; consider that in two out of the 59 municipalities in the sample the margin of victory was less than 2 percentage points.[26] It is also remarkable that support for the challenger does not change much with either good or bad news on the performance of the current mayor, suggesting that local elections with a rerunning mayor work more as a sort of revocatory referendum on the mayor's job than as a contest between the mayor and the challenger.[27]

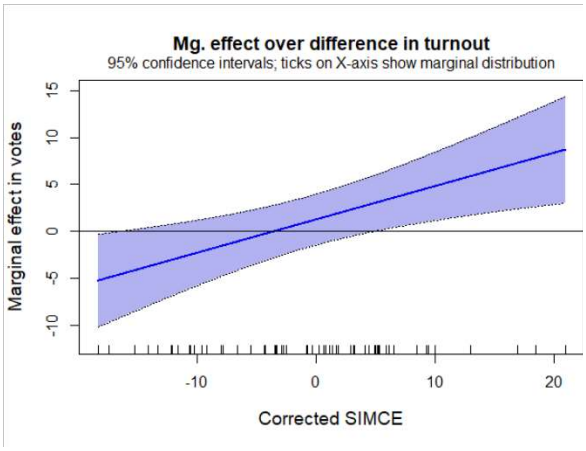
[26] As an additional reference, in six municipalities it was less than 3 points.

[27] One interpretation of these results relates to the contrasting findings in Ferraz and Finan (2008) and Chong et al. (2015) about the effect of information of corruption audits on voter turnout and incumbent support. While the former paper finds a zero effect on turnout in a context of mandatory voting, the latter paper finds a significant effect on turnout under voluntary voting. Thus, one possibility is that the strong effect on turnout we find is due to our voluntary voting context.

Figure 5: Marginal Effects

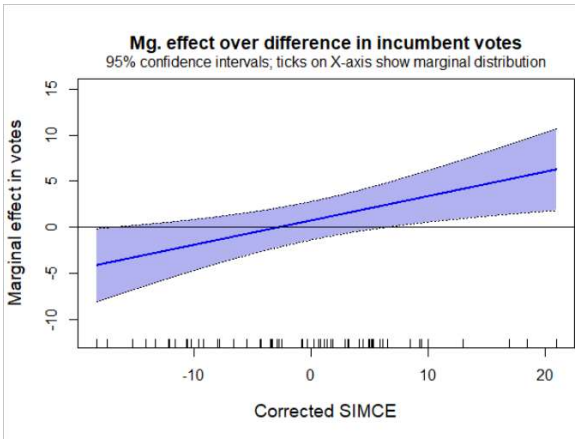
Panel A:

Effects on Turnout



Panel B:

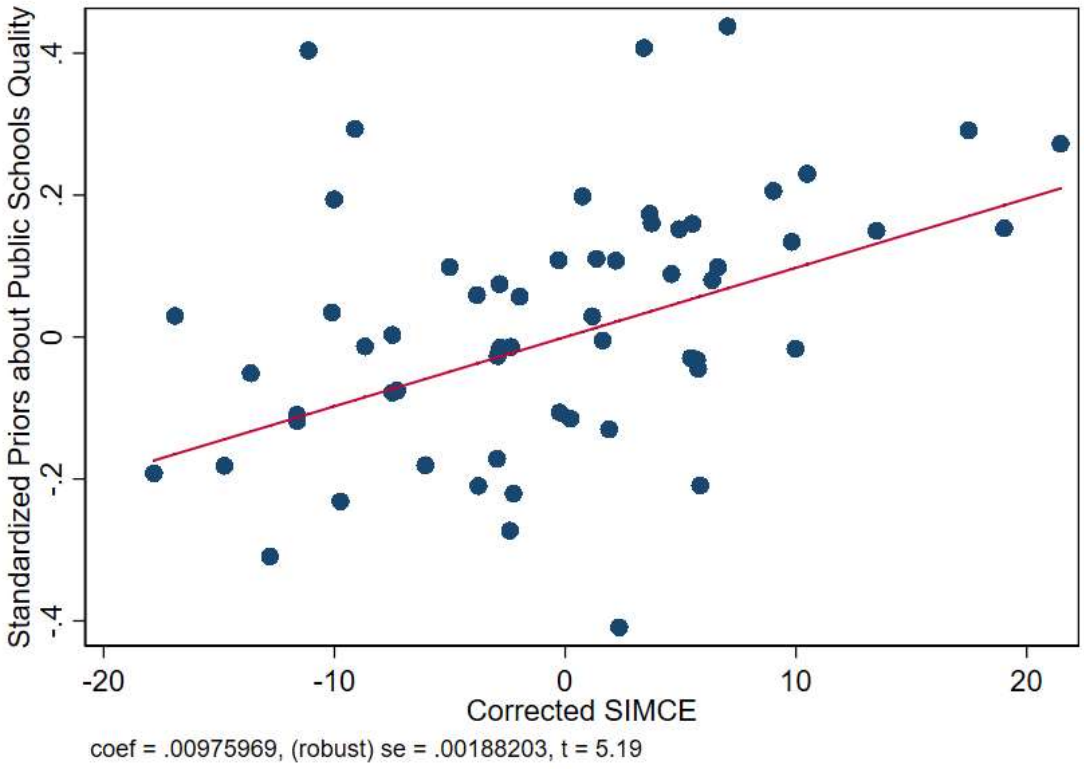
Effects on Support for the Incumbent



Several papers in the literature argue that information should more strongly affect behavior when it provides "news,", i.e. information not incorporated in voter priors beliefs (e.g., Arias et al., 2018; Gallego et al., 2020). The information provided in the letter may come as a surprise for some of them but may be a confirmation for other voters. We expect the first case to have stronger effects on outcomes if the letter provides additional information. This is important if voters have heterogeneous priors about the quality of public education across municipalities. We construct a proxy of prior beliefs about public school quality from a universal survey given to parents of school aged children (which is part of the SIMCE package). Figure 6 presents an added value plot that relates the expectations of public school quality (standardized) and corrected SIMCE, at the municipality level. As it is evident, while both outcomes are positively correlated, there are several municipalities in which parents' beliefsare different than what learning outcomes suggest.

Figure 6

School Quality: Correlation between Prior Beliefs and Outcomes at the Municipality Level



We extend equation (1) by adding interactions of the treatment dummies with a measure of prior beliefs at the polling station level.[28] Results for old polling stations are presented in Table 4, and are very similar to previous results (if anything they are larger). This suggests that the letter provided new information to voters, which was not part of their prior beliefs, and that they respond mostly to the "news" as expected.[29]

[28] Our measure of priors about education quality at the polling station level was constructed thanks to the collaboration of the Chilean Quality of Education Agency. We submitted the list of Chilean identification numbers by polling station, and they labeled them with fake ID numbers, linking parents with the encrypted IDs of students SIMCE test. With these, we can calculate measures of average priors by polling station. We weight the regressions including priors with the number of observations of parents by polling station.

[29] An alternative explanation for this may be that people only hold vague priors in the case of education (Allende et al., 2019), which may not be the case for other issues such as corruption (e.g., Arias et al.

Table 5: Main results controlling for priors, old polling stations

	(1) Differences in Turnout	(2) Differences in Incumbent votes	(3) Differences in Challenger votes
Average Treatment	1.645	1.847	0.417
	(1.695)	(1.557)	(0.845)
Maximum Treatment	-1.802	-1.425	0.216
	(1.927)	(1.600)	(1.141)
Average Treatment ×	0.297**	0.188*	0.142
corrected SIMCE	(0.145)	(0.112)	(0.0946)
Average Treatment ×	0.161	0.0586	0.00110
SIMCE change	(0.306)	(0.323)	(0.149)
Maximum Treatment ×	-0.00394	-0.00412	0.0511
corrected SIMCE	(0.189)	(0.106)	(0.118)
Maximum Treatment ×	-0.0397	-0.0259	0.190
SIMCE change	(0.433)	(0.299)	(0.234)
Standardized Priors	-0.126	-0.0979	-0.184
	(0.174)	(0.129)	(0.115)
Average Treatment ×	2.325*	0.707	1.398
standardized Priors	(1.254)	(1.224)	(0.895)
Maximum Treatment ×	1.271	2.397	0.531
standardized Priors	(2.089)	(1.859)	(1.063)
Polling station controls	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes
Observations	17,920	17,920	17,920
R-squared	0.373	0.637	0.694

Robust standard errors in parentheses. Old polling stations are those created before the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. *** p<0.01, ** p<0.05, * p<0.1.

2018). However, as despicted in Figure 6 there is strong correlation between priors and educational quality, at least at the municipality level.

Finally, Table 5 presents the results for an asymmetric specification in which we allow the effects to be different for good and bad news.[30] The results imply that providing negative "news" has a much stronger effect than positive "news." Indeed, reporting a SIMCE of -10 implies a reduction by 5.37 total votes (significant at the 95% level), and a reduction of 5.47 votes for the incumbent (significant at the 99% level). Interestingly, again the effects on the extensive margin (turnout) translate almost one-to-one into support for the incumbent. In turn, the results of reporting a positive corrected SIMCE are not statistically different from zero. These results, presented visually in Figure 7, imply that voters respond much more to "bad news" than to "good news." This finding is consistent with the fact that individuals tend to adjust their expectations upward faster than downward (Duesenberry 1949; Burchardt 2005; Ward 2015), and that, similarly, tend to be more averse to losses than to corresponding gains (Kahneman and Tversky 1979).

[30] The asymmetric specification is of the form:

$$y_{sm} = \alpha + \theta * T_{sm}^{ave} + \kappa * T_{sm}^{max} + \beta_1 * SIMCE^{+}{}_m * T_{sm}^{ave} + \beta_2 * SIMCE^{-}{}_m * T_{sm}^{ave} + \gamma_1 SIMCE^{+} * T_{sm}^{max} + \gamma_2 SIMCE^{-} * T_{sm}^{max} + \sigma_1 \Delta SIMCE^{+}{}_m * T_{sm}^{ave} + \sigma_2 \Delta SIMCE^{-}{}_m * T_{sm}^{ave} + \Psi_1 * \Delta SIMCE^{+} * T_{sm}^{max} + \Psi_2 * \Delta SIMCE^{-} * T_{sm}^{max} + X'_{sm}\mu + \tau_m + \varepsilon_{sm}$$

Where $SIMCE^{+}{}_m$ and $\Delta SIMCE^{+}{}_m$ correspond to $SIMCE_m$ and $\Delta SIMCE_m$, respectively, if $SIMCE_m$ and $\Delta SIMCE_m$ are nonnegative, and zero otherwise; and $SIMCE^{-}{}_m$ and $\Delta SIMCE^{-}{}_m$ correspond to $SIMCE_m$ and $\Delta SIMCE_m$, respectively, if $SIMCE_m$ and $\Delta SIMCE_m$ are negative, and zero otherwise.

Table 6: Main effects allowing for asymmetric effect due to positive (negative) information, old polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Difference in turnout			Difference in incumbent votes			Difference in challenger votes		
Average Treatment	2.308	0.682	2.010	2.610	0.281	2.326	0.177	0.321	-0.0280
	(2.311)	(2.109)	(2.738)	(1.635)	(1.418)	(1.877)	(1.406)	(1.374)	(1.865)
Average Treatment ×	0.145		0.146	-0.0440		-0.0411	0.139		0.142
corrected SIMCE$^+$	(0.242)		(0.236)	(0.185)		(0.184)	(0.166)		(0.167)
Average Treatment ×	0.557**		0.546**	0.564***		0.558***	0.0484		0.0487
corrected SIMCE$^-$	(0.244)		(0.245)	(0.189)		(0.187)	(0.193)		(0.195)
Maximum Treatment	-2.961	-0.207	-1.722	-1.485	0.483	-0.779	0.0185	-1.058	-0.480
	(2.434)	(2.227)	(2.780)	(1.634)	(1.554)	(1.836)	(1.356)	(1.396)	(1.744)
Maximum Treatment ×	0.224		0.223	0.166		0.166	-0.0209		-0.0197
corrected SIMCE$^+$	(0.277)		(0.272)	(0.203)		(0.203)	(0.157)		(0.158)
Maximum Treatment ×	-0.196		-0.216	-0.189		-0.200	0.160		0.151
corrected SIMCE$^-$	(0.298)		(0.307)	(0.207)		(0.213)	(0.181)		(0.181)
Average Treatment ×		0.248	0.210		0.185	0.141		0.0432	0.0435
SIMCE change$^+$		(0.472)	(0.472)		(0.414)	(0.393)		(0.381)	(0.391)
Average Treatment ×		0.118	9.67e-05		0.0596	-0.0257		-0.00923	-0.0442
SIMCE change$^-$		(0.419)	(0.416)		(0.275)	(0.274)		(0.254)	(0.257)
Maximum Treatment ×		-0.213	-0.210		-0.113	-0.111		0.300	0.298
SIMCE change$^+$		(0.456)	(0.460)		(0.487)	(0.490)		(0.408)	(0.405)
Maximum Treatment ×		0.313	0.331		0.173	0.193		0.00919	-0.0155
SIMCE change$^-$		(0.474)	(0.483)		(0.364)	(0.374)		(0.248)	(0.250)
Polling Station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,930	17,930	17,930	17,930	17,930	17,930	17,930	17,930	17,930
R-squared	0.374	0.373	0.374	0.635	0.635	0.635	0.684	0.684	0.684

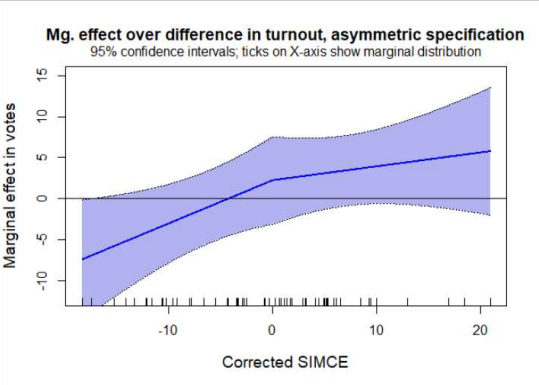
Robust standard errors in parentheses. Old polling stations are those created before the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters.*** p<0.01, ** p<0.05, * p<0.1.

Overall, results for old polling stations imply that voters react to news on educational outcomes, specifically to information on levels and when using an average benchmark. This reaction operates mainly through the extensive margin, increasing turnout and support for the incumbent mayor, without an effect on support for challengers. We also observe that the reactions seem to be asymmetric in the sense that voters react more strongly to negative than to positive news.

Figure 7: Marginal Effects for Asymmetric Specification

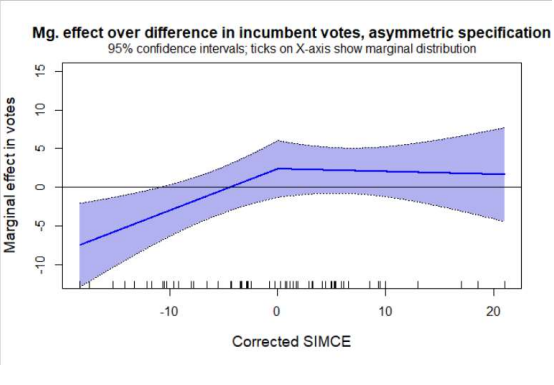
Panel A:

Effects on Turnout



Panel B:

Effects on Support for the Incumbent



b. Results for new polling stations

Table 6 presents the results for new polling stations, following the same structure as Table 4. Columns (1), (5), and (9) imply that the direct effects of the treatments seem to be negative on turnout (but with imprecisely estimated coefficients) and have an interesting pattern on candidates' support; while the maximum treatment seems to decrease support for the incumbent, the average treatment seems to decrease support for the main challenger. This may be explained by the maximum treatment being harsher on the incumbent. However, the results in the rest of the columns do not suggest that voters react to the actual contents of the letters, as none of the coefficients is statistically significant, and in several cases they present the "wrong" sign.

Table 7: Effects of treatments on turnout, votes for the incumbent and for the challenger (in levels), new polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Turnout				Votes for incumbent				Votes for the challenger			
Maximum Treatment	-3.269	-3.323		-3.436	-3.337**	-3.515**		-3.519**	1.509	1.825		1.757
	(2.685)	(2.881)		(2.871)	(1.389)	(1.422)		(1.422)	(1.936)	(1.939)		(1.938)
Maximum Treatment ×		-0.0147		-0.0436		-0.105		-0.112		0.246		0.233
corrected SIMCE		(0.364)		(0.361)		(0.189)		(0.187)		(0.198)		(0.199)
Maximum Treatment ×		0.186		0.174		0.0488		0.0490		0.148		0.143
SIMCE change		(0.386)		(0.384)		(0.209)		(0.209)		(0.154)		(0.154)
Average Treatment	-3.256		-3.081	-3.125	0.690		0.601	0.551	-2.742**		-2.782**	-2.746**
	(3.562)		(3.097)	(3.096)	(2.679)		(2.272)	(2.269)	(1.352)		(1.349)	(1.349)
Average Treatment ×			-0.600	-0.602			-0.154	-0.159			-0.262	-0.255
corrected SIMCE			(0.531)	(0.530)			(0.473)	(0.472)			(0.160)	(0.161)
Average Treatment ×			-0.514	-0.512			-0.0192	-0.0196			-0.172	-0.170
SIMCE change			(0.428)	(0.428)			(0.329)	(0.329)			(0.172)	(0.171)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455
R-squared	0.546	0.545	0.546	0.546	0.621	0.621	0.621	0.621	0.697	0.697	0.698	0.698

Robust standard errors in parentheses. New polling stations are those created after the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. *** p<0.01, ** p<0.05, * p<0.1

Thus, our reading of these results is that they seem to suggest that the letter per se is affecting the decisions of these voters, who have less electoral experience in local elections in the current municipality than those in the old polling stations.[31] Also note that the number of new polling stations is one fourth that of old polling stations, implying less statiscal power.

c. Extension and Robustness Exercises

We now proceed to discuss extensions and robustness exercises related to our main results. We present several results in the Appendix tables and discuss the principal ones in the main text.

Results presented in Figure 4 imply that the main estimates of the paper using changes in electoral outcomes are not an artifact of some underlying trend. We formally test this in Table 7, running a placebo regression for the presidential elections in differences. The specification is the same as that in our main equation, but using the differences in the outcomes of the 2017 and 2013 presidential elections in the left side. As expected if our identification assumptions are correct, we do not find effects for the interaction of the treatment with the corrected SIMCE.

[31] Results for the asymmetric specification for new booths are in Appendix Table 5.

Table 8: Effects of treatment on turnout, votes for the incumbent and votes for the challenger in the 2017 presidential election (in levels), old polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Turnout				Incumbent votes				Challenger votes			
Maximum Treatment	-2.753	-1.486		-1.485	-0.417	0.0668		0.0761	-1.442	-1.113		-1.111
	(2.077)	(2.292)		(2.292)	(1.675)	(2.298)		(2.298)	(1.106)	(1.154)		(1.155)
Maximum Treatment ×		-0.00872		-0.0148		-0.119		-0.124		0.0393		0.0379
corrected SIMCE		(0.200)		(0.200)		(0.169)		(0.169)		(0.107)		(0.107)
Maximum Treatment ×		0.716		0.712		0.313		0.308		0.178		0.177
SIMCE change		(0.477)		(0.477)		(0.619)		(0.619)		(0.212)		(0.212)
Average Treatment	0.825		-0.176	-0.190	1.713		0.677	0.681	0.370		0.193	0.181
	(2.029)		(2.144)	(2.145)	(1.590)		(1.881)	(1.882)	(1.139)		(1.408)	(1.408)
Average Treatment ×			-0.414*	-0.413*			-0.373**	-0.374**			-0.103	-0.102
corrected SIMCE			(0.246)	(0.246)			(0.181)	(0.181)			(0.136)	(0.136)
Average Treatment ×			-0.283	-0.274			-0.367	-0.363			-0.0600	-0.0580
SIMCE change			(0.388)	(0.388)			(0.401)	(0.401)			(0.303)	(0.303)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16,944	16,944	16,944	16,944	14,753	14,753	14,753	14,753	14,753	14,753	14,753	14,753
R-squared	0.374	0.375	0.374	0.375	0.642	0.642	0.642	0.6342	0.622	0.622	0.622	0.622

Robust standard errors in parentheses. Polling station control include the number of registered voters. Old polling stations are those created before the introduction of automatic registration in 2012. Incumbent and challenger votes estimations are made only for municipalities with *Alianza* or *Concertación* mayors. Intensity of the treatment differs across polling stations due to the merger of polling stations at the elections.*** p<0.01, ** p<0.05, * p<0.1.

Second, the results are robust to the exclusion of merged polling stations (in Appendix Tables 6 and 7). We also present results for both old and new polling stations together in differences (imputing 2012 values from the electoral district for new polling stations) in Appendix Table 8. In this case, unsurprisingly, we get results similar to the old polling station estimates (as they represent 80% of the total polling stations).

Third, a relevant extension is whether the treatment has an effect on the election of the municipality council. Local campaigns in Chile are strongly organized around parties and political coalitions and councilors actually often run campaigns together with candidates for mayors. In addition, the complexity of the election of councilors (with many unknown candidates for between 6 and 10 slots) suggest that voters may use information from the mayor's election as cues when voting for councilors (e.g., Ansolabehere et al. 2006), thus the letters may also affect that election (see Appendix Figure 6 with examples of campaign posters and of a ballot for a councilor election).[32]

Thus, we study whether the treatment spills over to the councilors' election. Table 9 presents the results for old polling stations: there is an almost one-to-one correspondence between the

[32] Indeed, the partial correlation between turnout for the mayoral election and for the councilors' election in the control group is 0.93. The correlation between support for the mayor and the councilors in the mayor's coalition is 0.88 in the control group.

effects for mayoral elections and those for councilors. In the case of turnout, the interaction between the average treatment and corrected SIMCE passes from 0.354 in the mayor's election to 0.333 for councilors. This makes sense, because mayor and councilors elections are concurrent and voters who are at the ballor box are compelled to vote in both of them. In the case of support for the incumbent, this interaction passes from 0.271 in the mayor's election to 0.245 in support for pro-incumbent councilors, defined as those from the incumbent's coalition.[33]

Table 9: Effects of treatment on turnout, votes for the incumbent list and votes for the challenger list (in differences) in council's election, old polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Difference in turnout				Difference in incumbent votes				Difference in challenger votes			
Maximum Treamtent	-0.440	-0.502		-0.490	-0.157	0.446		0.455	0.484	0.310		0.325
	(1.680)	(1.674)		(1.675)	(1.134)	(1.134)		(1.134)	(0.963)	(1.028)		(1.029)
Maximum Treatment ×		-0.140		-0.136		-0.0533		-0.0502		-0.120		-0.119
corrected SIMCE		(0.197)		(0.197)		(0.136)		(0.136)		(0.105)		(0.105)
Maximum Treatment ×		0.0337		0.0347		0.364*		0.363*		-0.0150		-0.0111
SIMCE change		(0.257)		(0.257)		(0.214)		(0.214)		(0.182)		(0.182)
Average Treatment	0.888		1.273	1.268	1.000		0.841	0.849	0.562		1.220	1.225
	(1.439)		(1.476)	(1.476)	(0.958)		(1.049)	(1.049)	(0.924)		(1.094)	(1.095)
Average Treatment ×			0.333**	0.331**			0.246**	0.245**			0.0767	0.0749
corrected SIMCE			(0.144)	(0.144)			(0.111)	(0.111)			(0.103)	(0.103)
Average Treatment ×			0.0381	0.0384			-0.132	-0.128			0.285	0.285
SIMCE change			(0.263)	(0.264)			(0.203)	(0.203)			(0.205)	(0.205)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,920	17,920	17,920	17,920	16,277	16,277	16,277	16,277	15,929	15,929	15,929	15,929
R-squared	0.362	0.362	0.362	0.362	0.453	0.453	0.453	0.453	0.589	0.589	0.589	0.589

Robust standard errors in parentheses. Old polling stations are those created before the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters.*** p<0.01, ** p<0.05, * p<0.1.

d. Heterogeneity Analyses

We analyze whether the estimates of our main coefficient of interest, β (the effect of SIMCE for polling stations treated with the average treatment), are different for polling stations with different types of voters (Table 10, Panel A) and for polling stations located in municipalities of different characteristics (Table 10, Panel B).[34] Overall, we lack power to find statistically significant differences by voter type in polling stations or by type of municipality. However, differences in point estimates are suggestive of relevant heterogeneities across several dimensions, which are large and consistent and may still be indicative of what groups have stronger effects and, therefore, may help us understand some of the mechanisms driving the results.

[33] As in previous cases, we focus on old booths and present results for new booths in Appendix Table 9.
[34] We only report the effects for β after estimating the complete specification in equation (1). We also report average treatment effects as a reference in Table 10 in each Panel.

Table 10: Summary of heterogeneities for main results, old polling stations

Panel A: Polling station level heterogeneities	Turnout	Incumbent votes	Challenger votes
No heterogeneity			
Average Treatment ×	0.355***	0.271***	0.0871
corrected SIMCE coefficient	(0.119)	(0.0951)	(0.0927)
Gender			
Greater share of women	0.441***	0.189	0.163
	(0.144)	(0.129)	(0.132)
Greater share of men	0.132	0.262*	-0.00933
	(0.172)	(0.142)	(0.118)
Age			
Younger voters	0.224	0.130	0.145
	(0.172)	(0.116)	(0.127)
Older voters	0.442***	0.395***	-0.0430
	(0.151)	(0.135)	(0.123)
Incumbent Support			
Low-Incumbent-Support Polling Stations	0.053	0.110	0.113
	(0.342)	(0.172)	(0.236)
High-Incumbent-Support Polling Stations	0.465***	0.357***	0.061
	(0.130)	(0.106)	(0.094)

Panel B: Municipality level heterogeneities	Turnout	Incumbent votes	Challenger votes
No heterogeneity			
Average Treatment ×	0.355***	0.271***	0.0871
corrected SIMCE coefficient	(0.119)	(0.0951)	(0.0927)
Incumbent political coalition			
Concertación	0.309*	0.189	0.106
	(0.170)	(0.146)	(0.111)
Alianza	0.504***	0.375***	0.135
	(0.166)	(0.130)	(0.204)
Municipality's share of students in public schools			
Lower share of public schools	0.349**	0.249	0.0737
	(0.160)	(0.166)	(0.142)
Higher share of public schools	0.360*	0.295**	0.124
	(0.184)	(0.117)	(0.130)
Municipality's average income			
Lower income municipalities	0.458***	0.347***	0.146
	(0.133)	(0.0991)	(0.102)
Higher income municipalities	-0.121	0.0152	-0.268
	(0.251)	(0.257)	(0.178)
Municipality size			
Smaller municipalities	0.282**	0.244**	0.00614
	(0.119)	(0.102)	(0.102)
Larger municipalities	0.598	0.309	0.601**
	(0.385)	(0.249)	(0.283)
Incumbent Electoral Spending			
Lower incumbent spending	0.337***	0.265**	0.058
	(0.125)	(0.112)	(0.100)
Higher incumbent spending	0.371	0.239	0.218
	(0.312)	(0.194)	(0.203)

We begin with the estimation of heterogeneities in polling stations with different average age,[35] gender composition,[36] and support for the incumbent mayor in the 2012 election.[37] Results by gender do not reveal consistent patterns (they suggest that turnout in polling

[35] We have the share of voters in each polling station in the following age intervals: 18-29, 30-59, 60-80. Using this information, we create an index for the average age in each booth.
[36] We split the sample in booths above and below the median in each dimension.
[37] We split the sample in booths with more or less than 50% of the votes for the incumbent mayor in the 2012 election.

stations with more women tend to be more affected in terms of turnout, but less affected in terms of support for the incumbent). In turn, results by age consistently suggest that the effects are larger and only significant for polling stations with older voters. This may be explained by older voters being more involved in the political process or more interested in education outcomes. We also test for differential effects by combinations of age and gender but found no clear patterns (not shown for reasons of space). Finally, we find that the effects are much stronger in polling stations where the incumbent mayor had a greater share of the vote in 2012. This suggests that voters who are more likely to have voted for the current mayor react more strongly to new information on her performance. This may actually explain the stronger results we find for old polling stations since they are more likely to be part of the incumbent's constituency.

Panel B presents heterogeneous effects by municipal characteristics. Treatment effects are larger in municipalities where the incumbent belongs to the right-wing political coalition (*Alianza*), however, the effects are far from statistically different. In turn, we do not see relevant differences by the share of public school enrollment in different municipalities. This contrasts with results by income levels, which, despite being non-significant, suggest that poorer municipalities react more strongly to the treatment. This is probably explained by these voters lacking educational outcome information (as documented in Allende et al., 2019). Notice that since there are no heterogeneous effects by public school enrollment, this income effect is unlikely to be related to poorer municipalities having a larger share of students in public schools. Next, we do not see clear differences by municipality size (measured using population), since the magnitude and significance of the coefficients point in different directions. At last, there are no clear patterns by the amount of (official) electoral spending in the incumbent's campaign.

Overall, heterogeneity results suggest that the information intervention is most useful for relatively old voters from poor municipalities. This probably relates to contexts with a combination of more information frictions and more demand and appreciation for mayoral outcomes.

6. Conclusion

Citizens are often confronted with the challenge of voting for politicians without precise information on their performance. This challenge is even more pressing when trying to deal with complex outcomes of the politicians' actions, which require both having benchmarks and processing raw information to assess the value added of politicians' job. Our paper examines the electoral effects of providing information on the quality of educational provision of incumbent mayors. We designed and implemented a randomized experiment in Chile, where local governments oversee public schools, there is good information about educational outcomes, and the electoral roll is public. We sent 128,033 letters to voters with information on performance of local public schools in test scores (levels and changes), alternating between two different yardsticks (average and maximum educational performance).

Our results show that being informed of a better relative performance increases turnout, which translates almost one-to-one in support for the incumbent and produces spillovers to the election of local councilors. We also show that these results are robust to controlling for voters prior beliefs about educational quality, thus suggesting that they are responding to the news provided. Results are especially strong when educational results are bad, reducing turnout and the votes for the incumbent. These results seem to be driven by effects among relatively old voters, by those who supported the mayor in the previous election, and in poor municipalities. In contrast, our results for voters belonging to new polling stations are less clear and seem to suggest that voters react more to the letter itself not the information it contains, with a direct negative effect on turnout especially when provided with a tougher yardstick. In terms of the letters' content, we find that the effects are concentrated in letters that use average performance as the yardstick, and that voters react much more to outcomes in levels than in changes.

It is worth emphasizing that we find a series of zero effects on electoral outcomes: no direct effect of the letters, no effects of information on SIMCE changes, no effects of the maximum treatment, and no effects on support for the challenger. From a policy perspective, this suggests that using information to affect the behavior of voters is not an easy task. Moreover, the fact that our significant effects only operate through vote for the incumbent without any

effect on voting for the main challenger implies a limited role for political competition to make incumbents accountable. Besides, since our effects operate via turnout, bad news are demobilizing, which may also be problematic.

In terms of policy evaluation and policy implications, our experiment incurred a cost of USD$0.34 per voter contacted. This is an upper bound of the cost as the anecdotal evidence of our experiment implies that there was some dissemination of the information to the control group. This also suggests the possibility of designing policies targeted through social media or through key actors. Certainly, more research is need.

Taken together, these findings indicate that providing voters with electoral experience with specific information about outcomes of policies controlled by politicians seems to affect their voting behavior. This contrasts with the null effects for voters with less previous voting experience. This suggests that they represent substantially different types of voters, which, therefore, require different policies and interventions.

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Appendix Table 1:

Table A1: Correlations of Educational Outcomes and Other Dimensions of Municipality Level

Dimension:	(1) Number of public health centers	(2) Crime risk	(3) Mantained parks	(4) Expenditures in park maintenance
D	0.235**	-11.13***	0.791**	1.026**
	(0.121)	(2.120)	(0.371)	(0.487)
$\log(Pop)$	-2.301**	-0.596*	-1.831***	-2.263***
	(0.952)	(0.789)	(0.616)	(0.780)
$\log(Pov)$	-2.892	-2.139	-1.463	-1.660
	(1.955)	(1.660)	(1.774)	(2.118)
R-squared	0.04	0.13	0.06	0.08
Observations	296	340	332	240
Spearman correlation	0.16***	-0.28***	0.13**	0.09

Notes: This table presents estimates of the following regression:

$$SIMCE_m = \alpha + \beta D_m + \gamma \log(Pop_m) + \delta \log(Pov_m) + \varepsilon_{sm} ,$$

where D are different proxies for other outcomes produced in municipality m, Pop is total population, and Pov is the poverty rate. The purpose is to control for size and income effects to better identify the correlation between SIMCE and other measures. The Spearman rank presents the correlation between SIMCE and D (after partialling out the effects of population and poverty).

Appendix Table 2:

Table A2: Value Added Regression

VARIABLES	(1) SIMCE score
Students' Vulnerability Index	-1.036**
	(0.469)
Students' Vulnerability Index^2	0.00534*
	(0.00322)
Rural Population	30.93***
	(8.734)
Rural Population^2	-25.15***
	(8.694)
Poor Students in Public Schools	-0.00149**
	(0.000687)
Poor Students in Public Schools^2	2.04e-08
	(1.29e-08)
Population	0.000126**
	(6.03e-05)
Population^2	-1.02e-10*
	(5.36e-11)
Type of Municipality FE:	Yes
Observations	343
R-squared	0.223

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

Appendix Table 3: Summary Statistics

Table A3: Summary statistics

	Observations	Mean	Std. dev.	p1	p99
Old polling stations (Treated polling stations = 326)					
Registered voters	17,930	333.90	20.46	259	437
Turnout in 2012	17,920	0.416	0.103	0.186	0.681
Incumbent votes in 2012	17,914	0.517	0.112	0.272	0.784
Share of men	17,930	0.467	0.197	0.054	0.938
Ratio age 18-30	17,930	0.159	0.153	0.012	0.586
Ratio age 30-59	17,930	0.586	0.163	0.129	0.863
Ratio age 60 or older	17,930	0.256	0.143	0.05	0.778
New polling stations (Treated polling stations = 74)					
Registered voters	4,455	334.04	26.70	248	444
Share of men	4,455	0.541	0.143	0.345	0.982
Ratio age 18-30	4,455	0.618	0.379	0.007	0.994
Ratio age 30-59	4,455	0.326	0.346	0.003	0.980
Ratio age 60 or older	4,455	0.056	0.107	0	0.590
At the municipality level					
Turnout in 2012	59	0.399	0.062	0.261	0.567
Incumbent votes in 2012	59	0.519	0.105	0.320	0.751
Change in SIMCE	59	-1.508	5.985	-12.29	19
Corrected SIMCE	59	-0.979	8.722	-18.31	20.98
Share Alianza 2012	57	0.345	0.169	0.039	0.751
Share Concertacion 2012	58	0.427	0.144	0.095	0.735
Population	59	167,811.1	150,024.6	50,696	888,377

New polling stations are those created after the introduction of automatic registration in 2012.

Appendix Table 4

Table A4: Effect of treatment in null and blank votes, old and new polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Old polling stations Difference in null and blank votes				New polling stations Total null and blank votes			
Maximum Treatment	-0.0809	-0.256		-0.255	-0.363	-0.407		-0.409
	(0.313)	(0.368)		(0.368)	(0.370)	(0.356)		(0.356)
Maximum Treatment ×		-0.0269		-0.0268		-0.0419		-0.0428
corrected SIMCE		(0.0297)		(0.0298)		(0.0519)		(0.0520)
Maximum Treatment ×		-0.0911		-0.0906		-0.0286		-0.0279
SIMCE change		(0.0776)		(0.0776)		(0.0523)		(0.0522)
Average Treatment	0.00911		0.0907	0.0875	-0.0685		-0.149	-0.157
	(0.273)		(0.326)	(0.326)	(0.306)		(0.298)	(0.298)
Average Treatment ×			0.00758	0.00714			-0.0175	-0.0189
corrected SIMCE			(0.0288)	(0.0288)			(0.0339)	(0.0338)
Average Treatment ×			0.0352	0.0340			0.0455	0.0451
SIMCE change			(0.0598)	(0.0598)			(0.0411)	(0.0412)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,920	17,920	17,920	17,920	4,455	4,455	4,455	4,455
R-squared	0.182	0.182	0.182	0.182	0.243	0.244	0.243	0.244

Robust standard errors in parentheses. New (old) polling stations are those created after (before) the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. *** p<0.01, ** p<0.05, * p<0.1.

Appendix Table 5

Table A5: Main effects allowing for asymmetric effect due to positive (negative) information, new polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Turnout			Votes for the incumbent			Votes for the challenger		
Average Treatment	-7.354	6.257	1.318	-5.054	5.523	-0.502	-0.336	-1.161	0.704
	(5.135)	(6.229)	(5.318)	(3.665)	(5.143)	(3.460)	(2.045)	(2.458)	(2.684)
Average Treatment ×	-0.0893		0.132	0.722*		0.929**	-0.692*		-0.703*
corrected SIMCE^{+}	(0.685)		(0.642)	(0.425)		(0.450)	(0.394)		(0.412)
Average Treatment ×	-1.069		-0.931	-0.863		-0.867	0.0712		0.125
corrected SIMCE^{-}	(1.072)		(1.053)	(0.960)		(0.955)	(0.221)		(0.230)
Maximum Treatment	-5.416	-3.082	-5.410	-5.306**	-2.545	-4.694*	3.008	2.459	4.359
	(4.297)	(4.657)	(6.009)	(2.154)	(2.190)	(2.622)	(3.670)	(4.278)	(5.570)
Maximum Treatment ×	0.498		0.632	0.370		0.474	-0.0772		0.0508
corrected SIMCE^{+}	(1.380)		(1.413)	(0.553)		(0.596)	(0.843)		(0.841)
Maximum Treatment ×	-0.288		-0.325	-0.325		-0.334	0.374		0.380
corrected SIMCE^{-}	(0.411)		(0.430)	(0.268)		(0.273)	(0.289)		(0.305)
Average Treatment ×		-1.586**	-1.412**		-0.595	-0.549		-0.347	-0.271
SIMCE change^{+}		(0.666)	(0.618)		(0.522)	(0.474)		(0.279)	(0.280)
Average Treatment ×		2.100*	2.026		1.440	1.708*		0.199	-0.0794
SIMCE change^{-}		(1.271)	(1.326)		(1.006)	(1.022)		(0.487)	(0.519)
Maximum Treatment ×		0.131	0.130		-0.0693	-0.0515		0.00191	-0.107
SIMCE change^{+}		(0.750)	(0.750)		(0.351)	(0.338)		(0.483)	(0.491)
Maximum Treatment ×		0.235	0.331		0.238	0.288		0.388	0.529
SIMCE change^{-}		(0.729)	(0.780)		(0.473)	(0.502)		(0.604)	(0.606)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455	4,455
R-squared	0.546	0.546	0.546	0.621	0.621	0.622	0.698	0.698	0.698

Robust standard errors in parentheses. New polling stations are those created after the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters.*** p<0.01, ** p<0.05, * p<0.1.

Appendix Table 6

Table A6: Main effects for never-merged polling stations (in differences), old polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Difference in Turnout				Difference in Incumbent votes				Difference in Challenger votes			
Maximum Treatment	-2.019	-1.845		-1.839	-0.375	-0.298		-0.295	-0.984	-0.659		-0.656
	(1.291)	(1.308)		(1.308)	(0.988)	(1.063)		(1.064)	(0.791)	(0.904)		(0.904)
Maximum Treatment ×		-0.0385		-0.0333		-0.0448		-0.0411		0.0297		0.0313
corrected SIMCE		(0.143)		(0.143)		(0.112)		(0.112)		(0.0875)		(0.0875)
Maximum Treatment ×		0.126		0.128		0.0678		0.0690		0.190		0.190
SIMCE change		(0.252)		(0.252)		(0.245)		(0.245)		(0.184)		(0.184)
Average Treatment	0.222		0.763	0.741	0.0815		0.407	0.404	0.246		0.299	0.292
	(1.313)		(1.345)	(1.345)	(0.946)		(1.068)	(1.069)	(0.801)		(0.894)	(0.894)
Average Treatment ×			0.358***	0.357***			0.252***	0.252***			0.114	0.115
corrected SIMCE			(0.116)	(0.116)			(0.0957)	(0.0957)			(0.0914)	(0.0914)
Average Treatment ×			0.113	0.114			0.0589	0.0597			-0.0223	-0.0200
SIMCE change			(0.247)	(0.247)			(0.203)	(0.203)			(0.170)	(0.170)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	17,487	17,487	17,487	17,487	17,487	17,487	17,487	17,487	17,487	17,487	17,487	17,487
R-squared	0.370	0.370	0.370	0.370	0.647	0.647	0.647	0.647	0.695	0.695	0.695	0.695

Robust standard errors in parentheses. Old polling stations are those created before the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 7

Table A7: Main results for never-merged polling stations (in levels), new polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Turnout				Incumbent votes				Challenger votes			
Maximum Treatment	-3.555	-4.149		-4.171	-3.314**	-3.654***		-3.646***	1.080	1.127		1.113
	(2.599)	(2.749)		(2.746)	(1.291)	(1.321)		(1.319)	(1.929)	(1.868)		(1.869)
Maximum Treatment ×		-0.346		-0.360		-0.218		-0.227		0.0968		0.0978
corrected SIMCE		(0.371)		(0.369)		(0.202)		(0.199)		(0.177)		(0.177)
Maximum Treatment ×		0.183		0.172		0.0345		0.0334		0.167		0.164
SIMCE change		(0.412)		(0.410)		(0.211)		(0.211)		(0.159)		(0.159)
Average Treatment	-0.447		-0.359	-0.388	0.981		0.398	0.369	-0.798		-0.382	-0.370
	(3.714)		(2.937)	(2.940)	(2.796)		(1.952)	(1.953)	(1.220)		(1.140)	(1.140)
Average Treatment ×			-0.518	-0.522			-0.392	-0.395			0.0478	0.0489
corrected SIMCE			(0.638)	(0.639)			(0.545)	(0.546)			(0.128)	(0.128)
Average Treatment ×			-0.538	-0.538			-0.0420	-0.0440			-0.191	-0.188
SIMCE change			(0.481)	(0.482)			(0.351)	(0.352)			(0.171)	(0.171)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,248	4,248	4,248	4,248	4,248	4,248	4,248	4,248	4,248	4,248	4,248	4,248
R-squared	0.495	0.495	0.495	0.496	0.602	0.602	0.602	0.603	0.700	0.700	0.700	0.700

Robust standard errors in parentheses. New polling stations are those created after the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. Merged polling stations both in 2012 or 2016 elections are excluded. *** p<0.01, ** p<0.05, * p<0.1

Appendix Table 8

Table A8: Main results (in differences), all polling stations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Difference in turnout				Difference in incumbent votes				Difference in challenger votes			
Maximum Treatment	-0.411	-0.313		-0.304	1.421	1.211		1.227	1.292	1.397		1.397
	(1.600)	(1.656)		(1.656)	(1.575)	(1.726)		(1.726)	(1.741)	(2.040)		(2.040)
Maximum Treatment ×		0.00736		0.0119		-0.154		-0.149		-0.0624		-0.0619
corrected SIMCE		(0.176)		(0.176)		(0.171)		(0.171)		(0.187)		(0.187)
Maximum Treatment ×		0.0780		0.0748		-0.0447		-0.0469		0.127		0.118
SIMCE change		(0.301)		(0.301)		(0.343)		(0.343)		(0.452)		(0.452)
Average Treatment	1.149		1.046	1.043	1.612		1.606	1.623	1.238		0.261	0.279
	(1.593)		(1.650)	(1.650)	(1.527)		(1.657)	(1.657)	(1.844)		(2.289)	(2.290)
Average Treatment ×			0.302*	0.302*			0.319*	0.316*			0.0548	0.0536
corrected SIMCE			(0.172)	(0.172)			(0.175)	(0.176)			(0.185)	(0.185)
Average Treatment ×			-0.254	-0.253			-0.185	-0.185			-0.671	-0.670
SIMCE change			(0.267)	(0.267)			(0.285)	(0.285)			(0.484)	(0.484)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,124	22,124	22,124	22,124	22,124	22,124	22,124	22,124	22,124	22,124	22,124	22,124
R-squared	0.266	0.266	0.266	0.266	0.320	0.320	0.320	0.320	0.284	0.284	0.284	0.284

Robust standard errors in parentheses. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. For new polling stations we impute past voting behavior using the mean votes in the same electoral circumscription. There are 261 polling stations that were not included in this estimation because were part of a new electoral circumscription so we were unable to impute any past vote.*** p<0.01, ** p<0.05, * p<0.1.

Appendix Table 9

Table A9: Effects of treatment on turnout, votes for the incumbent list and votes for the challenger list (in levels) in council's election, new polling stations

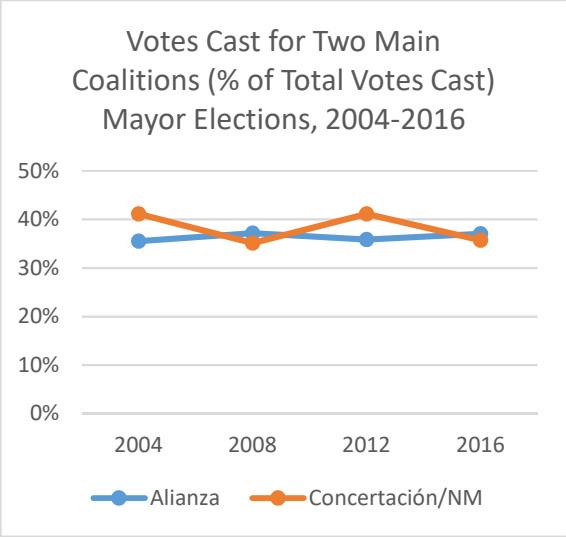
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Turnout				Votes for incumbent				Votes for the challenger			
Maximum Treatment	-3.736	-4.384		-4.435	-1.389	-1.487		-1.511	-1.374*	-1.554*		-1.568**
	(2.622)	(2.803)		(2.797)	(1.565)	(1.671)		(1.664)	(0.808)	(0.793)		(0.792)
Maximum Treatment ×		-0.391		-0.408		-0.0527		-0.0645		-0.171		-0.179
corrected SIMCE		(0.358)		(0.356)		(0.269)		(0.267)		(0.132)		(0.131)
Maximum Treatment ×		0.127		0.110		0.178		0.168		-0.121		-0.125
SIMCE change		(0.427)		(0.423)		(0.339)		(0.338)		(0.0958)		(0.0958)
Average Treatment	-3.167		-2.510	-2.535	-1.268		-1.327	-1.333	-1.501		-2.187*	-2.200*
	(3.543)		(3.089)	(3.091)	(2.825)		(2.153)	(2.154)	(1.338)		(1.219)	(1.220)
Average Treatment ×			-0.663	-0.666			-0.478	-0.479			-0.366*	-0.368*
corrected SIMCE			(0.536)	(0.536)			(0.366)	(0.366)			(0.187)	(0.188)
Average Treatment ×			-0.588	-0.590			-0.257	-0.256			-0.0845	-0.0871
SIMCE change			(0.400)	(0.401)			(0.533)	(0.534)			(0.210)	(0.210)
Polling station controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,411	4,411	4,411	4,411	3,967	3,967	3,967	3,967	4,245	4,245	4,245	4,245
R-squared	0.528	0.528	0.529	0.529	0.561	0.561	0.561	0.561	0.604	0.604	0.604	0.605

Robust standard errors in parentheses. New polling stations are those created after the introduction of automatic registration in 2012. Polling station controls include demographic characteristics (age and gender) and the number of registered voters. *** p<0.01, ** p<0.05, * p<0.1

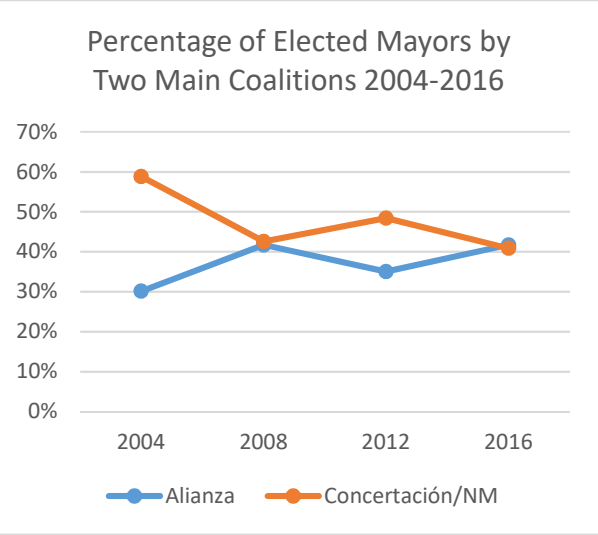
Appendix Figure 1

Support for the Major Coalitions in Mayoral Elections

Panel A

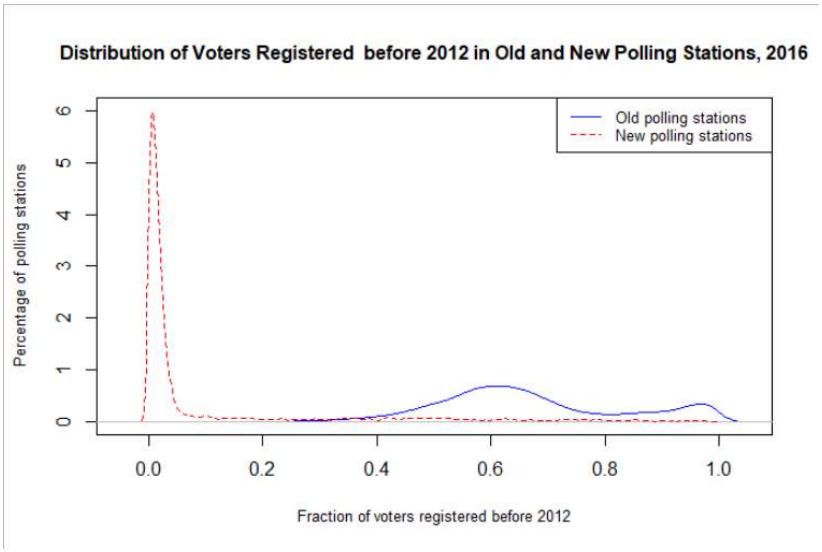


Panel B

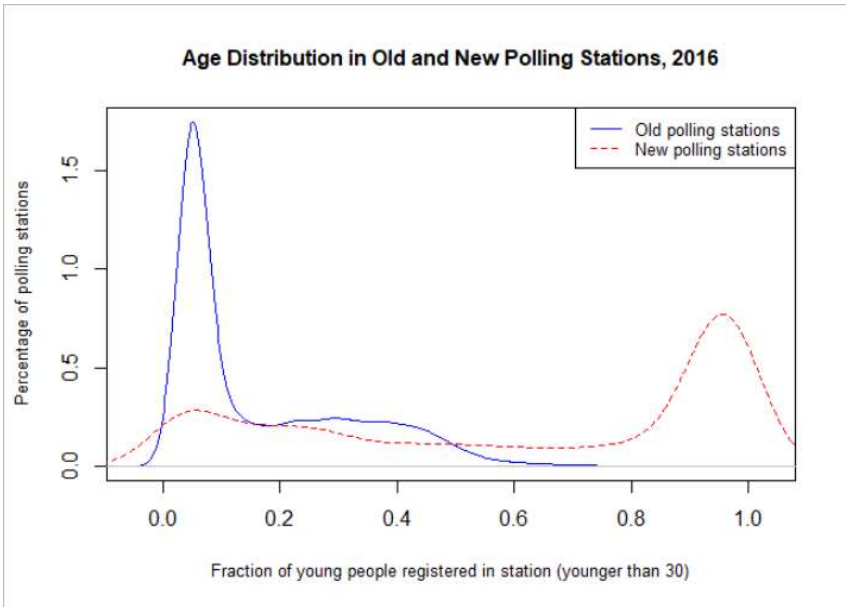


Appendix Figure 2

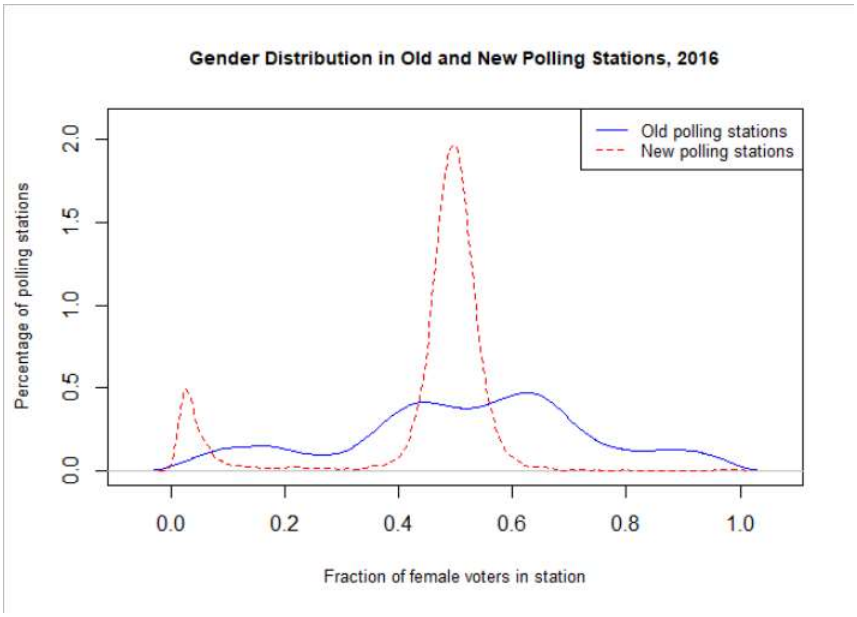
Panel A:



Panel B:



Panel C:

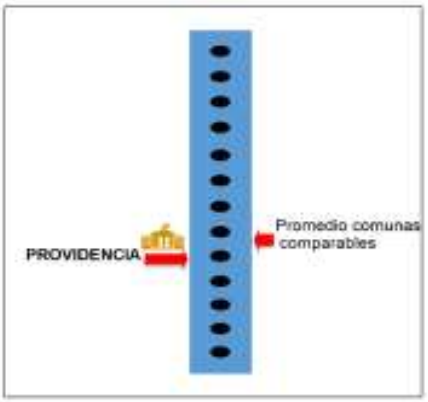

Gender Distribution in Old and New Polling Stations, 2016
Old polling stations
New polling stations
Percentage of polling stations
0.0
0.5
1.0
1.5
2.0
0.0
0.2
0.4
0.6
0.8
1.0
Fraction of female voters in station

Appendix Figure 3

Letter with Average Treatment (Example)

El domingo 23 de octubre son las elecciones municipales. El municipio es responsable de la administración de las escuelas municipales. Estos son los resultados de las escuelas municipales de su comuna en la prueba SIMCE de 4° básico, que mide logros de aprendizaje.

¿Cómo le fue a PROVIDENCIA respecto a comunas comparables?



¿Mejoró o empeoró PROVIDENCIA en este período municipal?

Esta carta informativa es parte de un proyecto de investigación académica coordinado por el profesor Francisco Gallego de la Pontificia Universidad Católica de Chile. Para preguntas o información adicional comunicarse con margarita@uc.cl.

Appendix Figure 4

Letter with Maximum Treatment (Example)

El domingo 23 de octubre son las elecciones municipales. El municipio es responsable de varias tareas relacionadas con la comuna, como la administración de las escuelas municipales. Estos son los resultados de las escuelas municipales de su comuna en este período municipal en la pruebas SIMCE de 4° básico, que mide logros de aprendizaje

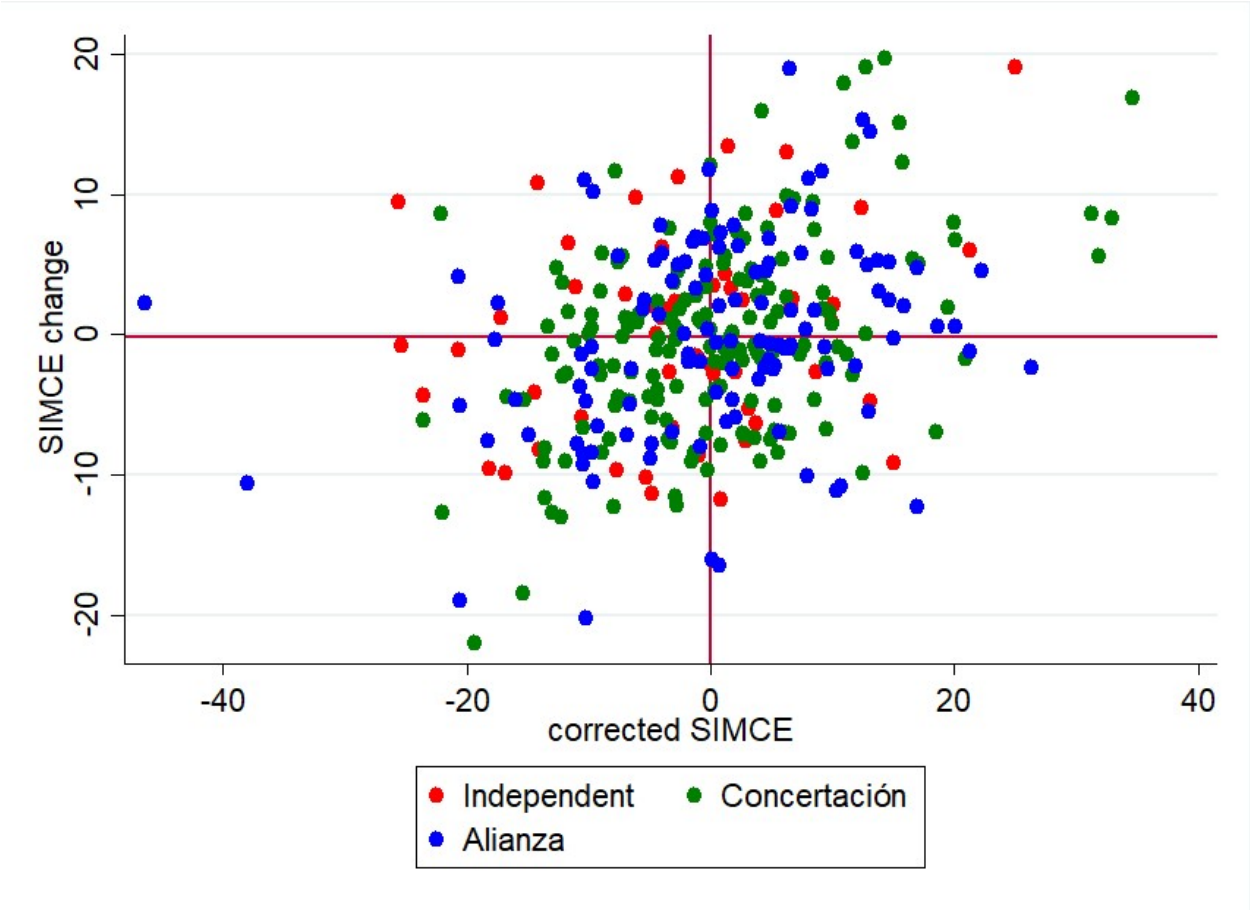
¿Cómo le fue a SAN PEDRO DE LA PAZ respecto a comunas comparables?

¿Mejoró o empeoró SAN PEDRO DE LA PAZ en este período municipal?

Esta carta informativa es parte de un proyecto de investigación académica coordinado por el profesor Francisco Gallego de la Pontificia Universidad Católica de Chile. Para preguntas o información adicional contactarme por margarita@uc.cl.

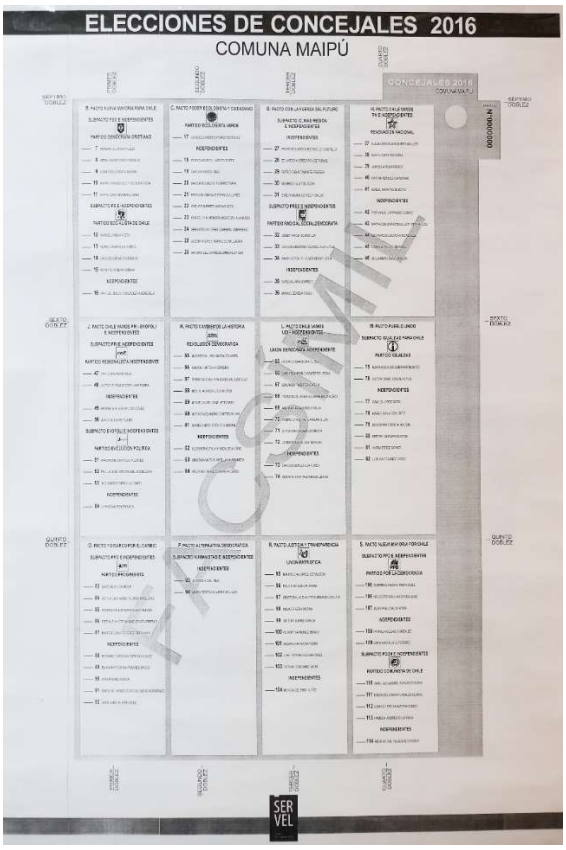
Appendix Figure 5

Correlation between SIMCE Changes and Levels, by Political Coalition



Appendix Figure 6

Councilors Campaign Posters and one Ballot for the Councilors Elections (Examples)


ELECCIONES DE CONCEJALES 2016
COMUNA MAIPÚ
SER VEL