DISCUSSION PAPER SERIES

SALIENCE AND ACCOUNTABILITY: SCHOOL INFRASTRUCTURE AND LAST-MINUTE ELECTORAL PUNISHMENT

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PUBLIC ECONOMICS

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Salience and Accountability: School Infrastructure and Last-Minute Electoral Punishment[i]

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Abstract

Can seemingly unimportant factors influence voting decisions by making certain issues salient? We study this question in the context of Argentina's 2015 presidential elections by examining how the quality of the infrastructure of the school where citizens were assigned to vote influenced their voting choice. Exploiting the quasi-random assignment of voters to ballot stations located in different public schools in the City of Buenos Aires, we find that individuals assigned to schools with poorer infrastructure were significantly less likely to vote for Mauricio Macri, the incumbent mayor then running for president. The effect is larger in low-income areas - where fewer people can afford private substitutes to public education - and in places where more households have children in school age. The effect is unlikely to be driven by information provision, since information on public school infrastructure was readily available to parents before elections. An alternative interpretation is that direct exposure to poor school infrastructure at the time of voting makes public education - and the poor performance of the incumbent - more salient.

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1   Introduction

Being informed about government actions is crucial for voters to correctly evaluate politicians and punish or reward them come election time. Yet, though information about government performance is widely available, evidence suggests that voters do not always translate it into useful knowledge. For example, they can mistakenly infer politicians' quality from their performance (e.g., attributing the effect of luck to effort (Leigh, 2009; Campello and Zucco, 2016), or can be swayed by seemingly irrelevant factors such as the order of the names on the ballot (Blom-Hansen et al., 2016).

Whether these lapses are due to the frictional costs associated with information processing or to the existence of mental gaps (Handel and Schwartzstein, 2018), the form and context in which information is presented to voters is also likely to matter. Indeed, prior evidence suggests that information provided in a more visible way and at the appropriate time may have a large effect on individuals' decision-making process (Robinson and Torvik, 2005; Mani and Mukand, 2007; DellaVigna, 2009; Harding and Stasavage, 2013).

In this paper we investigate the possibility that exposure to information about government performance at the time of voting affects electoral choices by making certain issues more salient. Focusing on the issue of public education and school infrastructure quality, we study whether voters assigned to vote in schools with poorer infrastructure are less likely to support the incumbent. Specifically, we test the hypothesis that being directly exposed to the poor state of public schools at the time of voting makes the issue of public education more salient and voters more likely to punish the incumbent government for its inadequate performance in the provision of this key public good.

Our analysis focuses on the presidential elections held in Argentina in 2015 which, for various reasons, represent a particularly suitable context to study this question. First, one of the main candidates running for president was Mauricio Macri, who was the mayor of Buenos Aires prior to the election. As mayor, Macri had been in charge of the city's public school system during the eight years preceding the election, and was hence responsible for the state of local public schools. Indeed, the issue of public education, and the promise of more investments in public schools, had been a cornerstone of Macri's campaign for mayor and then for president.[1] Furthermore, the improvement of Buenos Aires' public education system during his tenure was regularly praised throughout his presidential campaign.[2]

The second aspect, which is key to our identification strategy, concerns the way Argen-

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[1] For example, Macri's commitment to improve the quality of Argentina's early education system and to build 3,000 new kindergartens once elected president, received extensive media coverage during the 2015 campaign. See for example: this link.

[2] See, for instance: this link.

tinian voters are assigned to vote in particular ballot stations located in schools. Each of Argentina's 24 electoral districts is divided into small sub-districts, or *circuitos* (average area: $1.2 \, \text{km}^2$), and within each *circuito*, voters are assigned to ballot stations in alphabetical order by their last name. Exploiting the quasi-random nature of this procedure, we try to gauge the causal impact of exposure to school infrastructure by comparing the electoral behavior of voters assigned to schools in good vs. bad infrastructural conditions within the same *circuito*. What is crucial for our identification strategy is that the distribution of last names is not systematically correlated with the quality of school infrastructure within a *circuito*. Indeed, even if the frequency of certain last names was correlated with some observable or unobservable voter characteristics (e.g., if last names starting with the letter "A" were more common among rich than among poor people), we would still identify a causal effect as long as these characteristics are not systematically correlated with school quality within a *circuito* (e.g., if voters with last names starting with an "A" are not assigned to schools with better infrastructure).

To corroborate this assumption, using data on voters' age and gender at the ballot station level, we document that, at least along these dimensions for which information is available, voters assigned to schools with good infrastructure are similar to those assigned to schools with poorer infrastructure.

Since the quasi-random assignment is at the school level (rather than at the school-quality level), it is still possible that school's infrastructure is correlated with other variables relevant to voting decisions, and that our estimation might capture the effect of these characteristics. To alleviate this concern, in all our regressions we control for several key school characteristics: the average real state prices of the school's block (which captures the quality of the amenities in the surroundings of the school), and three measures of distance/accessibility to the school (i.e., number of bus/metro stations within a 0.5km radius of the school, and the average distance of the school from the center of the circuit).

Following this approach, and using comprehensive ballot-station level data for the entire city of Buenos Aires, we find that voters assigned to "poor-infrastructure" schools are significantly less likely to support Macri than those voting in "good-infrasctructure" ones. On average, exposure to poor school infrastructure is associated with a decrease in Macri's vote share of 0.22 percentage points.[3] The effect is mainly concentrated in areas populated by voters who value or benefit disproportionately from public schools. These include low-income circuits, where fewer people can afford private substitutes to public education (effect

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[3]To provide some context to interpret this figure, the last polls before the different election rounds estimated between 11% and 20% of undecided voters. See, for example Elypsis and La Nacion. Eventually the race was very close, with Macri prevailing by a margin of less than 2 p.p.

between 0.49-0.53 p.p.), and areas with a higher share of households with school-age children (0.52-0.60 p.p.). The effect reaches its peak - 0.58-0.67 p.p. - in places that present both of these characteristics.

Since the groups that are most affected by the experience at the polling booth are precisely those that are more likely to be aware of the quality of public schools in their community even *before* the election, it seems unlikely that the effect may be solely driven by the availability of new information. An alternative interpretation is that experiencing poor school infrastructure so vividly minutes before casting their ballot could have made the issue more salient to voters at a crucial moment, increasing their propensity to punish the incumbent.

We find no effect of school infrastructure quality on both voter turnout and on the proportion of invalid votes. The null-effect on turnout provides additional confidence that the effect is indeed driven by exposure to school infrastructure and not by other confounds, since voters could only witness the quality of the school premises once they had reached the voting booth. To the extent that invalid ballots are considered a form of protest vote (Power and Garand (2007)), this null effect indicates, instead, that voters directed their disappointment with the quality of public schools specifically towards the former mayor and not towards the political establishment in general. Taken together, these findings support the view that making information about public policy salient can have a significant impact on the way voters evaluate government performance and, ultimately, on their ability to keep elected officials accountable.

Our paper lies in the intersection of two strands of literature. First, it is related to previous work on the impact of contextual factors on voting decisions (see among others Miller and Krosnick (1998), Koppell and Steen (2004), Berger et al. (2008), Shue and Luttmer (2009), Marcinkiewicz (2014)). Unlike these contributions, however, we ascribe the documented effect not to confusion or unconscious factors. Rather, we attribute this to the increased salience of the issue of public education which is triggered by the infrastructure quality of the school where individuals vote.In this regard, our findings also relate to the literature on the effect of limited attention and salience on consumer and investor behavior (surveyed in DellaVigna (2009)). These contributions document that, when individual attention is scarce, even a small amount of information presented at the appropriate time can have a disproportionate effect on individual decisions.[4] Our paper documents that inattention and salience also impact voting decisions.

Second, our paper relates to the literature on electoral accountability and retrospective voting (Besley (2007), Banerjee et al. (2011), Casaburi and Troiano (2015), Duggan and

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[4]For example, DellaVigna and Pollet (2009) show that stock prices react more strongly to information published at times when people are less distracted by other events.

Martinelli (2017), Casas et al. (2017)). This body of work has documented that informing voters about government performance can have a considerable impact on electoral decisions (Ferraz and Finan (2008), Chong et al. (2014), Drago et al. (2014), Larreguy et al. (2015), Dias and Ferraz (2017)). Our results qualify these findings by showing that information on incumbent performance is especially effective when provided at the time voters make their decision. Altogether, we show that contextual factors matter even for rational voters.

The remainder of the paper is structured as follows: Section 2 explains the institutional background, Section 3 describes the data, Section 4 discusses the empirical strategy, Section 5 presents the main results and interpretation. Section 6, concludes.

2 Institutional Background

2.1 Presidential Elections

Argentina is a presidential democracy in which the president is directly elected by popular vote. To become president a candidate must obtain a qualified majority of 45% or obtain at least 40% of the votes with a difference of 10% or more over the runner-up. If none of these conditions is met, a runoff election is held between the top two candidates and the one obtaining more votes is elected president. Voting is compulsory for anyone aged 18 to 69. Therefore, turnout is typically high.

In 2011, a new system to elect candidates running in the general elections was introduced. The new system, called PASO, requires parties to select candidates through open primaries. Primaries for all parties are held simultaneously. The setting is identical to that of a general election, with the difference being that parties can present more than one candidate (though many do not). The candidate that obtains the simple majority within each party is selected to represent it in the general election. Only parties that obtain more than 1.5% of the votes in the PASO are eligible to participate in the general election. Since participation in the PASO is compulsory and turnout is high, these elections are considered, by parties and the media alike, almost as important as the general election which typically takes place a few months later.

2.2 The 2015 presidential election

The PASO elections were held in Argentina in August of 2015, while the first and second round of the general elections took place in October and November respectively. Eleven parties ran in the PASO; of these six obtained enough votes to run in the the general election. The main competing parties are described in Section 7.1, while Figure A1 reports the results

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of both elections at the national level (both in the Appendix).

One of the main candidates was Daniel Scioli, running for the *Frente para la Victoria* (FpV), the party that controlled the federal government since 2003. The main opposition candidate was Mauricio Macri, mayor of the City of Buenos Aires since 2007, who ran for the moderate center-right party *Cambiemos*. Hence, the citizens of the City of Buenos Aires could choose to punish or reward Macri through their vote in the 2015 elections.

Both elections were close: in the PASO, FPV obtained 38% of the votes against 30% for *Cambiemos*. In the first round of the general election, FPV obtained 37% of the votes against 34% for *Cambiemos*. In the runoff, *Cambiemos* won the election with 51.3% of the votes against FPV's 48.7%.

2.3 The role of mayors

Argentina is a federal democracy with three levels of government: federal, provincial and municipal. There are 23 provinces which are ruled by governors who are directly elected. In addition, the City of Buenos Aires is an autonomous jurisdiction which is identical in every aspect to a province and it is governed by an elected mayor.[5]

Following a series of reforms carried out in the early 1990's, the provision of key public goods and services was largely decentralized from the federal government to local governments. In the domain of education, 44% of high schools were managed by the federal government prior to the reform, while virtually all schools fell under the jurisdiction of provincial governments and of the City of Buenos Aires in 1994.[6].

As a consequence, spending in education has become one of the most significant items in provinces' budgets, accounting for about a third of total spending (Rivas and Dborkin (2018)). In Buenos Aires, in particular, education represents the largest spending item, even larger than health care.

The poor quality of school infrastructure has traditionally been a source of concern for the people of Buenos Aires, and public education has generally been a key issue in the local political debate and in the campaign promises of mayoral candidates. For example, in 2007, one month before taking office as mayor, Mauricio Macri conducted a survey on school infrastructure in Buenos Aires. It concluded that two thirds of the schools in the city were in critical conditions. The results of the survey attracted extensive media coverage,[7] which pressured the city council to declare a state of "infrastructural emergency", which was

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[5]The City of Buenos Aires is distinct and independent from the Province of Buenos Aires. We will henceforth use Buenos Aires to refer to the City of Buenos Aires.

[6]See http://www.bnm.me.gov.ar/giga1/documentos/EL004000.pdf.

[7]See for instance this link.

approved in the first week of Macri's government.

Although conditions in the schools of Buenos Aires have improved since, the issue is still relevant for most of the citizens. Almost every year since 2007, massive teacher strikes and student demonstrations have taken place in Buenos Aires demanding better infrastructure.[8]

2.4 The voting process

Argentina is divided into 24 electoral districts, which are divided into sections, which in turn are divided into small sub-districts (*circuitos*). Within each *circuito*, citizens are assigned to vote in a specific polling booth, located in classrooms within a school.

Buenos Aires (which has a voting population of 2.5 million people) is divided into 167 *circuitos*. These comprise over 7,300 polling booths located in about 800 schools (or "precincts").[9]

Each polling station within a *circuito* and a school hosts a fixed number of registered electors. Within each *circuito*, voters are assigned to a given ballot station according to the alphabetical order of their last names (see Casas et al. (2017)). Hence, conditional on the *circuito*, allocation of voters to schools is quasi-random. Within a given election year, the allocation of voters to polling stations does not change between the PASO and the general election, and between the first and second round of the latter.

3   Data and Sample

Our analysis focuses on the 2015 Argentinian presidential elections and uses information from both the PASO and the two rounds of the general election. Due to data availability, we restrict our focus to Buenos Aires which, nonetheless, represents a suitable context of analysis since we can examine how voters rewarded (or punished) the presidential candidate who was, until right before the election, the city's mayor. Electoral data is available from the *Cámara Nacional Electoral* (CNE) which is the federal agency responsible for the organization of the electoral process. The data include information on: i) the total number of registered voters, ii) the number of voters by polling station, iii) the number of valid votes cast, iv) the number of votes cast for each party and each candidate in each election and round.

Our main dependent variable is the share of votes cast for Mauricio Macri over total valid votes. We focus on polling stations located in public schools since these are the only ones for which systematic information about the quality of school infrastructure is available. Panel

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[8]These demonstrations attracted much attention from local and national media alike. For example: Article 2015, Article 2010, Article 2011.

[9]Figure A2 in the Appendix shows both the boundaries of the *circuitos* (lines) and the location of the schools (dots).

(A) of Table 1 reports the descriptive statistics at the school level separately for the PASO and for each round of the general election.[10]

Our main regressor of interest is the quality of school infrastructure. We use data gathered by the Directorate General for School Infrastructure in the second half of 2015 (i.e., around election time), which cover a sample of 456 public schools distributed in 158 *circuitos*. The data include information on the name of the school, the address, and a score for the quality of the school's infrastructure on a 4-point scale (i.e., Very bad, Bad, Good, Very good). Unfortunately, no information is available regarding the specific infrastructural problems present in each school, namely on how visible they might have been to a casual observer.

Table 1 reports the descriptive statistics of the electoral results by quality of school infrastructure (Panel (B)). In the main analysis we collapse the school quality data to two categories, defining school quality as "Good" ("Very Good" or "Good") or "Bad" ("Very bad" or "Bad"). The two categories of schools appear to be evenly scattered in most of the areas of the city (see Figure A3 in the Appendix). This aggregation is motivated by the fact that the proportion of schools defined as "Very good" or "Very bad" is rather small (11% and 14%) and, thus, these types of schools are not present in most *circuitos* (see Figure A4 in the Appendix). That said, for robustness we also present the results using the four different levels of quality.

In our analysis we also employ individual-level data for all voters registered in Buenos Aires including information on the polling station they were assigned to, their gender, and, only for male voters, their age. We use this information - which comes from the official registry of voters eligible for the 2015 Buenos Aires local elections - to confirm that gender and age are balanced with respect to the infrastructural quality of the schools where voters are assigned to vote.[11]

Our final data set results from the combination of electoral data at the polling-station level and data on infrastructure at the school level. We also include a series of controls at the school level to enrich the analysis and perform robustness checks. First, to proxy for the average wealth of the area in which the school is located, we compute the average selling price of dwellings in the block around the school based on data from early 2016 available from one

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[10]The original electoral data contained a few extreme values most likely due to entry errors. To address this issue, we exclude data from polling stations in which Macri's vote share was two standard deviations or more above or below the average of the other polling stations in the same school, which amount to approximately 2% of the sample (1% for each tail). The results, available upon request, remain identical when using the complete data set, which suggests that potential errors are randomly distributed with respect to the treatment.

[11]Though useful, these data have a limitation. Though the registry for Buenos Aires' 2015 local elections - and the corresponding allocation of voters to ballot stations - should be almost identical to that for the national elections held two months later, some discrepancies exist, as voters who turned 18 between one election and the other would be registered for the presidential elections but not for the local ones.

of the largest online real estate online marketplaces in Argentina (www.properati.com). In the absence of information regarding each voter's address, we proxy for the distance between voters and the school to which they were assigned to vote by computing the average distance of each school to the centroid of the *circuito*. This variable captures the idea that a randomly drawn individual will be farther away from schools located away from the *circuito*'s center.

Finally, we use data from the latest Argentinian Census (2010) to measure household characteristics at the level of the *circuito*. In particular, we compute the proportion of children in school age per household, a relevant variable that can potentially mediate the effect of school infrastructure on voting choices.

4   Empirical Strategy

To identify the causal effect of exposure to poor school infrastructure quality on voting, we exploit the random assignment of voters to schools within a *circuito*. This natural experiment allows us to compare the behavior of voters with similar characteristics that were assigned to vote in schools with different infrastructure quality. The following equation summarizes our econometric strategy:

$$Macri_{psct} = \alpha BadQuality_s + \lambda X_s + \Lambda X_p + \eta_c + \gamma_t + \epsilon_{psct} \tag{1}$$

The variable $Macri_{psct}$ represents the share of valid votes cast for presidential candidate and former mayor Mauricio Macri in polling station p located in school s in *circuito* c in election/round t. $BadQuality_s$ is a dummy variable for whether the school s where polling station p is located has poor infrastructure. X_s is a set of school-level controls. These controls include the average dwelling value in the block where the school is located and three measures of accessibility/distance to the school: distance from the *circuito*'s centroid and the number of bus/metro stations within five blocks of the school.

X_p is a set of polling station-level controls including the number of registered voters, the share of male voters, and their average age. η_c and γ_t are *circuito* and election/round fixed effects, respectively. In all regressions, standard errors are clustered at the school level.

Accounting for the number of individuals assigned to vote in a given polling station is important to rule out any effect on voting of facing long queues and waiting times, which is common in Argentina. Controlling for the share of male voters and their average age, instead, should capture plausible idiosyncratic differences in the distribution of voters by gender and age between schools with better vs. worse infrastructure. *Circuito* fixed effects account for all observable and unobservable factors common to all polling stations in the same *circuito*,

while election/round fixed effects capture any aggregate shock in candidates' popularity in the PASO and in each round of the general election.

School-level controls are particularly important for our identification strategy: given that the quasi-random assignment of voters is at the school level, school infrastructural quality could correlate to other characteristics that can potentially influence voting decisions. Controlling for the the average dwelling value in the vicinity of a school allows to account for the possible impact on voters of passing by a wealthy (poor) or safe (unsafe) street on their way to the ballot station. Controlling for the distance/accessibility variables, should capture the potential effect of a longer vs. shorter ride to the polling station.

We are also interested in exploring what segments of the voting population are more likely to be affected by exposure to poor school infrastructure. To this end, we estimate the following version of equation 1:

$$Macri_{psct} = \alpha BadQuality_s + \beta BadQuality_s * Z_c + \lambda X_s + \Lambda X_p + \eta_c + \gamma_t + \epsilon_{psct} \quad (2)$$

where Z_c represents some relevant observable characteristics of *circuito c* that can mediate the effect of school infrastructure quality on voting, such as income or having school-aged children. Hence, β, the coefficient of the interaction term, would capture whether the effect of poor school infrastructure is more pronounced in areas that are poorer and/or where there are more school-aged children. This is particularly important to test our hypothesis that individuals in such areas may value public school quality disproportionately and may drive the effect of school infrastructure on voting for Macri.

Our identification strategy relies on the assumption that, within the same electoral *circuito* (which, on average has a size of 1.2 Square kilometers or 0.47 Square miles), the alphabetical order of voters' last names is orthogonal to the infrastructure quality of the school they are assigned to. Even if last names were correlated with voter characteristics (e.g., if last names starting with an "A" were over-represented among wealthier or more educated families), our strategy would still allow to identify a causal effect as long as these characteristics are not systematically related to school quality within *circuito* (e.g., if wealthier and more educated voters are not more likely to vote in schools with better infrastructure).

We can partially test for this assumption using data on the distribution of voters by gender and age in schools with good vs. poor infrastructure. In addition, we can explore whether schools with different infrastructure quality differ with regard to the average number of voters assigned to each polling station. The results of these tests, reported in Table A1 (Appendix), indicate that voters assigned to schools with poor infrastructure quality are not

significantly different from voters assigned to schools with better quality. Though limited to a small set of variables due to data availability, this result suggests that school infrastructure quality is generally unrelated to other voter or location characteristics that may influence voting decisions in other ways.

Finally, we check if school infrastructure quality correlates with other school-level characteristics, such as the average value of dwellings in the surrounding area or distance/accessibility measures, such as the average expected distance of the school to the centroid of the *circuito*. The results, also presented in Table A1 (Appendix), show that low infrastructure quality schools do not tend to be systematically located in poorer areas and do not tend to be more or less accessible (in terms of proximity of public transportation) than the rest of the schools. We do find a small but significant difference in terms of expected distance to the centroid of the *circuito*, i.e., that low infrastructure quality schools are on average 80 meters closer than the rest. Yet, to the extent that a marginally *shorter* distance to the polling station should, if anything, *improve* voters' experience, this unbalance should not explain the lower support for the incumbent in poor-infrastructure schools. Finally, we show that low infrastructure quality schools are not characterized by a higher number of voters per polling station. These results suggest that, generally, school characteristics tend to be balanced across low and high-quality infrastructure schools although highlight the importance of controlling for certain school-level observables. Nevertheless, we will control in what follows for the robustness of our findings to the inclusion of these variables.

5   Results and Interpretation

Figure 1 (A) shows the kernel density of Macri's vote share separately for polling stations located in schools with good and poor infrastructure quality, while 1 (B), shows the kernel density for each of the four categories in the infrastructure quality classification which suggests that the relationship is monotonic. To further test for the relationship between school quality and voting, in Table 2 we estimate equations 1 and 2.[12]

In the first five columns the dependent variable is the share of total valid votes cast for Macri in the PASO election. As a robustness check, in the following five columns the dependent variable is the share of total valid votes cast for his coalition, *Cambiemos*. All regressions include electoral district fixed effects, round fixed effects, and school and polling stations controls.

The results in columns 1 and 5 confirm that electors voting in schools with low infrastructure quality are significantly less likely to support Macri. The average effect of voting in a

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[12]For robustness, Table A2 in the Appendix shows the estimations with different sets of controls.

bad-quality school as opposed to a good-quality one is about 0.2%. In the following columns we examine how the effect varies depending on voters' characteristics at the electoral *circuito* level.

First we test whether poor infrastructure quality had a different impact in areas with lower vs. higher income. The relationship between income and the demand for public education - and hence the electoral punishment of the incumbent's poor performance in this domain - is *a priori* unclear. On the one hand, households with higher education - and higher income - may put a higher value on education and on the quality of public schools. On the other hand, wealthier families who are more likely to send their children to private schools may have less of a stake in the quality of public education.[13] In fact, richer taxpayers who do not use public schools may prefer *lower* spending in public education as opposed to other public goods and services they may benefit from.[14] Results in columns 2 and 7 support the second hypothesis, i.e., that the reaction to poor school quality is stronger among poorer individuals that have less access to private schools. Indeed, the effect is concentrated in *circuitos* with below-median income, where voting in a poor-quality school decreases Macri's vote share between 0.49% and 0.53%, while it is virtually zero in richer ones. We find consistent results when comparing electoral *circuitos* with different levels of education (columns 3 and 8), which is not surprising given the strong correlation between income and education at the *circuito* level (0.79 in our sample).To test this, we define the dummy "Low Education" that takes value one if the average number of years of education of people in a *circuito* is below the median of the sample.

We then examine how the effect varies with the number of school-age children per household. The results, reported in columns 4 and 9, indicate that poor school quality only affects voting in *circuitos* where families have an above-median number of school-age children. In these areas, voting in a poor quality school reduces Macri's vote share by between 0.52% and 0.60%.[15]

In Table 3, we further explore the heterogeneity of the effect by comparing *circuitos* across *both* the income dimension and the number of school-age children in the *circuito*. The results

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[13]In the context of Argentina, access to private education varies drastically with income. According to official figures, 50% of all school-age children attend private schools; this percentage is 30 points higher for households in the top quartile of the income distribution than for those in the bottom quartile, even within the same neighborhood.

[14]See Epple and Romano (1996) and Stiglitz (1974) for a discussion about voting and the demand for public services when private alternatives are available.

[15]In Tables A3 and A4 in the Appendix, we show the results using the four categories of infrastructure quality which confirm that the punishment increases as the quality of school worsens (the dummy for "Very Good Quality" is the dropped one). These results should be taken with some caution since within-*circuito* variation of school infrastructure quality is limited. Indeed, only few *circuitos* have schools in all four categories of infrastructure quality.

confirm that the effect of school quality on voting is concentrated and stronger in schools located in *circuitos* with lower income *and* more school-age children. For these schools, the effect is even more significant and larger in magnitude, i.e., between 0.58 and 0.67 percentage points depending on what dependent variable is used. These magnitudes are quite sizable especially considering the rather mild nature of the treatment which did not involve any direct information sharing or priming.

Finally, in Table 4 we test whether school quality affects turnout, a measure of political participation, as well as the share of invalid votes, a proxy for voters' attitudes towards the political establishment. With regard to the first outcome, we do not expect school quality to influence citizens' decision to turn out since one could be exposed to the quality of school infrastructure only once at the ballot station. In line with this hypothesis, we find no significant effect of school quality on turnout. Similarly, we find no tangible effect of school quality on the share of invalid votes cast. This result suggests that voters' disappointment with the poor quality of the school premises specifically translates into lower support for the incumbent mayor - directly responsible for local public education - and not into general disenchantment towards the political system.

Taken together our results indicate that: i) exposure to visible manifestations of poor public good provision can have a tangible impact on voting decisions, ii) this effect is stronger for individuals that are more likely to use public goods and have limited access to private substitutes, and iii) voters blame the poor public good provision specifically on the relevant incumbent politicians rather than on the entire political class.

These findings also shed light on the potential mechanism(s) through which the documented effect operates. In particular, the fact that the effect is stronger for voters that are more likely to use public schools suggests that it is not driven by pure informational update. Indeed, these individuals are also more likely to be exposed to and informed about school infrastructure before the election. To further test this hypothesis, in Column 5 of Table 2, we examine whether the effect is weaker in *circuito* where citizens vote in schools that are located, on average, closer to where they live. Indeed, to the extent that people are more likely to know and send their children to schools located closer to their homes, exposure to school quality on election day should provide less new information than for schools located farther away. We find no evidence that the effect varies with average distance to the schools which further confutes the information channel.

Our findings are in line with existing theories of information frictions and mental gaps (Handel and Schwartzstein (2018)) according to which even readily available information may not translate into usable knowledge. The fact that school infrastructure quality becomes salient at the polling station right before votes are cast, ensures that voters pay attention

and take this information into account when evaluating the incumbent's performance. Our findings highlight that the form and the context in which information is presented is crucial, and that salient information provided at the right time may have a large impact on decision-making (DellaVigna (2009)). They also support the view that intervening on more visible policy items may be more effective at boosting government popularity than equally important but less noticeable policies (Mani and Mukand (2007), Harding and Stasavage (2013), Robinson and Torvik (2005)).

6   Conclusions

We examine whether and how voting choices are influenced by contextual factors that make certain issues more salient. Specifically, we study whether individuals assigned to vote in schools with poorer infrastructure quality were less likely to support the former mayor of Buenos Aires who ran for the presidential mandate and who had instructed public education policy in the city over the eight years preceding the election.

We find that individuals assigned to vote in schools with relatively poorer infrastructure are significantly less likely to vote for the outgoing mayor. The effect is larger in areas with lower income and a higher number school-age children, where families value public education and have less access to private schools. The magnitude of the effect is large considering the mild nature of the treatment, and is in line with previous findings on the electoral impact of more "intense" treatments involving explicit information-sharing and priming campaigns Chong et al. (2014); Dias and Ferraz (2017).

Our results indicate that voters can extract valuable information from seemingly unimportant elements which can in turn influence their evaluation of politicians' performance. They also highlight the power of contextual factors in making certain issues salient.

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7 Tables and Figures

Table 1: Electoral Descriptive Statistics

PANEL (A) - by round	Turnout (perc.)	Positive votes ratio (perc.)	Votes for Macri (perc.)	No. of Poll. Booths
PASO	73.1	98.1	40	4,331
	(2.95)	(6.1)	(1.6)	
1st Round	78.2	98.8	48.5	4,331
	(2.99)	(4.7)	(1.7)	
2nd Round	77.8	97.8	63.1	4,331
	(2.99)	(4.2)	(1.9)	
Pooled Elections	76.4	98.2	50.5	4,331
	(2.99)	(5.5)	(1.8)	

PANEL (B) - by type of school	Very Bad	Bad	Good	Very Good
No. of "precincts" (schools)	53	180	166	63
Turnout (percentage)	76.8	77	76.8	75
	(7.3)	(6.2)	(7.1)	(6.9)
Positive votes ratio (percentage)	98.2	98.1	98.2	98.2
	(3)	(2.0)	(1.4)	(1.2)
Votes for Macri (percentage)	45.7	49.2	51.6	53.7
	(12.9)	(13.5)	(14.8)	(13.8)
Number of voters per polling station	346.4	346.5	346.9	346.8
	(3.1)	(3.0)	(3.0)	(2.8)

Definitions Panel (A): Electors: total number of registered voters. Turnout: total number of votes for any candidate plus blank votes divided by the total number of registered voters. Positive votes ratio: total number of votes for any valid candidate divided by the total number of votes. Votes for Macri: number of votes cast for the candidate Mauricio Macri divided by the total number of valid votes. No. of Polling Booths: sum of all the polling booths in the sample. PASO: primary elections, 1st Round: first round of the general election, 2nd Round: runoff round of the general election. Mean values at the "precinct" (school) level in first rows, standard deviations in parentheses.

Definitions Panel (B): Turnout: total number of votes for any candidate plus blank votes divided by the total number of registered voters. Positive votes ratio: total number of votes for any valid candidate divided by the total number of votes. Votes for Macri: total number of votes cast for the candidate Mauricio Macri divided by the total number of valid votes. "Very Bad", "Bad", "Good", "Very Good" are the four different categories used to measure the infrastructure quality of schools.

Figure 1: **(A) Votes for Macri by School Quality Level (aggregated)**
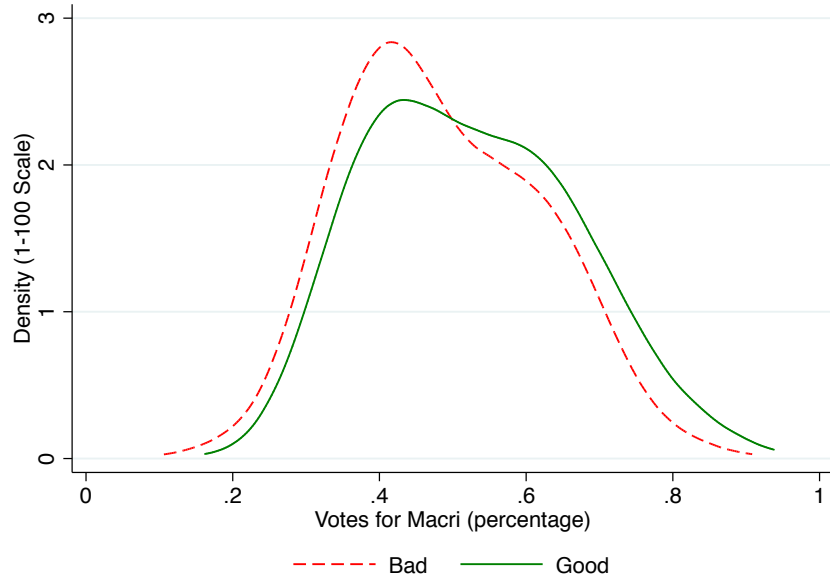
Note: Bandwidth: 0.05. Votes are measured at the polling booth level, and the three rounds of elections are pooled.

(B) Votes for Macri by School Quality Level
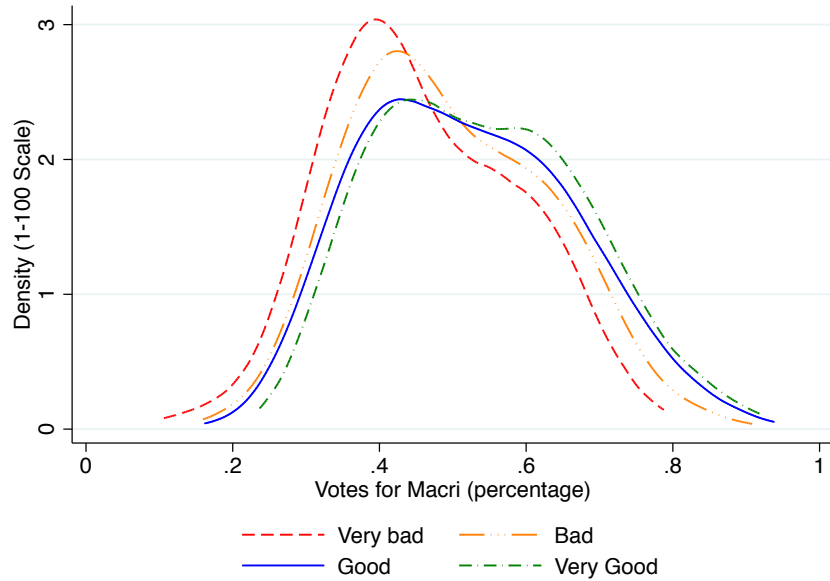
Note: Bandwidth: 0.05. Votes are measured at the polling booth level, and the three rounds of elections are pooled.

Table 2: Effect of School Quality on Voting for Macri - Main effect and heterogeneity by income or density of school-age children (percentage)

	(A)					(B)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Bad Quality	-0.25**	0.02	-0.07	-0.011	-0.25**	-0.28**	-0.02	-0.06	-0.01	-0.24*
	(0.12)	(0.16)	(0.15)	(0.14)	(0.12)	(0.13)	(0.16)	(0.16)	(0.15)	(0.13)
Bad Quality * Poor		-0.52**					-0.55**			
		(0.22)					(0.23)			
Total Effect (Poor)		-0.52***					-0.57***			
		(0.18)					(0.19)			
Bad Quality * Low Ed.			-0.31					-0.32		
			(0.21)					(0.23)		
Total Effect (Low Ed.)			-0.38**					-0.37**		
			(0.17)					(0.18)		
Bad Quality * HDC				-0.55***					-0.63***	
				(0.21)					(0.22)	
Total Effect (HDC)				-0.56***					-0.64***	
				(0.18)					(0.19)	
Bad Quality * Distance					0.00					0.00
					(0.003)					(0.004)
Obs.	12,626	12,626	12,626	12,626	12,626	12,626	12,626	12,626	12,626	12,626
R-Squared	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92

Standard Errors clustered at the school level in parentheses.
Regressions include electoral *circuito* fixed effects, election round fixed effect, school and polling station controls as described in Section 4.
(A): Definition of the dependent variable: total number of votes for Macri divided by the total number of valid votes (PASO election, first round of the general election and runoff of the general election).
(B): Definition of the dependent variable: total number of votes for Macri or any other candidate in the Cambiemos Alliance divided by the total number of valid votes (PASO election). Total number of votes for Macri divided by the total number of valid votes (first round of the general election and runoff of the general election).
"Poor": 1 if the average housing price in the *circuito* is below the median of the city, 0 otherwise.
"Low Ed.": 1 if the proportion of individuals living in the *circuito* with less than a higher education degree is below the median of the city.
"HDC" means "High Density of Children": 1 if the average proportion of households in the *circuito* with children between 0 and 15 is above the median of the city, 0 otherwise.

Table 3: Effect of School Quality on Voting for Macri - Main effect and double interaction with income and density of school-age children (percentage)

	(A)			(B)		
	(1)	(2)	(3)	(4)	(5)	(6)
Bad Quality (BQ)	-0.25**	0.08	-0.02	-0.28**	0.09	0.01
	(0.12)	(0.17)	(0.16)	(0.13)	(0.17)	(0.16)
BQ * Poor		-0.37			-0.31	
		(0.33)			(0.34)	
BQ * Low Ed.			0.03			-0.08
			(0.35)			(0.36)
BQ * HDC		-0.45	-0.82*		-0.47	-0.78
		(0.39)	(0.44)		(0.43)	(0.52)
BQ * Poor * HDC		0.14			0.06	
		(0.52)			(0.56)	
BQ * Low Ed. * HDC			0.27			0.14
			(0.58)			(0.65)
Effect on Poor + HDC		-0.60***			-0.62***	
Effect on Poor + LDC		-0.29			-0.21	
Effect on Not Poor + LDC		-0.37			-0.37	
Effect on Not Poor + HDC		0.08			0.09	
Effect on Low. Ed + HDC			-0.54***			-0.55***
Effect on Low Ed. + LDC			0.01			0.09
Effect on High Ed. + LDC			-0.02			0.01
Effect on High Ed. + HDC			-0.84*			-0.78
Obs.	12,626	12,626	12,626	12,626	12,626	12,626
R-Squared	0.83	0.83	0.83	0.83	0.86	0.86

Standard Errors clustered at the school level in parentheses.
All regressions include electoral *circuito* fixed effects, round fixed effect and the time-varying school controls described in Section 4.
(A): Definition of the dependent variable: total number of votes for Macri divided by the total number of valid votes (PASO election, first round of the general election and runoff of the general election).
(B): Definition of the dependent variable: total number of votes for Macri or any other candidate in the Cambiemos Alliance divided by the total number of valid votes (PASO election). Total number of votes for Macri divided by the total number of valid votes (first round of the general election and runoff of the general election).
"Poor": 1 if the average housing price in the *circuito* is below the median of the city, 0 otherwise.
"Low Ed.": 1 if the proportion of individuals living in the *circuito*, with less than a higher education degree is below the median of the city.
"HDC" means "High Density of Children": 1 if the average proportion of households in the *circuito* with children between 0 and 15 is above the median of the city, 0 otherwise.
"LDC" means "Low Density of Children": 1 if the average proportion of households in the *circuito* with children between 0 and 15 is below the median of the city, 0 otherwise.

Table 4: Effect of School Quality on Turnout and Valid Votes (percentage)

	(1)		(2)		(3)	
	Turnout	Valid	Turnout	Valid	Turnout	Valid
Bad Quality	0.09	0.005	0.08	0.007	-0.015	0.01
	(0.09)	(0.03)	(0.10)	(0.03)	(0.1)	(0.03)
Obs.	12,652	12,652	12,652	12,652	12,652	12,652
R-Squared	0.83	0.83	0.83	0.83	0.86	0.86

Standard Errors clustered at the school level in parentheses.

Set of controls per column: "(1)" includes electoral *circuito* fixed effects, election round fixed effects, school and polling station controls as described in Section 4.

"(2)" includes electoral *circuito* fixed effects, election round fixed effects, number of electors per polling station and school controls as described in Section 4. It excludes the demographic characteristics of voters at the polling station level.

"(3)" includes electoral *circuito* fixed effects and election round fixed effects. It excludes the number of electors per polling station and the demographic characteristics of voters at the polling station. It includes school controls as described in Section 4 Definition of the dependent variables: "Turnout" is the number of votes (valid or not) divided by the number of voters in a polling station.

"Valid" is the number of valid votes divided by the number of votes in a polling station.

Appendix

7.1 Main Parties

Formally, eleven parties competed in the PASO (compulsory primary elections), although only six obtained at least 1.5% of the votes and therefore could compete in the general election:

Frente para la Victoria (FPV): Led by the incumbent President Cristina Fernandez de Kirchner. The party was in charge of the federal government from 2003 to 2015. It is the most recent faction of the Peronist party. The party had only one candidate in the PASO elections: Daniel Scioli.

Cambiemos: A coalition led by Mauricio Macri, who was the Mayor of the City of Buenos Aires from 2007 to 2015. The party is typically associated with the modern, center-right political trend. It had three candidates running against each other in the PASO elections: Mauricio Macri – who obtained the vast majority of the votes within the coalition – Ernesto Sanz and Elisa Carrió.

Unidos por una Nueva Alternativa (UNA): A coalition formed by the largest dissident Peronist, i.e. which is not aligned with the FPV. It is typically associated with a conservative center-right ideology. Two candidates ran for this party's nomination in the PASO elections: Sergio Massa and José de la Sota.
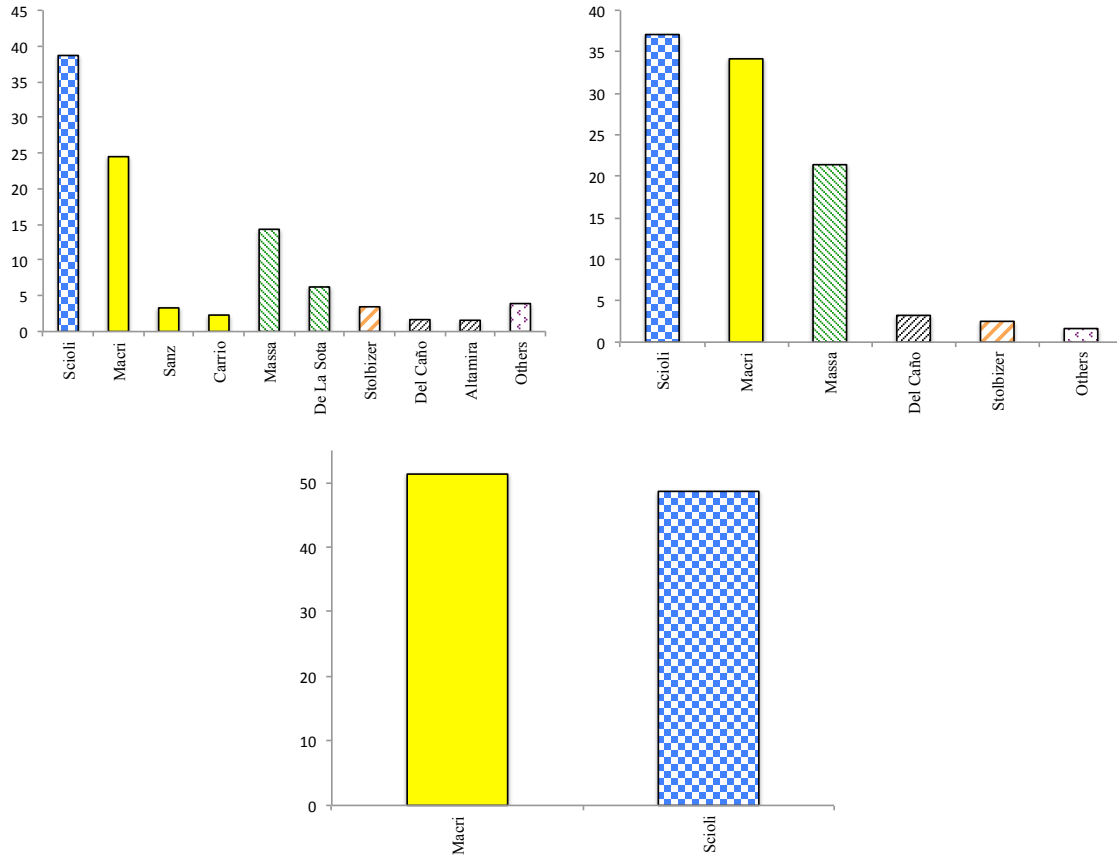
Progresistas: A progressive coalition, associated with the center-left. The party had only one candidate for the PASO elections: Margarita Stolbizer.

Compromiso Federal: A conservative/centrist faction of the Peronist party, but with a very specific regional origin in the province of San Luis, where the party has continuously governed since 1983. Alberto Rodriguez Saa was the party's only candidate in the PASO elections.

Frente de Izquierda y de los Trabajadores (FIT): A left wing coalition. The party presented two candidates for the PASO elections: Nicolas del Caño and Jorge Altamira.

7.2 Additional Figures

Figure A1: **Electoral Results at the National Level**

Note: The 1st figure corresponds to the results of the PASO election; the 2nd and 3rd figures correspond to the 1st and 2nd rounds of the general election. Bars are grouped by party: Scioli (FPV), Macri, Sanz, Carrio (Cambiemos), Massa and De la Sota (UNA), Stolbizer (Progresistas), Altamira and Del Caño (FIT). The description for each party/coalition can be found in the Appendix.

Figure A2: **Electoral *circuitos* and Schools in the City of Buenos Aires**
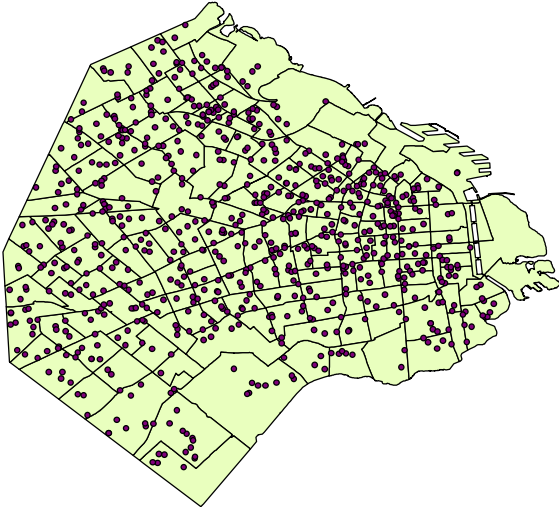
Figure A3: **Location of "Good" and "Bad" schools in the City of Buenos Aires**
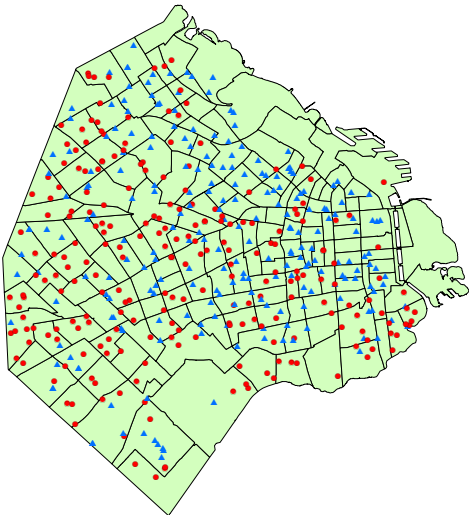
Note: Circles represent "bad" schools, triangles represent "good" schools.

Figure A4: **Distribution of School Infrastructure Quality**

Source: Ministry of Education, City of Buenos Aires

7.3 Additional Tables

Table A1: Balance Test

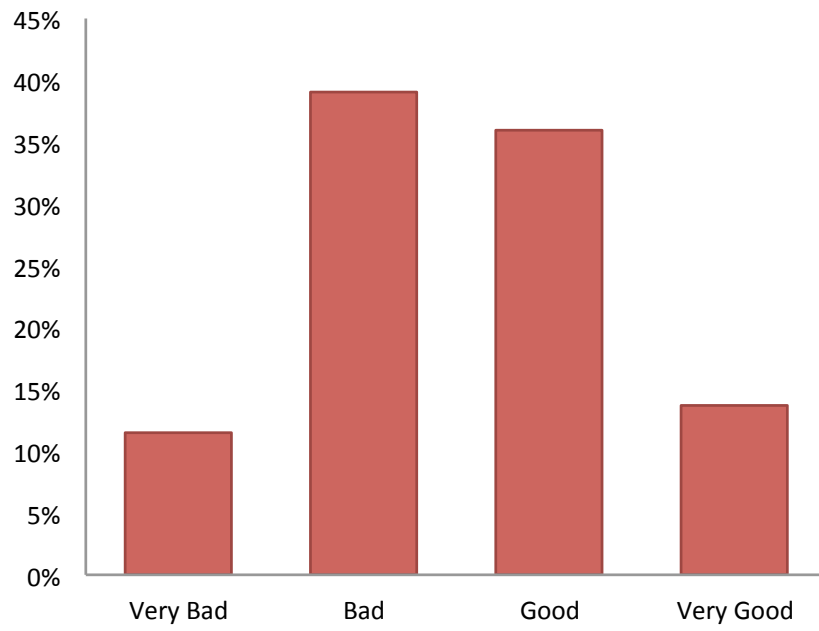|	No. Voters	Housing Prices (Dollars/Sq. meter)	Distance (Meters)	Metro Stations (number)	Bus Stations (number)	Age	Male
Bad Quality	-0.09	49	-80***	0.035	1.9	0.09	0.0007
	(0.07)	(70)	(35)	(0.05)	(1.2)	(0.065)	(0.012)
	[-0.03σ]	[0.07σ]	[0.27σ]	[0.03σ]	[0.06σ]	[0.002σ]	[0.0014σ]
Observations	12.958	12.958	12.958	12.958	12.958	531,272	1,100,374
R-Squared	0.03	0.03	0.03	0.03	0.03	0.03	0.03

Standard Errors clustered at the school level in parentheses

Regressions include electoral *circuito* fixed effects.

Age is defined in years and is defined only for male voters.

Male is a dummy that equals 1 if the voter is a male and 0 otherwise.

Metro and Bus Stations are defined as the number of stations within a radius of 0.5km of each school

Table A2: Robustness (I): Effect of School Quality on Voting for Macri (percentage) with no controls

	(A)			(B)			(C)		
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)
Bad Qual.	-0.25**	0.02	-0.011	-0.26**	-0.02	-0.03	-0.26	-0.017	-0.026
(BQ)	(0.12)	(0.16)	(0.14)	(0.13)	(0.16)	(0.14)	(0.16)	(0.15)	(0.14)
BQ * Poor		-0.52**			-0.50**			-0.50**	
		(0.22)			(0.22)			(0.21)	
Tot. Effect		-0.52***			-0.52***			-0.52***	
(Poor)		(0.18)			(0.17)			(0.18)	
BQ * HDC			-0.55***			-0.52**			-0.54**
			(0.21)			(0.21)			(0.21)
Tot. Effect			-0.56***			-0.55***			-0.56***
(HDC)			(0.18)			(0.18)			(0.18)
Obs.	12,652	12,652	12,652	12,652	12,652	12,652	12,652	12,652	12,652
R-Squared	0.83	0.83	0.83	0.83	0.86	0.86	0.83	0.83	0.83

Standard Errors clustered at the school level in parentheses.

Set of controls per column: "(A)" includes electoral *circuito* fixed effects, election round fixed effects, school and polling station controls as described in Section 4.

"(B)" includes electoral *circuito* fixed effects, election round fixed effects, number of electors per polling station and school controls as described in Section 4. It excludes the demographic characteristics of voters at the polling station level.

"(C)" includes electoral *circuito* fixed effects and election round fixed effects. It excludes the number of electors per polling station and the demographic characteristics of voters at the polling station. It includes school controls as described in Section 4

Definition of the dependent variable: total number of votes for Macri divided by the total number of valid votes (PASO election, first round of the general election and runoff of the general election).

"Poor": 1 if the average housing price in the *circuito* is below the median of the city, 0 otherwise.

"Low Ed.": 1 if the proportion of individuals living in the *circuito*, with less than a higher education degree is below the median of the city.

"HDC" means "High Density of Children": 1 if the average proportion of households in the *circuito* with children between 0 and 15 is above the median of the city, 0 otherwise.

Set of controls per column: "Full controls" includes electoral *circuito* fixed effects, election round fixed effects, school and polling station controls as described in Section 4.

"School Controls" includes electoral *circuito* fixed effects, election round fixed effects, and school controls as described in Section 4.

"Round and Circuit FE" includes electoral *circuito* fixed effects and election round fixed effects.

Definition of the dependent variables: "Turnout" is the number of votes (valid or not) divided by the number of voters in a polling station.

"Valid" is the number of valid votes divided by the number of votes in a polling station.

Table A3: Effect of School Quality on Voting for Macri by four quality levels of school infrastructure (percentage)

	(A)		(B)	
	(1)	(2)	(3)	(4)
Very Bad Quality	-0.55**	-0.18	-0.64**	-0.23
	(0.26)	(0.36)	(0.27)	(0.38)
Very Bad Quality * Poor		-0.76		-0.87*
		(0.50)		(0.52)
Very Bad Quality Total Effect (Poor)		-0.93***		-1.1***
		(0.36)		(0.37)
Bad Quality	-0.40**	-0.09	-0.42**	-0.05
	(0.19)	(0.23)	(0.20)	(0.25)
Bad Quality * Poor		-0.69*		-0.82
		(0.30)		(0.39)
Bad Quality Total Effect (Poor)		-0.77***		-0.88***
		(0.30)		(0.30)
Good Quality	-0.22	-0.12	-0.23	-0.09
	(0.17)	(0.21)	(0.18)	(0.23)
Good Quality * Poor		-0.24		-0.36
		(0.36)		(0.37)
Good Quality Total Effect (Poor)		-0.36		-0.45
		(0.28)		(0.29)
Obs.	12,626	12,626	12,626	12,626
R-Squared	0.92	0.92	0.92	0.92

Standard Errors clustered at the school level in parentheses.

Regressions include electoral *circuito* fixed effects, election round fixed effects, school and polling station controls as described in Section 4.

(A): Definition of the dependent variable: total number of votes for Macri divided by the total number of valid votes (PASO election, first round of the general election and runoff of the general election).

(B): Definition of the dependent variable: total number of votes for Macri or any other candidate in the Cambiemos Alliance divided by the total number of valid votes (PASO election). Total number of votes for Macri divided by the total number of valid votes (first round of the general election and runoff of the general election).

"Poor": 1 if the average housing price in the *circuito* is below the median of the city, 0 otherwise.

"Low Ed.": 1 if the proportion of individuals living in the *circuito*, with less than a higher education degree is below the median of the city.

Table A4: Effect of School Quality on Voting for Macri by four quality levels of school infrastructure (percentage)

	(A)		(B)	
	(1)	(2)	(3)	(4)
Very Bad Quality	-0.55**	-0.04	-0.64**	-0.06
	(0.26)	(0.33)	(0.27)	(0.36)
Very Bad Quality * HDC		-1.1***		-1.24**
		(0.48)		(0.50)
Very Bad Quality Total Effect (HDC)		-1.1***		-1.3***
		(0.37)		(0.37)
Bad Quality	-0.40**	-0.11	-0.42**	-0.10
	(0.19)	(0.20)	(0.23)	(0.25)
Bad Quality * HDC		-0.78***		-0.96***
		(0.30)		(0.31)
Bad Quality Total Effect (HDC)		-0.89***		-0.92
		(0.31)		(0.31)
Good Quality	-0.22	-0.10	-0.23	-0.12
	(0.17)	(0.20)	(0.18)	(0.22)
Good Quality * HDC		-0.39		-0.38
		(0.36)		(0.37)
Good Quality Total Effect (HDC)		-0.49*		-0.50*
		(0.36)		(0.29)
Obs.	12,626	12,626	12,626	12,626
R-Squared	0.92	0.92	0.92	0.92

Standard Errors clustered at the school level in parentheses.

Regressions include electoral *circuito* fixed effects, election round fixed effects, school and polling station controls as described in Section 4.

(A): Definition of the dependent variable: total number of votes for Macri divided by the total number of valid votes (PASO election, first round of the general election and runoff of the general election).

(B): Definition of the dependent variable: total number of votes for Macri or any other candidate in the Cambiemos Alliance divided by the total number of valid votes (PASO election). Total number of votes for Macri divided by the total number of valid votes (first round of the general election and runoff of the general election).

"HDC" means "High Density of Children": 1 if the average proportion of households in the *circuito* with children between 0 and 15 is above the median of the city, 0 otherwise.