PRIORS RULE: WHEN DO MALFEASANCE REVELATIONS HELP OR HURT INCUMBENT PARTIES?*

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Effective policy-making requires that voters avoid electing malfeasant politicians. We rationalize the mixed evidence of incumbent sanctioning in developing contexts in a simple Bayesian model that emphasizes voters' prior beliefs. Specifically, electoral punishment of incumbents revealed to be malfeasant is rare where voters *already* believed them to be malfeasant, while the effect of information on electoral turnout is non-linear in the magnitude of the malfeasance revealed. Our theory is supported by a field experiment in Mexico, where treated voters were informed about malfeasant municipal spending. Reflecting voters' unfavorable prior beliefs, information revealing relatively high levels of malfeasance increased the incumbent party's vote share *on average*. However, rewards were lower among voters with lower malfeasance priors and stronger prior beliefs, and when audits revealed more severe malfeasance and caused voters to unfavorably update their posterior beliefs about the incumbent's malfeasance. Consistent with our theory, surprising information increased turnout, while relatively unsurprising information reduced turnout. Finally, we document the reactions of incumbent and challenger parties to the information provided.

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1 Introduction

Elected politicians around the world implement policies to support economic development and alleviate poverty. The median voter in developing countries is generally poor, and thus often stands to benefit substantially from anti-poverty programs. However, the implementation of these programs is often beset by political rent seeking, including bribery (e.g. Hsieh and Moretti 2006), preferential contracting (e.g. Tran 2009), and misallocated spending (e.g. Larreguy, Marshall and Snyder 2017). While policy-makers and non-governmental organizations (NGOs) have increasingly sought to design institutions to mitigate such agency losses, political accountability ultimately requires citizens to elect highly performing politicians and sanction malfeasant politicians (e.g. Barro 1973; Fearon 1999; Ferejohn 1986; Rogoff 1990). Given that malfeasance in office still represents a major challenge in many developing contexts (e.g. Khemani et al. 2016; Mauro 1995; Pande 2011), a key question is thus: when do voters hold their governments to account by punishing incumbent parties for malfeasant behavior in office?

A growing political economy literature has emphasized the importance of providing voters with information about incumbent performance. Negative information, such as reports revealing corruption, is typically expected to cause voters to vote out those responsible. However, in practice, the evidence of such sanctioning is mixed. On the one hand, Chang, Golden and Hill (2010), Ferraz and Finan (2008), and Larreguy, Marshall and Snyder (2017) find that media revelations of mayoral malfeasance reduce the likelihood of re-election in Italy, Brazil, and Mexico, respectively. Banerjee et al. (2011) and Humphreys and Weinstein (2012) similarly find that disseminating incumbent performance scorecards can reduce support for poorly performing legislators in India and Uganda. On the other hand, Adida et al. (2016), Chong et al. (2015), Cruz, Keefer and Labonne (2016), and de Figueiredo, Hidalgo and Kasahara (2013) find that disseminating negative information on incumbent performance in Benin, Mexico, the Philippines, and Brazil often does not damage, and

may even improve, incumbent electoral prospects.[1] The effects on turnout of revealing incumbent malfeasance are similarly mixed: while Chong et al. (2015) suggest that unfavorable information may induce systemic disengagement in Mexico, Banerjee et al. (2011) observe increased turnout in India. From both a theoretical and a policy perspective, it thus remains difficult to anticipate when or how providing information about incumbent performance might affect individuals' vote choices.

We argue that voters' *prior* beliefs can rationalize these mixed findings, and ultimately explain when and how incumbent performance information impacts turnout and vote choice. We highlight the importance of the direction and magnitude of belief updating when exposed to new information using a simple two-party model in which voters form beliefs about the malfeasance of the incumbent party, receive expressive benefits from voting for relatively less malfeasant parties, and are subject to fixed partisan attachments (see also Kendall, Nannicini and Trebbi 2015).

Specifically, if voters already believe that their incumbent party is malfeasant, even revelations of relatively severe malfeasance can increase incumbent support if voters favorably update their posterior beliefs based on information that is not as serious as expected. This can explain why well-intentioned interventions can sometimes produce perverse consequences in terms of supporting malfeasant politicians. The implications for turnout are more novel and imply a testable non-linearity. Under bimodal distributions of partisan attachments, information that induces low levels of updating reduces turnout by motivating a large mass of voters located around one mode to abstain because their relative preference between the parties no longer exceeds the costs of turning out. However, sufficiently surprising revelations—in either direction—increase turnout by inducing voters who previously abstained to turn out and vote for the party shown to be less malfeasant, and by prompting supporters around one mode to switch parties.[2]

We test these theoretical predictions—registered in our pre-analysis plan—using a field experi-

[1] We discuss differences between media and other forms of dissemination in the conclusion.

[2] Similar results follow under unimodal distributions that are biased towards the party that voters learn is more malfeasant than expected.

ment conducted in Mexico around the 2015 elections. Beyond its large population and recent shift towards a more pluralistic democracy, Mexico's relatively high (but substantially varying) levels of corruption and distrust in elected politicians across municipalities make it a well-suited location to test our argument. Although individual incumbents could not seek re-election, voters hold parties responsible for incumbent performance in office in Mexico's highly party-centric system (see Chong et al. 2015; Larreguy, Marshall and Snyder 2017; Marshall 2017). Extending two recent empirical studies that focus on the content of the information provided, but with markedly different findings (Chong et al. 2015; Larreguy, Marshall and Snyder 2017), and using the outcomes of independent municipal audits, we examine how voters respond to information about the extent to which municipal governments correctly spent federal transfers earmarked for social infrastructure projects benefiting the poor.

Across 678 electoral precincts in 26 municipalities from four central Mexican states, we randomized the dissemination of leaflets reporting the results of the municipal audit reports to up to 200 households in rural and urban precincts in the weeks just before the election. We provided voters with one of two measures of incumbent malfeasance: the share of funds earmarked for social infrastructure projects that was spent on projects that did not benefit the poor, or the share of funds spent on unauthorized projects. These measures ranged from 0–58% in our sample, with substantial variation around the mean of 21%. To measure prior beliefs and the extent of voter updating, we use the control group's post-election beliefs to proxy for the pre-treatment prior beliefs of treated voters within randomization blocks of similar precincts. A baseline survey was not feasible, due to financial constraints. Using a variety of tests, we demonstrate the validity of our measures of prior beliefs by showing that the treatment and control groups contain similar respondents and that beliefs in the control group are persistent, unaffected by electoral outcomes, and unaltered by potential treatment spillovers.

Consistent with the theory, we find that the impact of revealing municipal audit reports on voters' support for the incumbent party depends on how the information relates to their prior be-

liefs. On average, audit report information increased the incumbent party's vote share by almost 3 percentage points. This positive effect reflects the common prior belief that incumbent parties are corrupt and relatively unwilling to support the poor (see also Chong et al. 2015). This suggests that voter expectations were already sufficiently low that revelations of objectively poor performance are often rewarded because they improve voter posterior beliefs about incumbent malfeasance or reduce their uncertainty about such beliefs.[3] Supporting this claim, the average effects mask substantial heterogeneity in the response of a Mexican electorate skeptical that local politicians allocate funds as legally mandated. We demonstrate that the increase in incumbent support induced by our treatment is concentrated among voters in municipalities in which audit reports revealed low malfeasance, voters who already believed that their incumbent party was highly malfeasant, and voters who favorably updated their posterior beliefs regarding incumbent party malfeasance upon receiving the information. Conversely, for egregious cases of reported malfeasance, and where voters updated most unfavorably about their incumbent's malfeasance, voters are more likely to punish their incumbent party at the polls.

Moreover, we find support for the prediction that malfeasance revelations should non-linearly affect electoral turnout. In particular, relatively unsurprising information—20–30% of funds spent on projects that did not benefit the poor or on unauthorized projects—depresses turnout by around 1 percentage point. Conversely, extreme cases of malfeasance—both 0% and above 50%—mobilize turnout by around 1 percentage point. This non-linearity, which fits with the bimodal distribution of voters' partisan attachment that we observe in Mexican municipalities, further underscores the importance of voters' prior beliefs in explaining how information influences voting behavior. However, we find little evidence to suggest that revealing more severe cases of malfeasance to voters reduces confidence in the capacity of elections to select competent politicians.

Finally, we further explore this low-expectations equilibrium by examining party responses to

[3]We find little evidence that voter responses reflect updating about the incumbent party's ability to extract federal funds, or the belief that the intervention was a smear campaign against the incumbent.

our intervention. In particular, we find that voting behavior may in part be mediated by parties' reactions to the information: voters in treated precincts recalled that both incumbent and challenger local party organizations discredited or incorporated malfeasance reports into their campaigns, especially where the leaflets informed voters of high levels of malfeasance. However, party reactions cannot fully explain voter behavior, since the extent of their updating is uncorrelated with parties' responses, and this updating is a central driver of voter responses.

In sum, the results provide strong support for our simple prior-oriented theory of voter responses to incumbent malfeasance information. By rationalizing the mixed evidence on the impact of revealing malfeasance information on voting behavior, this article makes three main contributions. First, we demonstrate that voter responses to incumbent performance information depend on the extent to which it improves or worsens their posterior beliefs regarding the incumbent party's malfeasance. While previous studies have highlighted the potential importance of voters' prior beliefs (Banerjee et al. 2011; Chong et al. 2015; Ferraz and Finan 2008; Humphreys and Weinstein 2012; Larreguy, Marshall and Snyder 2017; Marshall 2017), we provide the first direct evidence that both the level and precision of prior beliefs affect electoral accountability in a large developing country. Extant studies highlight significant variation in responses to the information provided, but lack the data to relate this variation to prior beliefs or to allow for heterogeneous prior beliefs across municipalities and voters. In contrast, we demonstrate the crucial Bayesian interaction of prior beliefs and information content.[4] This, for example, provides a clear rationalization of the path-breaking findings of Ferraz and Finan (2008), who show that voters in Brazil reward incumbents revealed not to have engaged in any corruption violations, but punish incumbents for whom more than one corruption violation was revealed, a result that the authors attribute to voters' prior beliefs. Our findings similarly reinforce studies showing that malfeasance information only affects voter attitudes when delivered by a credible source (e.g. Botero et al. 2015).

[4]Other studies in the EGAP Metaketa initiative have also examined the updating of posterior beliefs, but have thus far yielded relatively inconclusive evidence and focused primarily on the *direction* of updating (e.g. see Adida et al. 2016).

In developed countries, our focus on voters' prior beliefs about malfeasance complements Kendall, Nannicini and Trebbi (2015). Their novel approach to eliciting prior beliefs demonstrates that while Italian voters internalize both valence and ideological campaign messages, only valence—in their case, the effectiveness of an urban development plan—ultimately influences vote choice. More generally, while relatively high expectations of incumbent malfeasance entail rewards for many incumbents in our study, comparatively lower expectations of incumbent malfeasance may explain voters' apparent greater willingness to sanction politicians revealed to have performed poorly in more developed countries (e.g. Chang, Golden and Hill 2010; Eggers 2014; Snyder and Strömberg 2010).

Second, we reinterpret previous findings suggesting that negative campaigning and revelations of malfeasance motivate voters to disengage from the political system and reduce turnout (Ansolabehere and Iyengar 1995; Chong et al. 2015; de Figueiredo, Hidalgo and Kasahara 2013). Our non-linear explanation for the relationship between malfeasance and turnout instead relies on voters' prior beliefs and the distribution of their partisan preferences. In our context, we demonstrate that that malfeasance revelations can lead to either an increase or decrease in turnout. Although we do not preclude disengagement in theory, our approach nevertheless substantiates the claim that the mixed extant findings with respect to turnout may instead reflect Bayesian updating (e.g. Banerjee et al. 2011; Chong et al. 2015; de Figueiredo, Hidalgo and Kasahara 2013; Humphreys and Weinstein 2012).

Third, the possibility that equilibrium voter behavior may be conditioned by party campaign strategies—particularly by incumbents—suggests the importance of integrating strategic political actors into models that examine the effects of information provision. Our findings pertaining to incumbent responses complement results from the Philippines, where Cruz, Keefer and Labonne (2016) observe that distributing information about government projects increases vote buying. Suggesting the use of less nefarious means by politicians, Banerjee et al. (2011) find that providing non-partisan candidate information reduced vote buying in urban Indian slums, and Cole,

Healy and Werker (2012) find that Indian voters are less likely to punish incumbents for adverse weather shocks when the incumbent responds effectively to the crisis. Similarly, in Sierra Leone, Casey (2015) shows that providing voters with information about their candidates leads politicians to readjust their distributive strategies.

The article is structured as follows. Section 2 describes the Mexican municipal context motivating our argument. Section 3 presents a simple model highlighting the conditions under which information increases or decreases a voter's propensity to turn out and cast a ballot for the incumbent party. Section 4 explains and validates our experimental design. Sections 5 and 6, respectively, present the individual- and precinct-level results. Section 7 discusses the general equilibrium implications in terms of incumbent and challenger party responses. Section 8 concludes.

2 Malfeasance, audits, and elections in Mexican municipalities

Mexico's federal system is divided into 31 states (and the Federal District of Mexico City), which contain around 2,500 municipalities and 67,000 electoral precincts. Following major decentralization reforms in the 1990s (see Wellenstein, Núñez and Andrés 2006), municipal governments—the focus of this article—have played an important role in delivering basic public services and managing local infrastructure. Municipalities, which account for 20% of total government spending, are governed by mayors who are typically elected to three-year non-renewable terms.[5]

2.1 Independent audits of municipal spending

A key component of a mayor's budget is the Municipal Fund for Social Infrastructure (FISM), which represents 24% of the average municipality's budget. According to the 1997 Fiscal Coordination Law, FISM funds are direct federal transfers mandated exclusively for infrastructure projects that benefit the population living in poverty. Eligible projects include investments in the

[5]Re-election will become possible for incumbents in some states starting in 2018.

water supply, drainage, electrification, health infrastructure, education infrastructure, housing, and roads. However, voters are poorly informed about both the resources available to mayors and their responsibility to provide basic public services (Chong et al. 2015).

The use of FISM transfers is subject to independent audits. Responding to high levels of perceived mismanagement of public resources, the Federal Auditor's Office (ASF) was established in 1999 to audit the use of federal funds. Although the ASF reports to Congress, its autonomy is enshrined in the constitution, and it has the power to impose fines, recommend economic sanctions, and file or recommend criminal lawsuits against public officials (see Larreguy, Marshall and Snyder 2017). The ASF selects around 150 municipalities for audit each year, based primarily on the relative contribution of FISM transfers to the municipal budget, historical performance, factors that raise the likelihood of mismanagement, and whether the municipality has recently been audited (including concurrent federal audits of other programs) (Auditoría Superior de la Federación 2014). The municipalities to be audited in a given year are announced after the funds disbursed for a given fiscal year have been spent.

Audits address the spending, accounting, and management of FISM funds from the previous fiscal year. Although the ASF's reports categorize the use of FISM funds in various ways, we focus on two key dimensions of mayoral malfeasance documented in the audit reports (that are not necessarily mutually exclusive): (1) the share of funds spent on social infrastructure projects that do not directly benefit the poor and (2) the share of funds spent on unauthorized projects, which includes the diversion of resources to non-social infrastructure projects (e.g. personal expenses and election campaigns)[6] and funds that are not accounted for. The results for each audited municipality are reported to Congress in February the year after the audit was conducted, and are made publicly available on the ASF's website, asf.gob.mx.

According to the ASF's audit reports, between 2007 and 2015, 8% of audited funds were spent on projects that did not benefit the poor, while 6% were spent on unauthorized projects. In one

[6]Such spending is similar to the corruption identified by similar audits in Brazil (Ferraz and Finan 2008.

case, the mayor of Oaxaca de Juárez created a fake union to collect payments, presided over public works contracts without offering a public tender, diverted advertising and consulting fee payments, and failed to document spending amounts.[7] In another instance, nine municipal governments in the state of Tabasco—Centro, Balancán, Cárdenas, Centla, Jalapa, Jonuta, Macuspana, Tacotalpa and Tenosique—diverted resources to fund the 2012 electoral campaigns of their parties' candidates.[8] Given that the ASF captures only one dimension of malfeasance, it is thus unsurprising that 50% of voters do not believe that municipal governments use public resources honestly (Chong et al. 2015).

2.2 Municipal elections

Traditionally, local political competition has been between either the populist Institutional Revolutionary Party (PRI) and the right-wing National Action Party (PAN), or between the PRI and its left-wing offshoot, the Party of the Democratic Revolution (PRD). Due to regional bases of political support and highly localized influence within municipalities, local politics is typically dominated by one or two main parties. In order to get elected, the three large parties often subsume smaller parties into municipal-level coalitions.[9] Moreover, as Figure 1 shows, two-party dominance is reflected in the generally bimodal distribution of voter partisanship within municipalities, once differences in the average ideological positions are accounted for. In the municipal elections we study, the effective number of political parties by vote share at the precinct and municipal levels remains consistently around 2.5.[10]

Although economic and criminal punishments for misallocating funds are relatively rare, there are good reasons to believe that voters will hold the incumbent party responsible, even when indi-

[7] BBM Noticias, "ASF: desvió Ugartchechea 370.9 mdp," October 21, 2013, here.

[8] *Tabasco Hoy*, "Pagaron pobres campañas 2012," March 6, 2014, here.

[9] These smaller parties typically benefit by receiving sufficient votes to maintain their registration. However, the National Regeneration Movement (MORENA) stood for the first time in 2015, and made headway against this hegemony at the national level, obtaining 9% of the federal legislative vote.

[10] The effective number of parties is given by $\frac{1}{\sum_{p \in \mathbb{P}} V_p^2}$, where V_p is the vote share of party p.

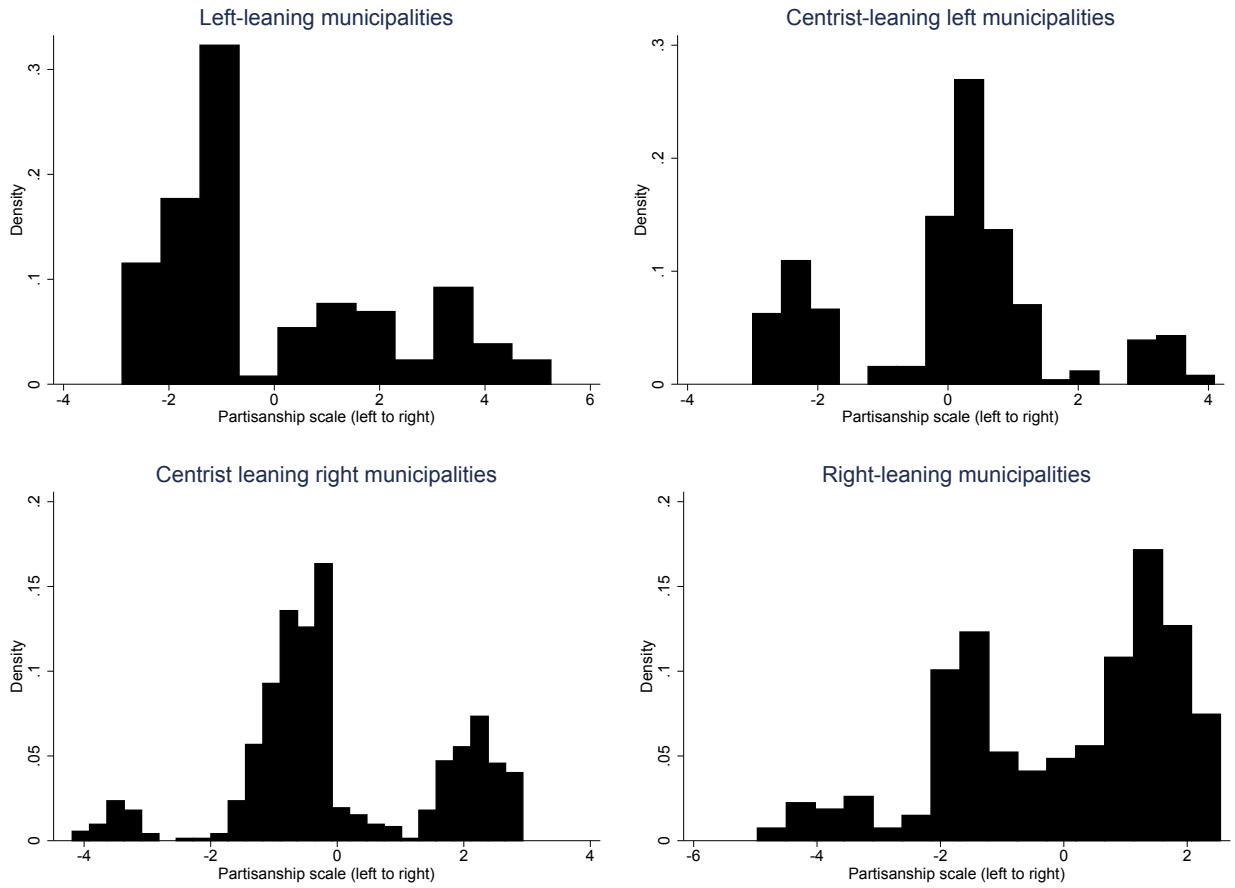

Figure 1: Distribution of voter partisanship, by type of municipality

Notes: These figures were constructed using the Comparative Study of Electoral Systems 2009 survey in Mexico. We first constructed a 7-point ideological scale based on which parties voters sympathize with: if individuals only mentioned one party, we assigned them values -3 (for left parties: PRD, Labor Party (PT), Citizen's Movement (MC), and Social Democratic Party (PSD)), 0 (for centrist parties: PRI, Ecological Green Party (PVEM), and New Alliance Party (PNA)), or 3 (for right parties: PAN) depending on the ideology of the chosen party. If an individual mentioned more than one party, they were asked about their second preferred party, and we coded the individual as the average of the two. We then demeaned individual responses using the municipality mean. Finally, the graphs are split according to "left-leaning municipalities" with modes between -3 and -2, "centrist left-leaning municipalities" with modes between -2 and 0, "centrist right-leaning municipalities" with modes between 0 and 2, and "right-leaning municipalities" with modes between 2 and 3.

vidual mayors cannot be re-elected. First, voters are considerably better informed about political parties than about individual politicians (e.g. Chong et al. 2015; Larreguy, Marshall and Snyder 2016). Crucially, for political accountability, 80% of voters in our survey can correctly identify the

party of their municipal incumbent. Second, Mexico's main parties have differentiated candidate selection mechanisms that deliver candidates with similar attributes (Langston 2003). For example, 74% of voters in our survey believe that if the current mayor is malfeasant, then another candidate from the same party is at least somewhat likely to also be malfeasant. Third, Larreguy, Marshall and Snyder (2017) and Marshall (2017), respectively, find that when Mexican voters have access to local media, they punish municipal incumbent parties for malfeasance and elevated pre-election homicide rates. Moreover, the surveys we conducted for this study show that 74% and 72% of respondents in control precincts, respectively, regard fighting poverty and honesty as important or very important when deciding which candidate to vote for.

However, the evidence regarding electoral sanctioning of Mexico's incumbent parties in response to revelations of malfeasant behavior is mixed. Larreguy, Marshall and Snyder (2017) observe large electoral penalties among voters with access to broadcast media outlets incentivized to report local news. Exploiting plausibly exogenous variation in the release of audit reports prior to elections and access to radio and television stations across the country, they find that an additional local media station decreases the vote share of an incumbent party revealed just before the election to have spent significant quantities of FISM funds inappropriately by around 1 percentage point. This evidence supports the standard electoral accountability model (e.g. Barro 1973; Fearon 1999; Ferejohn 1986; Rogoff 1990).

Conversely, in a field experiment conducted in 12 municipalities across three states, Chong et al. (2015) find evidence that information about severe incumbent malfeasance breeds disengagement. Disseminating leaflets to voters on audit report outcomes, they instead find that, while incumbent support declines when the incumbent is revealed to be highly malfeasant, challenger support also declines at least as much. They speculate that such broad-based disengagement, which is also observed through reduced partisan attachment to the incumbent, reflects an equilibrium in which voters disengage because they believe that all politicians are malfeasant.[11] The disjuncture

[11] In the context of our model below, this could be the result of reducing the expressive benefits of voting

between these accountability and disengagement findings, which cover the same information over the same period, illustrates the need for a more refined theory to identify when and why different types of information impact voters differently.

3 Information, prior beliefs, and voting behavior

We now explore how information about incumbent malfeasance may impact electoral accountability. A key insight of our simple learning model is that the impact of information on voters' posterior beliefs—and ultimately their vote choice—depends on how the information revealed relates to their prior beliefs. While high levels of malfeasance are clearly bad news, it is not obvious whether voters will reward or punish incumbent parties for low (but non-zero) levels of malfeasance (e.g. Banerjee et al. 2011; Ferraz and Finan 2008). However, our more novel insight concerns turnout: with a positive cost of voting and a bimodal distribution of voters' partisan attachment, information relatively close to voters' prior beliefs may reduce turnout, while major departures can cause wholesale shifts in support from the incumbent to a challenger (or vice versa). Our model derives the comparative statics guiding our experimental design, which we registered in our pre-analysis plan.

3.1 Theoretical model

We consider a simple decision-theoretic model in which a unit mass of voters update their posterior beliefs about a party's malfeasance based on informative signals, and choose between voting for the incumbent party I, voting for the challenger party C, and abstaining.[12] Since two-party competition is found in most parts of Mexico, this assumption provides a good approximation of political

relative to the cost of turning out.

[12] In the model, we abstract from party attempts to counteract the effect of scandal exposure. Empirically, we find some evidence of such responses. However, as explained below, this operates alongside, rather than in place of, voter updating of posterior beliefs.

competition in most Mexican municipalities.

Voters receive expressive utility from voting for the *relatively* better party, and only turn out if parties are sufficiently different in terms of the utility that voters expect to obtain from either of them (see Larreguy, Marshall and Querubín 2016). We therefore do not assume that voters believe their vote is pivotal (see e.g. Brennan and Hamlin 1998). The expected utility that voter i associates with electing party $p \in \{I, C\}$ is a function of both expected malfeasance and fixed partisanship,[13] and is given by:

$$U_i^p = \begin{cases} \mathbb{E}\left[-\exp(\theta_I - \delta_i)\right] & \text{if } p = I \\ \mathbb{E}\left[-\exp(\theta_C)\right] & \text{if } p = C \end{cases} \tag{1}$$

where θ_p is the malfeasance of party p and $\delta_i \in \Gamma \subseteq \mathbb{R}$ is a positive or negative partisan bias towards the incumbent. For analytical simplicity in incorporating risk aversion, we employ a standard exponential utility function that satisfies constant absolute risk aversion. In this model, voters receive greater expressive utility from voting for less malfeasant parties, especially when they are relatively certain that the party is relatively clean, while malfeasance and partisanship are perfect substitutes. The partisan bias δ_i is independently and identically distributed across the electorate according to cumulative distribution function F. This bias could reflect durable partisan attachments or shocks occurring before the election that are uncorrelated with prior beliefs and signals of malfeasance. Finally, let $c > 0$ be the cost of turning out to vote.

A voter only turns out to vote if the difference in expected utility between the two parties is large enough. Conditioning on voting, individuals cast their vote for their most preferred party. Consequently, i votes for the incumbent party I if $\Delta_U := U_i^I - U_i^C \geq c$, votes for the challenger party C if $-\Delta_U \geq c$, and abstains if $|\Delta_U| < c$.[14]

[13] The theory can be easily extended to incorporate the ban on re-election by allowing for imperfect within-party candidate correlations. Provided that candidates within parties are sufficiently similar, the forces underpinning our results remain.

[14] An alternative specification of expressive utility, in which voters vote for p if $U_i^p > \max\{U_i^{-p}, c\}$,

Voters are uncertain about the malfeasance θ_p of both the incumbent and challenger parties, and learn from a signal about party malfeasance in a Bayesian fashion. In particular, we assume that all voters share the same normally distributed prior beliefs about the malfeasance of each party p, distributed according to $N(\mu_p, \sigma_p^2)$, where $\lambda_p := 1/\sigma_p^2$ denotes the precision of the prior beliefs. Focusing on the case where voters only receive an audit report documenting malfeasance that pertains to the incumbent, voters observe a signal s_I drawn from a normal distribution of signals $N(\theta_I, \tau_I^2)$ centered on the incumbent's true (but unknown) malfeasance level θ_I. The known precision of this signal, $\rho_I := 1/\tau_I^2$, could reflect the fact that the audit report may only capture one dimension of an incumbent's malfeasance. For simplicity, we consider the case where the malfeasance of each party p is known to be independently distributed.[15] As we show empirically below, signals of incumbent performance do not cause voters to systematically change their posterior beliefs about the challenger.

After receiving a signal of incumbent malfeasance s_I, voters update their posterior beliefs about the incumbent's malfeasance using Bayes' rule:

$$N\left(\mu_I + \kappa_I \Delta_I, \frac{\kappa_I}{\rho_I}\right) \tag{2}$$

where $\kappa_I := \frac{\rho_I}{\lambda_I + \rho_I}$ captures the relative precision of the signal, and $\Delta_I := s_I - \mu_I$ is the difference between the signal and voters' mean prior belief about I. Higher values of κ_I indicate that the signal is relatively more precise than voters' prior beliefs, while positive values of Δ_I denote signals that the incumbent is more malfeasant than voters previously thought. Henceforth, we refer to Δ_I as the extent of the unfavorable updating by voters. Moreover, the extent of such updating is greater

would complicate our analysis but yield qualitatively similar comparative statics for the incumbent party's vote share. However, because U_i^C is not affected by a signal that is uninformative about C, the total number of votes for C would not be affected; thus, turnout would be monotonic in s_I. Our results show that neither implication holds.

[15] At the cost of mathematical complexity this could be relaxed, and would yield similar results for a sufficiently small correlation between s_I and θ_C. Intuitively, this is because an imperfect correlation between types means that the signal is more informative about I than C.

when the signal is relatively precise in comparison with voters' priors. Because the malfeasance of parties is independent, voters do not update about θ_C. New information also increases the precision of voters' posterior beliefs, given that $\kappa_I/\rho_I < 1/\lambda_I$.

A signal of low incumbent malfeasance (i.e. $s_I < \mu_I$) increases the relative utility of voting for I by reducing both the incumbent's expected malfeasance and i's uncertainty about the incumbent's malfeasance. This is reflected in the difference in the utility of voting for each party, as perceived by voter i:

$$\Delta_U = -\exp\left[\mu_I + \kappa_I\Delta_I + \frac{\kappa_I}{2\rho_I} - \delta_i\right] + \exp\left[\mu_C + \frac{1}{2\lambda_C}\right] \tag{3}$$

where the $\frac{\kappa_I}{2\rho_I}$ and $\frac{1}{2\lambda_C}$ terms reflect voters' risk aversion. Integrating over the distribution of voter partisan biases, we obtain the following results pertaining to the share of voters V_p turning out for each party and the abstention rate A:

Proposition 1. *Receiving a signal s_I of incumbent malfeasance:*

- *Increases V_I if and only if $\Delta_I < \frac{1}{2\lambda_I}$, where the magnitude of the difference in V_I is decreasing in s_I and Δ_I, decreasing in λ_I (provided that $\Delta_I < -\frac{1}{2\rho_I}$), and increasing in μ_I (provided that ρ_I/λ_I is sufficiently large).*

- *Ambiguously impacts abstention, although A increases with s_I when $F'(\bar{\delta}_C) - F'(\bar{\delta}_I) > 0$ and decreases with s_I when $F'(\bar{\delta}_C) - F'(\bar{\delta}_I) < 0$, where $\bar{\delta}_p$ denotes the point of indifference between voting for p and abstaining upon receiving s_I.*

Proof. See Appendix. ■

The effect of information thus crucially depends on how the signal relates to voters' prior beliefs. The effect on the incumbent party's vote share is intuitively illustrated in Figure 2, which plots the distribution of voters by their relative preference Δ_U for the incumbent. Voters to the right, with higher values of Δ_U, are more likely to turn out for I. We can thus analyze how the key

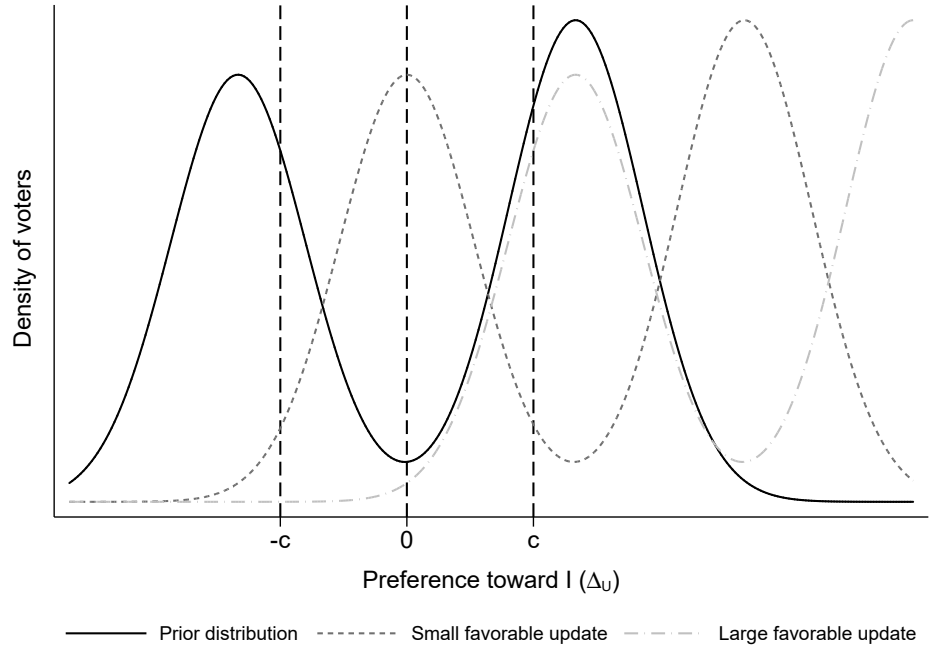

Figure 2: Vote choice and distributions of voters

parameters in our model affect voting behavior by shifting the distribution of voters along the Δ_U axis. As illustrated by the dotted distribution, a weak signal that the incumbent is less malfeasant than voters initially believed results in a small decrease in Δ_I as well as a reduction in the risk of voting for I. This produces a commensurate shift in the distribution of relative voter preferences to the right. This unequivocally increases the number of voters who support I and decreases the number of voters supporting C. A signal revealing greater malfeasance than initially believed will reduce the incumbent party's vote share, provided that the signal is strong enough to overcome the reduction in risk aversion (hence the condition $\Delta_I < \frac{1}{2\lambda_I}$). Similarly, a decrease in voters' prior beliefs about incumbent malfeasance (i.e. lower μ_I), or an increase in the precision of a relatively favorable signal (i.e. greater κ_I, or lower λ_I), also shifts the distribution to the right and increases the incumbent's vote share when the signal is relatively precise (i.e. ρ_I is high). The second-order comparative statics are discussed below.

While the incumbent vote share results hold for any distribution F of partisan attachments, the

impact of providing information about the incumbent on turnout depends on the shape and position of F and the extent to which information induces updating. Consider the case of receiving $s_I < \mu_I$. This signal of lower-than-expected incumbent malfeasance has two effects, again by shifting voter expectations and reducing uncertainty. First, it induces some voters who would not otherwise have voted to turn out for I. Second, the signal induces some voters who would otherwise have voted for C not to turn out. The relative masses of these conflicting effects on turnout determine whether turnout increases or decreases.

To produce sharp empirical predictions, we focus on the empirically prevalent case in which voter partisan attachments are *bimodally* distributed and voters at each mode turn out for different parties. In many electoral contexts, including Mexico, this is a reasonable approximation. As noted above, the geographic dispersion of party strength ensures that most races are effectively two-party races. Furthermore, Figure 1 shows that voter partisanship is generally bimodally distributed within municipalities.

The non-linear effect of information on turnout is best illustrated graphically using the example in Figure 2. The dark gray dotted distribution shifted slightly to the right demonstrates that a small update in favor of the incumbent causes more initial C voters to abstain than initial abstainers to vote for I. This is easy to see by comparing the mass under each distribution over the interval $[-c, c]$. However, a sufficiently large favorable update about the incumbent—which leads the light gray dashed distribution to shift further to the right—induces initial C supporters to vote for I rather than abstain. More generally, it is easy to see that such non-linear predictions hold for any bimodal distribution in which the voters at each mode initially turn out for different parties.[16] Furthermore, similar results may also hold for unimodal distributions when the modal voter initially turns out.[17]

[16] To see this, consider the derivative of the density function at the turnout cutoffs, i.e. $F'(\bar{\delta}_p)$.

[17] Assuming the modal voters initially support C, then moderately good news about I induces the modal voters to abstain, while very good news causes the modal voter to support I. Note that this result depends on the weight in the tails of the distribution.

3.2 Empirical implications

The model generates various comparative static predictions, some of which are more particular to our model than others. We focus on the impact of providing voters with a signal of incumbent malfeasance, s_I, via a treatment containing information pertaining to mayoral malfeasance. We now enumerate the key hypotheses that our experiment is designed to test empirically; all hypotheses were registered in our pre-analysis plan.

We first consider how revelations of incumbent malfeasance affect voters' posterior beliefs regarding the incumbent party's malfeasance, as well as their vote choice. As Equation (2) shows, the direction of updating from signal s_I depends on voters' prior expectations, denoted μ_I. The effect is thus context dependent, reflecting both the nature of the information provided and voters' prior beliefs regarding the incumbent party's malfeasance. Given what we anticipated to be relatively unfavorable information about malfeasance provided to voters, and despite the reduction in uncertainty about the incumbent party's policy that such information generates, we expected that, *on average*:

H1. *Providing information about an incumbent's malfeasance increases voters' posterior beliefs that the incumbent party is malfeasant and decreases the incumbent party's vote share.*

The most important implications of the model capture how the effect of incumbent malfeasance information varies with voters' prior beliefs. These are theoretically unambiguous in our model. First, if voters already believe that the incumbent party is malfeasant (i.e. high μ_I), a signal that indicates high malfeasance has a weaker impact on posterior beliefs and the incumbent party's vote share:

H2. *The effect of providing information about an incumbent's malfeasance on voters' posterior beliefs about whether the incumbent party is malfeasant is decreasing in voters' prior beliefs that the incumbent party is malfeasant, while the effect of providing such information on incumbent party vote share is increasing in prior beliefs.*

Second, voters who already have strong prior beliefs about the incumbent's malfeasance (i.e. low κ_I or high λ_I) are less responsive to new information:

H3. *The effect of providing information about an incumbent's malfeasance on both voters' posterior beliefs that the incumbent party is malfeasant and incumbent party vote share is weaker among voters with more precise prior beliefs.*

Third, voters update their posterior beliefs more favorably (unfavorably) about the incumbent party's malfeasance upon learning that the incumbent is relatively clean (malfeasant):

H4. *The effect of providing information about an incumbent's malfeasance on voters' posterior beliefs that the incumbent party is malfeasant is increasing in the severity of the reported malfeasance, while the effect of providing such information on incumbent party vote share is decreasing in the severity of the reported malfeasance.*

Finally, given that the extent of voter belief updating reflects the difference between the signal and voters' prior beliefs (i.e. Δ_I),[18]

H5. *The effect of providing information about an incumbent's malfeasance on voters' posterior beliefs about whether the incumbent party is malfeasant is increasing in the extent to which the information is worse than voters' prior beliefs (unfavorable updating), while the effect of providing such information on the incumbent party's vote share is decreasing in the extent to which the information is worse than voters' prior beliefs.*

As shown above, new information has a non-linear effect on turnout when voters are bimodally distributed and voters at each mode initially turn out for different parties, as the evidence above suggests is the case in Mexico. In particular, shockingly favorable or unfavorable revelations

[18]We also pre-registered a hypothesis distinguishing between good and bad news. Although the results shown in Table A19 in the Appendix broadly reinforce the results in the main paper, our measurement of updating using the post-treatment survey may only be reliable in relative rather than absolute terms, and thus reduces our confidence in the (absolute) cutoffs for defining good and bad news.

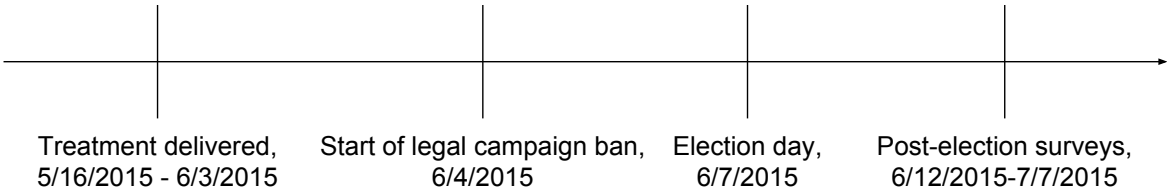

Figure 3: Timeline of the experiment's implementation

motivate voters who previously abstained to turn out to vote, and induces voters to switch parties, while relatively unsurprising—but nevertheless informative—favorable (unfavorable) information induces challenger (incumbent) partisans to become relatively indifferent between the parties and abstain from voting. While this logic does not yield clear predictions for the average effect of new information or its linear interaction with the level of malfeasance reported, it clearly predicts that:

H6. *Providing information reporting high and low levels of incumbent malfeasance increases electoral turnout, while intermediate levels of reported malfeasance decrease turnout.*

4 Experimental design

We designed a field experiment to test this theory. We focus on Mexico's June 7, 2015 municipal elections, which were held concurrently with state and federal legislative elections. We examine the effect of providing voters in 678 electoral precincts with the results of audit reports documenting the municipal use of federal transfers designated for infrastructure projects that benefit the poor. We first explain our sample selection, and then outline our information interventions, randomization, and estimation strategy. Figure 3 illustrates the experiment's timeline.

4.1 Sample selection

Our study focuses on 26 municipalities in the central states of Guanajuato (seven municipalities), México (14 municipalities), San Luis Potosí (four municipalities), and Querétaro (one munici-

pality). These municipalities are shown in Figure 4; the average municipality contains 259,000 registered voters. In addition to the fact that they held elections in 2015,[19] these four states were chosen for security and logistical reasons, because they contain internal variation in the municipal incumbent party, and because they broadly represent Mexico as a whole. The 26 municipalities were selected from those in which an audit was released in 2015 according to three criteria. The first criteria relates to the safety of voters and our distribution and survey teams. After immediately receiving threats upon entering Aquismón and Villa Victoria, these municipalities were replaced by Atlacomulco, Temoaya, and an additional block from Tlalnepantla de Baz in the state of México. Importantly, since our blocking strategy—explained in detail below—ensures that all blocks are contained within the same municipality, excluding these problematic municipalities does not affect the study's internal validity. Second, we only selected municipalities in which the ASF's audit revealed that at least one of the two measures of reported malfeasance (percentage of FISM funds not spent on the poor or spent on unauthorized projects) was at least two percentage points lower (or, more often, higher) than the state average of opposition parties. Finally, municipalities were chosen to match the distribution of incumbent parties across audited municipal governments in these four states.[20]

Within each municipality, we selected up to one-third of the electoral precincts, oversampling precincts from municipalities with particularly high or low levels of incumbent malfeasance and strong contrasts with opposition party malfeasance within the state. Within municipalities, we first prioritized accessible rural precincts, where possible, in order to minimize cross-precinct spillovers and maximize the probability that voters would not receive the audit information through other means. Moreover, to maximize the share of households that we could reach with a fixed number of leaflets, attention was restricted to precincts with fewer registered voters. In urban areas, where we

[19]Municipal elections reflect state electoral cycles, which are staggered across years. On June 7, 2015, 15 states and the federal district held simultaneous local elections.

[20]Of our 26 municipalities, 17 were governed by the PRI (including 16 in coalition with the Teacher's (PNA) and Green (PVEM) parties), five by the PAN (including two in coalition with the PNA), two by the PRD, and one by the Citizen's Movement (MC).

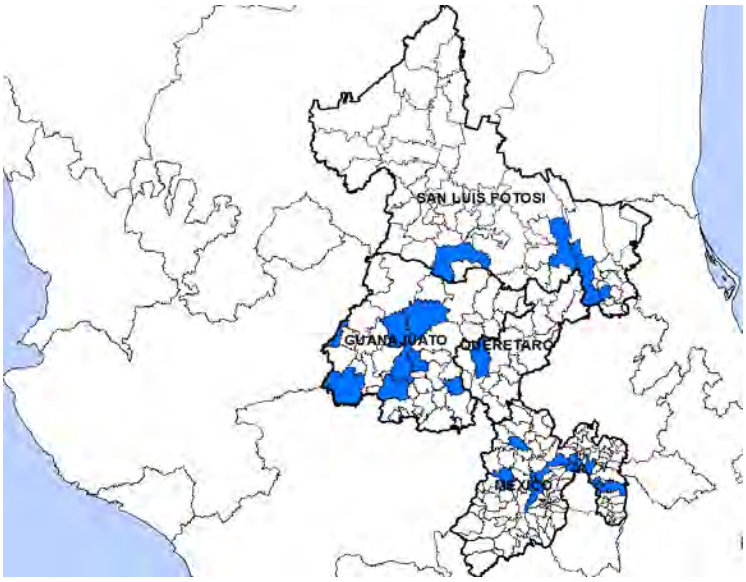

Figure 4: The 26 municipalities in our sample

had more precincts to choose from, we restricted our sample to precincts with at most 1,750 registered voters, and designed an algorithm to minimize the number of neighboring urban precincts in our sample.[21]

4.2 Information treatment

In partnership with the non-partisan Mexican NGO Borde Político,[22] we sought to evaluate the impact of distributing leaflets to voters that documented the use of FISM funds in their municipality. For each municipality, the leaflet focused on *either* the proportion of unauthorized spending or spending that did not benefit the poor (but never on both in the same municipality). For each municipality, we chose the malfeasance measure that maximized the difference from other par-

[21]The algorithm started with the set of neighboring precincts surrounding each precinct and identified all neighboring precincts that were eligible for our sample; we then iteratively removed the precinct with the most "in-sample" neighbors until we reached the required number of precincts for that municipality. In most municipalities, the algorithm ensured that our sample contained no neighboring precincts.

[22]Borde Político is a leading NGO seeking to increase voter knowledge about the actions of their politicians in office, with significant experience in developing web-based platforms to provide politically relevant information to voters (see borde.mx).

ties within the municipality's state. All treatments were delivered at the electoral precinct level, Mexico's lowest level of electoral aggregation.

Figure 5: Example of local information leaflet in Ecatepec de Morelos, México

Our leaflet was designed to be non-partisan, accessible, and sufficiently intriguing that voters would not discard it.[23] Figure 5 provides an example of a leaflet focusing on a severe case of unauthorized spending in the municipality of Ecatepec de Morelos in the state of México. The front page explains that Borde Político is a non-partisan organization and that the information contained in the leaflet is based on the ASF's official audit reports, which are available online. The main page first states that FISM funds should only be spent on social infrastructure projects,

[23]It was produced by a local graphic designer based on feedback from multiple focus groups. We also sought legal advice to ensure that our leaflets did not constitute political advertisements, and thus were not subject to distribution restrictions stipulated in Mexican electoral law.

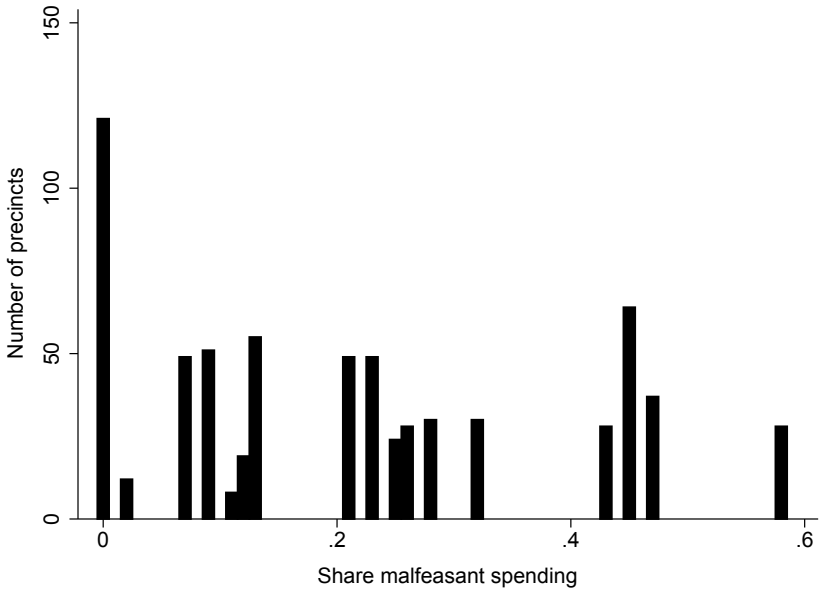

Figure 6: Precincts by share of malfeasant spending in our sample

and provides examples of such projects on the right. The leaflet then informs recipients of the total amount of money their municipality received (146.3 million pesos, in this case), and the percentage of this money spent in an unauthorized way by their government (45%). To avoid suspicions of political motivation, neither the incumbent mayor nor their party is referred to directly, although as noted above the vast majority of voters could correctly identify the party of their incumbent mayor. Figure A1 in the Appendix provides an example from the municipality of Salamanca in Guanajuato, where all 54.1 million pesos were correctly allocated to social infrastructure projects that benefited the poor. More generally, Figure 6 shows that the average precinct was informed of 21% malfeasant spending within their municipality.

Although they are not the main focus of this article, the experiment also considered two extensions to this information treatment. First, to examine the effect of providing voters with a benchmark against which to compare their municipality's malfeasance, we supplemented the leaflet by providing the mean outcome among all audited municipalities within the same state governed by a different political party. Second, to vary the extent to which the distribution of the leaflets is

common knowledge among voters within the precinct, we also varied whether leaflet delivery was accompanied by a loudspeaker informing voters that their neighbors would also receive the information and encouraging them to share and discuss it. The details of these treatments and the results are presented in the Appendix.

4.3 Block randomization and implementation

Our sample of 678 precincts was allocated according to the factorial design, with a pure control, shown in Table 1. The 400 treated precincts were equally divided between the four variants of the information treatment. Given that neither the comparative nor public information variants significantly moderated our treatment effects, and all leaflets contained the same baseline information pertaining to incumbent malfeasance, we proceed by pooling all treatment conditions. The control group comprising 278 electoral precincts reflects our sampling and block randomization design.

For the randomization, precincts were first stratified into rural or urban blocks of six or seven similar precincts within a given municipality.[24] Precinct similarity was defined by the Mahalanobis distance between 23 social, economic, demographic, and political variables provided by Mexico's National Statistical Agency and the National Electoral Institute (INE).[25] Within each block, we then randomly assigned precincts to each of the treatment conditions and, depending on the availability of an additional precinct, either two or three pure control precincts. Block randomization ensured that the sampled precincts coming from different municipalities did not receive different treatment proportions, and maximized the power of the experiment by minimizing differences between treated and control precincts.

The leaflets were distributed by our implementing partners Data OPM and Qué Funciona para el Desarollo using precinct maps provided by the INE. Our distribution teams delivered one leaflet

[24] If there were sufficient precincts, and the total treated precincts did not exceed one-third of all precincts, we used blocks of seven precincts.

[25] We used the `R` package `blockTools` to assign precincts to blocks. The algorithm is "greedy" in that it creates the most similar group first. Where a surplus of potential precincts was available, we used the most similar blocks to maximize statistical efficiency.

Table 1: Factorial design with a pure control

	Control	Private	Public
Control	278 precincts		
Local		100 precincts	100 precincts
Comparative		100 precincts	100 precincts

to a maximum of 200 households in the largest locality (in rural blocks) and randomly selected city blocks (in urban blocks) within each treated precinct. Within our sample, the median precinct contained 353 households (according to the 2010 Census), 420 private dwellings, and 1,056 voters registered for the 2015 election. Where possible, leaflets were delivered in person with a short verbal explanation of the leaflet's provenance. When no adult was available, leaflets were left in mailboxes or taped to the recipient's front door in a waterproof bag. Leaflet delivery took several hours per precinct, and was conducted over a period of three weeks, concluding at the legally designated end of the election campaign four days before the election. Our team recorded where leaflets were distributed in order to return for the post-election follow-up survey.

While compliance with the delivery of our treatments was very good in general, we nevertheless encountered some issues in the field. In a couple of cases, some leaflets were delivered to voters outside the precinct or adverse weather conditions and poor road conditions prevented us from reaching a precinct.[26] To preserve the randomization, we focus on estimating intent to treat (ITT) effects, which are arguably the most policy relevant.

4.4 Precinct- and individual-level data

We collected two sources of data to measure our main outcomes. First, by combining publicly available results and freedom of information requests, we collected official precinct-level electoral returns from each state's electoral institute. We use this data to measure our three pre-registered

[26] In addition, a new block in the municipality of Chimalhuacán replaced a block where treatments were misassigned across the different precincts. We dropped the misassigned block from our sample, but the results are unaffected by its inclusion.

precinct-level outcomes: incumbent party vote share (as a share of turnout), incumbent party vote share (as a share of registered voters), and turnout. Measuring incumbent party vote share using the share of registered voters allows us to abstract from changes in turnout. We drop the three precincts in our sample that were merged with another precinct because they contained fewer than 100 registered voters, which produces a final sample of 675 electoral precincts.[27] We complement the 2015 precinct-level electoral returns with the background covariates from the 2010 Census and 2012 electoral returns that we used for our block randomization.

Second, we conducted a post-election survey: we interviewed 10 voters from each of the treated precincts and 10 voters from a randomly selected control precinct within each block.[28] Most importantly, at the beginning of the survey we measured voters' posterior beliefs about incumbent malfeasance. Specifically, we asked respondents to rate, on a five-point scale from very low (-2) to very high (2), each major party's level of corruption or level of interest in supporting the poor (depending on the measure of malfeasance we focused on in that municipality).[29] Higher values of this variable thus indicate that voters believed a party was more malfeasant. To gauge the precision of these beliefs, we then asked respondents to report how certain they were about this belief on a four-point scale from very uncertain (1) to very certain (4).

[27] In two of these cases, a small precinct was merged with another precinct that remains in our sample; where the treatment condition conflicts, we retain the larger precinct's treatment status. We were not aware of these merges when the experiment was designed.

[28] For treated precincts, enumerators were instructed to survey the localities and city blocks where our informational treatment was delivered. In control precincts, respondents were chosen according to the same protocol used to determine the delivery of leaflets in treated rural and urban blocks.

[29] We did not ask explicitly about the MC party, which was the incumbent party only in Apaseo el Alto. Consequently, the 24 precincts from this municipality are dropped from analyses examining prior beliefs.

4.5 Estimation and balance

Following our pre-analysis plan, we estimate the average ITT effect of providing any type of information using OLS regressions of the form:

$$Y_{pbm} = \beta Treatment_{pbm} + \eta_{bm} + \varepsilon_{pbm}, \tag{4}$$

where Y_{pbm} is an outcome for electoral precinct p within randomization block b in municipality m. For individual-level survey outcomes, Y_{ipbm} also includes an i subscript. Block fixed effects, η_{bm}, are included to adjust for the differential treatment probabilities across blocks arising from different block sizes. Moreover, block fixed effects substantially increase efficiency by enabling us to fully control for all block-specific characteristics, including race-specific differences across municipalities. Importantly, including block fixed effects ensures that we only compare precincts that chose between the same candidates. Throughout, standard errors are clustered at the municipality-treatment level.

We weight precinct-level observations by the share of voters to whom we delivered a leaflet. In control precincts, we use the number of leaflets delivered to the average treated precinct within a block. This weighting scheme—the only departure from our pre-registered specifications—permits more precise estimates by de-weighting large precincts in which only a small fraction of voters could receive the leaflet. Nevertheless, we show similar results weighting each precinct equally as a robustness check in Table 6 below. In treated precincts, we only interviewed voters that were delivered leaflets; thus individual-level observations remain unweighted.[30]

Our main estimates pool municipalities that received information about unauthorized spending and spending on projects that did not benefit the poor. If voters evaluate these dimensions of malfeasance similarly, as the findings of Larreguy, Marshall and Snyder (2017) suggest, this maxi-

[30]Predicting the likelihood that respondents reported receiving the leaflet, we find no significant interaction between the treatment and the share of voters in the precinct that could be treated.

mizes the power of the experimental design. Since voters could plausibly respond to negligent and corrupt spending differently, we also examine the types of information separately in Table 5 and observe similar responses.

We use the baseline specification to validate the randomization. Table A1 in the Appendix demonstrates that the treatment is well balanced across 46 precinct and survey respondent characteristics. As usual, there are some significant differences, most notably with respect to incumbent vote share in the previous elections in 2012. In Table 6 we demonstrate that the results are robust—and, if anything, more precisely estimated—when we control for the 37 precinct-level pre-treatment variables.

4.6 Heterogeneous effects

We expect our informational treatment to have different effects across different voters. For example, it is not obvious whether misallocated spending totaling 10% represents good or bad news without comparing information content with voters' prior expectations. To test our hypotheses examining how the effects of providing malfeasance information vary with voters' prior beliefs, signal content, and the direction of voter updating, we estimate interactive specifications of the form:

$$Y_{pbm} = \beta Treatment_{pbm} + \gamma\big(Treatment_{pbm} \times X_{bm}\big) + \eta_{bm} + \varepsilon_{pbm}, \tag{5}$$

where X_{bm} is a block-level measure capturing the heterogeneous effects implied by H2–H6. We show the robustness of these specifications in Table 6 by interacting our treatment with potential confounders of X_{bm}.

To test H4 and H6, we simply interact the treatment with the share of funds spent inappropriately that was shown in the leaflet. However, measuring prior beliefs and voter updating is more challenging. Given that we were not able to conduct a baseline survey due to financial constraints,

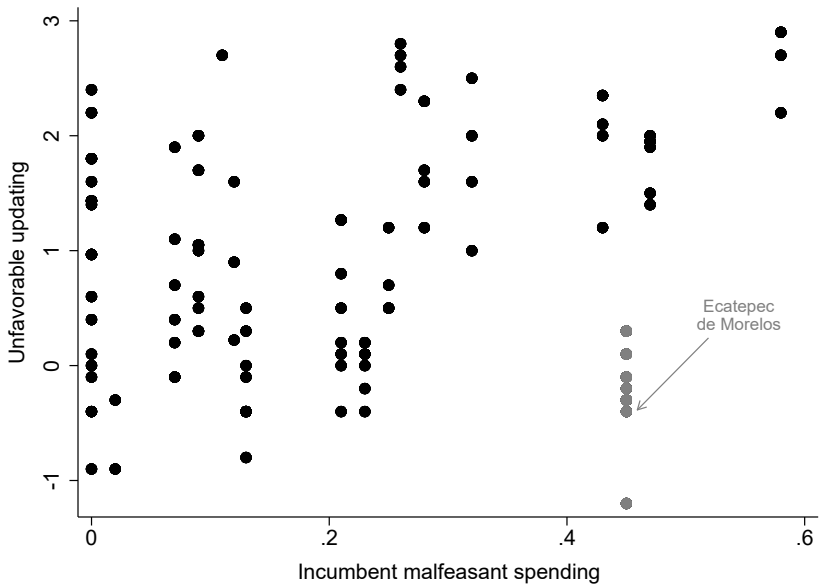

Figure 7: Scatter plot of audit report outcomes and control group unfavorable updating

we use the post-election surveys conducted in each block's surveyed control precinct to proxy for the average pre-treatment beliefs of the treated and control voters within the same block.[31] For H2, we use the mean belief about the incumbent party's malfeasance reported in a block's control group to proxy for the parameter μ_I in the model. For H3, we similarly use the mean precision of the incumbent malfeasance perceptions reported in a block's control group to capture parameter ρ_I.

To proxy for voter updating, we construct a measure of the extent to which the treatment caused voters to update their posterior beliefs about the incumbent party's malfeasance. Specifically, at the end of the survey we showed voters the leaflet corresponding to their municipality and asked them again how they perceived the incumbent party on the same five-point scale. To measure the extent and direction in which voters in each block updated their prior beliefs about the incumbent party, and thus test H5, we simply consider the average change in perceptions before and after showing

[31] We pre-specified that prior beliefs would be defined by control voters at the municipal level. However, we focus on the block-level controls to produce more precise measures. Nevertheless, we show in Tables A22 and A23 that this choice does not affect our results.

the corresponding leaflets to voters in a block's control precinct. This is the equivalent of Δ_I in our model, where positive (negative) values imply that the voters' posterior assessment is worse (better) than their prior beliefs (i.e. unfavorable updating about the incumbent). Unsurprisingly, Figure 7 shows that the extent of unfavorable updating is positively correlated with the level of malfeasance revealed by the audit information presented in the leaflet. Ecatepec de Morelos, in the state of México, is an odd case where voter priors were exceedingly unfavorable about their PRI-PVEM-PANAL incumbent, and even learning of 45% unauthorized spending caused voters to update their posterior beliefs about the incumbent party favorably.[32]

Using post-election surveys from the control group to proxy for pre-treatment beliefs requires two assumptions: (1) that control group respondents are similar to treatment group respondents and (2) that, absent any intervention, individual beliefs are fairly consistent across three-week periods.

We show that these assumptions are plausible in the context of this study. First, our randomization ensures that treated and control precincts are identical in expectation. Moreover, our blocking strategy ensures substantial within-block similarity. Providing significant support for the credibility of our first assumption, block fixed effects account for 60% of the variation in precinct-level incumbent vote share and 29% of the variation in individual-level beliefs within our samples, while Table A1 shows remarkably similar survey respondent characteristics across treatments. Second, we show in Table A2 that municipal-level electoral outcomes do not systematically affect the level or the precision of beliefs about incumbent malfeasance among respondents in the control group, indicating that the election outcome itself does not significantly influence voter beliefs (and thus violate our second assumption). Furthermore, suggesting that campaigns generally have a limited impact on voter beliefs, on average, Marshall (2017) shows in a nationally representative Mexican survey that upcoming elections do not affect confidence in the mayor. Third, and more generally, the 2012 Mexican Panel Survey shows that voter assessments of politicians are relatively persis-

[32]This reflects the unfavorable prior beliefs of those in the control group. Our robustness check in Table 6 shows that removing Ecatepec de Morelos further strengthens our findings.

tent. Voters' opinions of the presidential candidates before and after the election—three months apart, in contrast to the 3–4 weeks apart we examine—exhibit a 0.4 correlation. Fourth, Table A3 shows no compelling evidence of spillovers to neighboring precincts outside our sample. In particular, neighbors exhibit null ITT effects and null or opposing heterogeneous effects inconsistent with our key findings. Moreover, Table A4 shows that respondents in control precincts that neighbor treated precincts are no more likely to recall or act upon the leaflet. Together, these checks indicate that information from treated precincts did not influence beliefs in the control group in the three weeks between the treatment and the post-election survey, and thus violate our second assumption. Fifth, if the information is indeed novel to the control group, then the control group should update its beliefs substantially more than the treatment group after being shown the leaflet at the end of the post-election survey. Supporting this claim, Table A5 demonstrates that control voters indeed perceive their incumbent party to be more malfeasant when learning of high levels of malfeasance or when the information causes them to unfavorably update their posterior beliefs.

Finally, borrowing the data from a similar study to ours in Brazil,[33] in which both baseline and endline surveys were conducted, we are able to provide evidence in support of our approach. First, the correlation in prior (baseline) beliefs across respondents in control and treated units within the same randomization block is high (0.75). Second, the correlation in the beliefs of respondents in control units across the baseline and endline surveys is also high (0.69). Finally, consistent with these two facts, we find a high correlation (0.70) between the endline beliefs of respondents in control units and the baseline beliefs of individuals in treated units. We provide more details on this exercise in Appendix Section A.2.2.

[33]Details on the "Accountability and Incumbent Performance in the Brazilian Northeast" study can be found on EGAP's Metaketa I website: egap.org/content/accountability-and-incumbent-performance-brazilian-northeast .

5 How do voters interpret the information treatment?

Before examining the precinct-level electoral results, we first assess how the information treatment affected voters' actions and posterior beliefs using our post-election survey.

5.1 Manipulation checks

We first conduct several "manipulation checks" to ensure that treated voters indeed experienced the treatment as intended. The four self-reported outcomes in Table 2 provide clear evidence that voters received and engaged with the information distributed. Column (1) demonstrates that treated voters are 25 percentage points more likely to report remembering receiving our leaflet, relative to a control mean of 9% of voters.[34] Moreover, Column (2) confirms that voters in treated precincts were 17 percentage points more likely to report having read the leaflet, while Column (3) shows that treated voters were 14 percentage points more likely to correctly recall the spending covered in the leaflet.[35] Given that voters may only hazily recall receiving a specific pamphlet around the election, these differences are likely to be lower bounds. Finally, Column (4) indicates that 7% of treated voters reported that the leaflet influenced their vote choice, which is 5 percentage points higher than for voters located in control precincts.

Voters generally did not believe that the leaflet was politically motivated. Among treated precincts, 44% of voters believed that the leaflet came from a non-partisan NGO (this response was more than twice as likely as any particular government source or political party), while 33% did not know. The difference was even greater among those who remembered the leaflet. Moreover, neither the comparative nor public treatment variants—which could reasonably have been

[34] The non-zero control mean likely reflects respondents mistaking our leaflet for another leaflet. As noted above, Tables A3 and A4 in the Appendix provide little evidence to suggest that there were cross-precinct spillovers.

[35] In addition to both types of spending, respondents were also given the opportunity to say that the leaflet contained unemployment or public security information.

Table 2: Effect of information treatment on self-reported engagement with leaflet

	Remember leaflet (1)	Remember reading leaflet (2)	Correctly remember content (3)	Leaflet influenced vote (4)
Information treatment	0.247***	0.171***	0.138***	0.051***
	(0.022)	(0.018)	(0.019)	(0.010)
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}
Control outcome mean	0.09	0.05	0.06	0.02
Control outcome std. dev.	0.28	0.22	0.25	0.14
Information treatment mean	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42
R^2	0.11	0.09	0.10	0.06
Observations	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

perceived as more political—differentially affected the perception that the treatment emanated from a government or political source. Finally, such perceptions about the leaflet are not correlated with block-level prior beliefs, the precision of those beliefs, or belief updating. These results are reported in Table A7 of the Appendix.

5.2 The effect of information on voters' posterior beliefs

The distribution of prior beliefs about the municipal incumbent party's malfeasance in the control group demonstrates that voters have low expectations of incumbent parties. Figure 8 shows that most respondents are likely to report that the incumbent party engages in medium to very high levels of corruption or misallocated spending. Voters thus expect their mayors to engage in non-trivial levels of malfeasance in office.

In a context of low expectations of politicians, to understand how our information treatment will affect incumbent party support on average, it is essential to understand whether voters favorably or

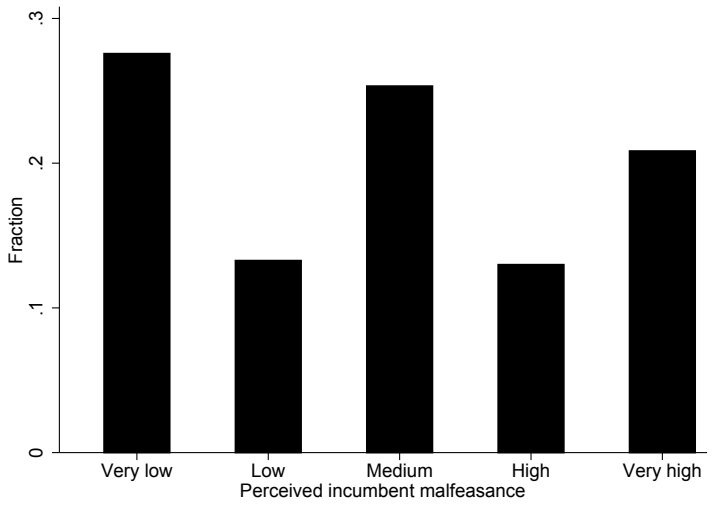

Figure 8: Perceived incumbent party malfeasance in control precincts

unfavorably update their posterior beliefs about the incumbent party's malfeasance. In particular, we estimate Equations (4) and (5) to examine how the treatment affected the posterior beliefs of treated voters regarding the incumbent party's level of malfeasance. The negative, albeit far from statistically significant, coefficient in Column (1) of Table 3 shows that treated voters did not increase their posterior beliefs about their incumbent party's malfeasance upon learning of relatively high levels of malfeasance, on average. This finding contrasts with our initial expectation that the malfeasance revelations that we report would cause voters to, on average, believe their incumbent party is more malfeasant (H1). Nevertheless, voters' prior beliefs concerning high levels of incumbent malfeasance are consistent with the prior beliefs of Mexican voters reported in Chong et al. (2015).

However, the *average* updating of treated voters masks substantial heterogeneity in responses across voters who have different prior beliefs, and who receive different information about their incumbent party's malfeasance. Consistent with H2, the treatment's interaction with voters' prior beliefs in Column (2) demonstrates that treated voters within blocks that have unfavorable prior beliefs (i.e. pre-existing expectations of high levels of malfeasance) about the incumbent favorably

Table 3: Effect of information treatment on voters' posterior beliefs about incumbent party malfeasance

	Perceived incumbent party malfeasance (very low to very high)				
	(1)	(2)	(3)	(4)	(5)
Information treatment	-0.001	-0.031	0.874**	0.016	-0.165***
	(0.040)	(0.047)	(0.327)	(0.067)	(0.059)
× Incumbent malfeasance prior		-0.275***			
		(0.040)			
× Incumbent prior precision			-0.270**		
			(0.103)		
× Incumbent malfeasant spending				-0.083	
				(0.214)	
× Unfavorable incumbent updating					0.178***
					(0.036)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.14	-0.14	-0.14	-0.14	-0.14
Control outcome std. dev.	1.48	1.48	1.48	1.48	1.48
Information treatment mean	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.24	0.21	0.89
Interaction std. dev.		0.89	0.37	0.17	1.07
R^2	0.29	0.30	0.29	0.29	0.30
Observations	4,624	4,624	4,624	4,624	4,624

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

update those beliefs about the incumbent, while treated voters with favorable prior beliefs (i.e. expectations of low malfeasance) are more likely to report perceiving their incumbent as corrupt or neglectful of the poor. For the average leaflet, the difference in responses to the treatment between those with the most favorable and most unfavorable prior beliefs is almost one standard deviation of the posterior belief. Moreover, Column (3) shows that treated voters within blocks with relatively weak prior beliefs are significantly more likely to unfavorably update their posterior beliefs about their incumbent party. As predicted by H3, this negative interaction term indicates that this effect declines as the precision of voters' prior beliefs increases.

The insignificant interaction in Column (4) initially provides little evidence that the share of misspent funds differentially impacts the posterior beliefs of treated voters (H4). However, the

precinct-level electoral results described below strongly support this hypothesis. Moreover, this changes once we account for how the information provided relates to prior beliefs. The large and statistically significant positive coefficient on the interaction between the treatment indicator and our measure of voter updating in Column (5) demonstrates that treated voters in blocks where voters unfavorably (favorably) update their posterior beliefs about the incumbent display substantially more unfavorable (favorable) opinions of the incumbent party. Substantively, a one-standard-deviation difference in updating translates to around a 0.13-standard-deviation change in posterior beliefs among treated voters. We thus find strong support for H5.[36]

Our information treatment could, in theory, also affect posterior beliefs about challengers (e.g. Kendall, Nannicini and Trebbi 2015). Tables A9-A14 in the Appendix similarly show that treated voters with unfavorable prior beliefs about the challenger are more likely to favorably update their posterior beliefs about the main challenger's malfeasance. Given that such effects are similar across the local and comparative variants of our treatment, this suggests that voters in our sample are primarily updating their posterior beliefs about challengers from the information they receive about the incumbent, and thus believe that incumbents' and challengers' types are positively correlated.[37] However, since voters' beliefs about challengers are highly correlated with voters' beliefs about incumbents, it is difficult to interpret these links. Moreover, neither incumbent malfeasance nor the difference in reported malfeasance between the incumbent and the main challenger systematically affects posterior beliefs about that challenger. Justifying our focus on incumbent parties, Tables A15-A17 show that voting behavior is ultimately driven primarily by how the treatment relates to voters' prior beliefs about the incumbent party rather than challenger parties.

Together, these results confirm that voters meaningfully updated their posterior beliefs about

[36]This result is not mechanical, since our block-level measures of prior beliefs and unfavorable updating are based on responses from voters in control precincts.

[37]On 5-point scales of perceived similarity of candidates across parties, ranging from not all probable to extremely probable that they will behave similarly in office, there is a 0.57 correlation in the control group. Similarly, conditional on believing that the incumbent is at least somewhat malfeasant, 69% of control group voters believe that challengers are also somewhat malfeasant.

the incumbent party in response to our information treatment. Moreover, the direction of updating varies substantially across voters, depending on how the information received relates to prior beliefs. We now examine whether voter updating translates into aggregate-level vote choices.

6 Aggregate election results

We now present our three main precinct-level findings. First, in line with voters' prior beliefs that the incumbent engages in a relatively high level of malfeasant spending, the information treatment increases the incumbent's vote share, on average. Second, and consistent with our theoretical model, this effect is greatest where voters updated their posterior beliefs about the incumbent party most favorably based on the information received. Third, we identify a non-linear effect of information on electoral turnout such that intermediate levels of malfeasance reduce turnout, but extreme levels—either high or low—increase turnout.

6.1 Average effects of information on incumbent vote share

We first examine the average ITT effect of disseminating information about incumbents' malfeasance across our sample. Consistent with the fact that for many voters our information represents good news about the incumbent's malfeasance, or at least reduced the uncertainty associated with re-electing the incumbent party, the information treatment *increases* the incumbent party's vote share, on average.[38] Column (1) of panel A in Table 4 demonstrates that our intervention significantly increased the incumbent party's vote share, as a proportion of those that turned out, by an average of 2.6 percentage points. Column (1) of panel B similarly shows that this translates into a 1.3-percentage-point increase in the incumbent party's vote share, as a proportion of all registered voters in the precinct. The latter finding indicates that the information caused the incumbent to

[38]It is important to reiterate that our pre-analysis plan explicitly acknowledged this possibility, noting that the expected negative effect is premised on the empirical expectation "that on average the information reported in the leaflets will exceed voters' priors (though this is something that we will be able to test)."

gain more voters, rather than simply demobilize challenger supporters. Relative to the mean vote share in the control group, the information treatment increased the incumbent party's vote share by 7%, or around a quarter of a standard deviation. Moreover, the electoral results are broadly in line with the 5% of respondents—shown in Table 2—that claimed receiving the leaflet influenced their vote choice, given that only around 60% of households in the average precinct received a leaflet.[39]

Our model demonstrates that the incumbent party's vote share could still increase due to the reduction in uncertainty associated with receiving information consistent with existing prior beliefs (see also Kendall, Nannicini and Trebbi 2015). This is captured by the $\frac{\kappa_I}{2\rho_I}$ term in Equation (3). Supporting the risk-reduction interpretation, Table A18 shows that voters with imprecise prior beliefs indeed significantly strengthened their posterior beliefs after receiving the information treatment.[40] This finding thus provides a plausible explanation of why the average survey respondent did not substantially improve their perception of incumbent party malfeasance, but nevertheless became more likely to vote for the incumbent party.

Moreover, it is unlikely that the positive average effect reflects other potential explanations. One possibility is that voters (falsely) credit the incumbent for attracting the resources to their municipality. However, we find little support for this interpretation in Table A18, which shows no heterogeneous effects by the quantity of FISM funds received by the municipality, in either absolute or per voter terms. Another possibility is that the intervention may have been perceived as a smear campaign against the incumbent party. However, as shown above, voters nevertheless updated their posterior beliefs and generally believed that the information came from a non-partisan source. A final possibility is that voting behavior reflects general equilibrium considerations, such as the responses of incumbent and challenger parties to the information's provision. As we show below, although there is some evidence indicating that both incumbent and challenger parties responded, they did so in roughly equal measure. Nevertheless, it is possible that incumbent responses are

[39]The survey may nevertheless underestimate the extent to which the same treatment induced some voters to change in different directions.

[40]Our analyses of the average effect were not preregistered, so should be treated as exploratory.

Table 4: Effect of information treatment on incumbent party vote share

	Incumbent party vote share				
	(1)	(2)	(3)	(4)	(5)
Panel A: Incumbent party vote share (share of turnout)					
Information treatment	0.026***	0.024***	0.092	0.042***	0.032***
	(0.006)	(0.005)	(0.063)	(0.007)	(0.006)
× Incumbent malfeasance prior		0.010*			
		(0.005)			
× Incumbent prior precision			-0.021		
			(0.019)		
× Incumbent malfeasant spending				-0.072***	
				(0.027)	
× Unfavorable incumbent updating					-0.010**
					(0.004)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12
R^2	0.61	0.60	0.60	0.62	0.60
Panel B: Incumbent party vote share (share of registered voters)					
Information treatment	0.013***	0.012***	0.015	0.022***	0.018***
	(0.003)	(0.003)	(0.035)	(0.004)	(0.003)
× Incumbent malfeasance prior		0.007**			
		(0.003)			
× Incumbent prior precision			-0.001		
			(0.011)		
× Incumbent malfeasant spending				-0.043***	
				(0.015)	
× Unfavorable incumbent updating					-0.007***
					(0.002)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07
R^2	0.64	0.64	0.63	0.64	0.64
Information treatment mean	0.60	0.59	0.59	0.60	0.59
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.24	0.22	0.85
Interaction std. dev.		0.90	0.34	0.17	1.07
Observations	675	651	651	675	651

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (2), (3), and (5) reflect the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

substantially more effective (e.g. Cruz, Keefer and Labonne 2016), which could contribute to the average positive effect. Importantly, our evidence of voter learning—to which we turn next—suggests that political responses cannot fully account for these heterogeneous effects.

6.2 Heterogeneous effects of information on incumbent vote share

Although treated precincts somewhat surprisingly rewarded incumbent parties *on average*, we next demonstrate that voter responses vary with the content of the information received exactly as theorized, and in line with our survey data documenting changes in posterior beliefs.

First, supporting H2, our information treatment's largest positive effects are in precincts where voters were initially most likely to believe that their incumbent was malfeasant. Across both panels in Table 4, Column (2) shows that the increase in incumbent party vote share caused by our information treatment is significantly greater (smaller) in blocks where the control group had more unfavorable (favorable) prior beliefs regarding the incumbent party's level of malfeasance. These results indicate that moving from the block with the most favorable prior beliefs about the incumbent party (-1.6) to the block with the most unfavorable prior beliefs (1.8) increases the effect of providing information on the incumbent party's vote share from 0.8 to 4.2 percentage points, and the effect on the incumbent's share of registered votes from 0.1 to 2.5 percentage points. Consistent with H3, Column (3) in panel A identifies a smaller effect of the information in precincts where the block's control respondents had stronger prior beliefs, although this estimate is not statistically significant.

Second, the extent to which the incumbent party is rewarded declines with the level of malfeasance revealed to voters. In line with H4, the significant negative interaction in Column (4) between the treatment and the share of malfeasant spending reported in the leaflet shows that voters substantially reward incumbents for lower levels of malfeasance, but may sanction incumbent parties in the most severe cases. As illustrated in Figure 9, revealing any level of malfeasant spending below 40% actually significantly increases the incumbent's vote share. Moreover, the effects are

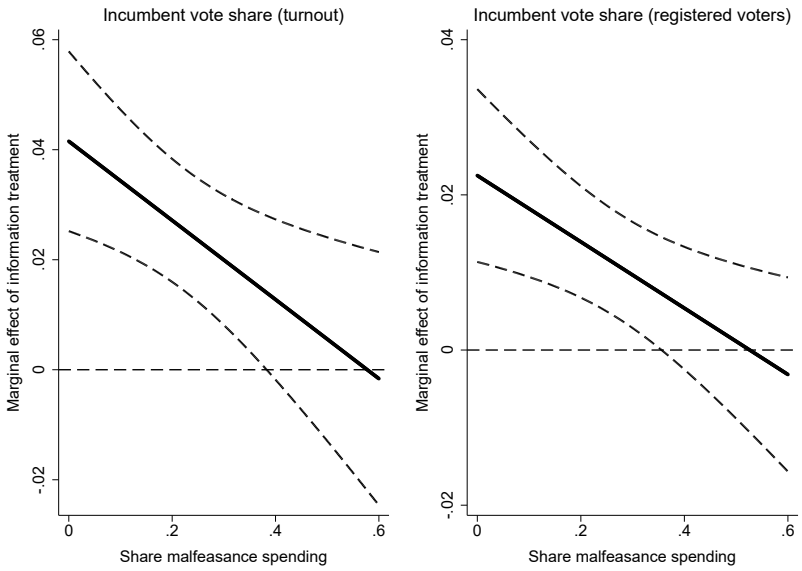

Figure 9: Marginal effect of information treatment on incumbent vote share, by share of malfeasant spending (95% confidence intervals)

relatively substantial: a one-standard-deviation increase in reported malfeasance implies a 1.2-percentage-point decline in the incumbent party's vote share (as a share of turnout). We show in Table A21 that this gradient becomes starker when the anomalous municipality of Ecatepec de Morelos is excluded.

Third, and combining the preceding heterogeneous effects, the increase in incumbent party vote share caused by providing incumbent malfeasance information decreases with the extent to which the information causes voters to believe that the incumbent is more malfeasant than they previously believed. Column (5) of both panels demonstrates a significant negative interaction between the treatment and our measure of unfavorable updating of posterior beliefs in each block's control precincts. A one-standard-deviation increase in unfavorable updating induced by the information treatment reduces the incumbent party's vote share (as a share of turnout) by 1.1 percentage points.

We find broadly similar results for revelations of information concerning spending that did not benefit the poor and unauthorized spending. Table 5 splits the sample between municipalities that

Table 5: Effect of information treatment on incumbent party vote share, by type of malfeasance information received

	Incumbent party vote share (share of turnout)			Incumbent party vote share (share of registered voters)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Municipalities receiving information regarding the share of spending not spent on the poor						
Information treatment	0.021**	0.042***	0.019	0.011**	0.024***	0.019*
	(0.008)	(0.009)	(0.016)	(0.005)	(0.005)	(0.011)
× Incumbent malfeasant spending		-0.100***			-0.063***	
		(0.026)			(0.013)	
× Unfavorable incumbent updating			-0.003			-0.007
			(0.008)			(0.005)
Outcome range	[0.09,0.85]	[0.09,0.85]	[0.09,0.85]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.40	0.40	0.41	0.19	0.19	0.20
Control outcome std. dev.	0.12	0.12	0.11	0.07	0.07	0.06
Information treatment mean	0.61	0.61	0.61	0.61	0.61	0.61
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49	0.49
Interaction mean		0.21	1.55		0.21	1.55
Interaction std. dev.		0.18	0.83		0.18	0.83
R^2	0.55	0.56	0.52	0.58	0.58	0.56
Observations	407	407	383	407	407	383
Panel B: Municipalities receiving information regarding the share of unauthorized spending						
Information treatment	0.034***	0.037***	0.030***	0.017***	0.017**	0.015***
	(0.007)	(0.011)	(0.006)	(0.003)	(0.006)	(0.002)
× Incumbent malfeasant spending		-0.015			-0.001	
		(0.028)			(0.016)	
× Unfavorable incumbent updating			-0.038***			-0.018**
			(0.012)			(0.008)
Outcome range	[0.07,0.71]	[0.07,0.71]	[0.07,0.71]	[0.03,0.44]	[0.03,0.44]	[0.03,0.44]
Control outcome mean	0.35	0.35	0.35	0.19	0.19	0.19
Control outcome std. dev.	0.13	0.13	0.13	0.08	0.08	0.08
Information treatment mean	0.58	0.58	0.58	0.58	0.58	0.58
Information treatment std. dev.	0.50	0.50	0.50	0.50	0.50	0.50
Interaction mean		0.22	-0.10		0.22	-0.10
Interaction std. dev.		0.15	0.42		0.15	0.42
R^2	0.70	0.70	0.70	0.73	0.73	0.73
Observations	268	268	268	268	268	268

Notes: Panel A includes only precincts from municipalities that received information about the share of spending on projects that did not benefit the poor; panel B includes only precincts from municipalities that received information about the share of unauthorized spending. All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (3) and (6) reflects the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

received information about not spending FISM funds on projects that benefited the poor (panel A) and spending on unauthorized projects (panel B). Columns (1)–(3) of panels A and B again show a clear positive average effect of our treatment across both types of malfeasant spending. Although the interactions with the share of malfeasant spending and the extent of unfavorable updating differ somewhat, the coefficients consistently point in the same direction across subsamples. Columns (4)–(6) report similar results for the incumbent party vote share as a share of registered voters.

The lack of heterogeneity in electoral response by precinct socioeconomic development—found in unreported estimates—suggests that misallocating funds to projects that did not benefit the poor is no less salient where voters were less likely to directly benefit from FISM projects themselves. This suggests that voters primarily worry about malfeasance in terms of incumbent integrity or competence, rather than its distributive implications.

6.3 Robustness tests

Table 6 demonstrates that the incumbent party vote share results are robust to several alternative specifications. While we focus on vote share as a share of actual turnout, Table A24 shows similar results for incumbent party vote share using registered voters—for which our results are generally stronger—in the denominator.

First, to address the potential concern that our results are driven by imbalances that remain after random assignment, panel A simultaneously controls for all 37 covariates we assess balance over. The results are substantively indistinguishable and more precisely estimated. In fact, we now find support for the prediction that the effect of the treatment is greater in blocks where voters have weak prior beliefs (H3).

Second, it is still possible that our heterogeneous effects are confounded by correlates of voters' prior beliefs and municipal malfeasance. In particular, our estimates could be biased if voters' prior beliefs correlate with proxies for potential confounds relating to the extent of treatment dissemination, the ease with which our information treatment could be relayed through local networks

Table 6: Robustness of information treatment on incumbent party vote share (share of turnout)

	Incumbent party vote share (share of turnout)				
	(1)	(2)	(3)	(4)	(5)
Panel A: Controlling for 37 balancing covariates					
Information treatment	0.020***	0.018***	0.134**	0.038***	0.028***
	(0.005)	(0.005)	(0.056)	(0.007)	(0.006)
× Incumbent malfeasance prior		0.009*			
		(0.005)			
× Incumbent prior precision			-0.036**		
			(0.017)		
× Incumbent malfeasant spending				-0.081***	
				(0.022)	
× Unfavorable incumbent updating					-0.011***
					(0.004)
Panel B: Controlling for selected standardized interacted covariates					
Information treatment	0.019***	0.019***	0.033	0.037***	0.029***
	(0.005)	(0.004)	(0.063)	(0.007)	(0.005)
× Incumbent malfeasance prior		0.011**			
		(0.005)			
× Incumbent prior precision			-0.005		
			(0.019)		
× Incumbent malfeasant spending				-0.082**	
				(0.034)	
× Unfavorable incumbent updating					-0.012***
					(0.003)
Panel C: Unweighted precinct estimates					
Information treatment	0.020***	0.019***	0.113**	0.031***	0.025***
	(0.004)	(0.004)	(0.043)	(0.006)	(0.005)
× Incumbent malfeasance prior		0.007			
		(0.004)			
× Incumbent prior precision			-0.029**		
			(0.013)		
× Incumbent malfeasant spending				-0.052**	
				(0.023)	
× Unfavorable incumbent updating					-0.007**
					(0.004)

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated (except those in panel C), and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

(Arias et al. 2017), alternative sources of our information (e.g. Ferraz and Finan 2008; Larreguy, Marshall and Snyder 2017), and the level of political polarization. Accordingly, we control for the interaction of our information treatment with the following standardized covariates: share of the precinct electorate that received a leaflet, share that received a hand-delivered leaflet, distance to the municipality center, whether a precinct is rural, population density, number of radio and television stations covering the precinct that transmit from within the municipality, percentage of households with access to a television, percentage of households with access to the internet, and municipal winning margin in the previous election. We purposely avoid controlling for variables that could determine voters' prior beliefs themselves. The results in panel B demonstrate that our heterogeneous effects are robust, and thus support our interpretation that voters respond to malfeasance revelations in a Bayesian manner.

Third, despite increasing the weight on large precincts in which proportionately fewer voters were delivered the treatment, panel C shows that the results are robust to equally weighting all precincts. In this specification, the interaction with the precision of voters' prior beliefs becomes statistically significant, and thus further bolsters support for H3.

6.4 Non-linear effects of information on turnout

A distinctive feature of our theory is the non-linear relationship between the extent of malfeasance and turnout. In particular, we predicted that revelations of either extremely low or high levels of malfeasance would induce voters to switch parties.

The results in Table 7 support this non-linear prediction. Providing evidence consistent with H6, Column (3) shows that for very low levels of malfeasance, the lower-order treatment term indicates that turnout significantly increases by 1 percentage point, while the negative linear and positive quadratic interactions with the share of malfeasant spending demonstrate that turnout decreases for interim levels of malfeasance but increases for high levels of malfeasance. Figure 10 depicts this non-linearity graphically. In line with such heterogeneity in responses, Column (1)

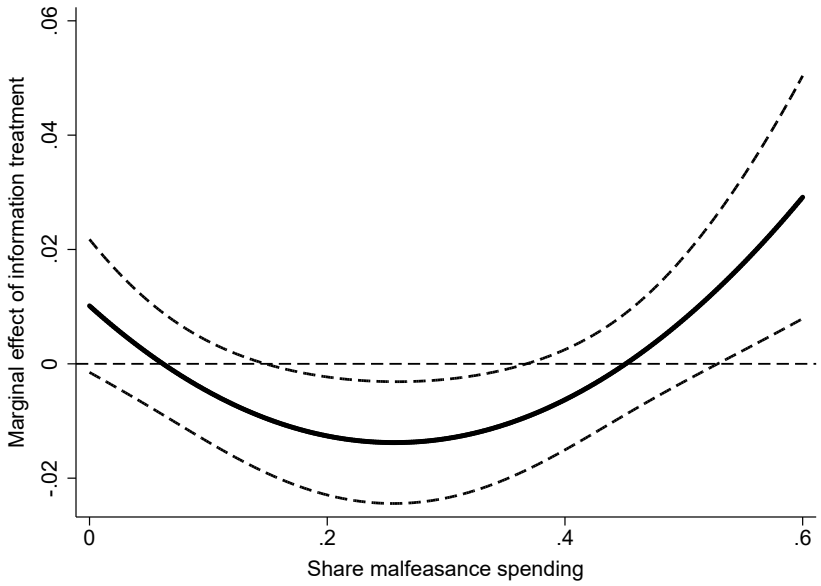

Figure 10: Marginal effect of information treatment on turnout, by share of malfeasant spending (95% confidence intervals)

shows that, on average, providing information does not affect turnout.

Column (4) shows that the results are robust to splitting the sample into quartiles by level of malfeasance spending, and thus are not an artifact of our pre-specified parametric (quadratic) approach. Furthermore, although it is possible that our turnout results reflect party mobilization strategies, the results in Table 8 below suggest that political responses are concentrated in high-malfeasance municipalities, and thus cannot explain how the treatment could induce high turnout in low-malfeasance municipalities. In sum, these results indicate that revelations that substantially deviate from the average voter's prior beliefs can induce major realignments, as voters shift not just towards indifference but to support other parties.

While these results support our model that emphasizes the importance of voters' prior expectations, it is possible that voters may also disengage. However, we find weak evidence to suggest that information about an incumbent's malfeasance induces a general form of disengagement with the system (e.g. Chong et al. 2015). Column (2) of panel A shows that turnout does not significantly

Table 7: Effect of information treatment on turnout and confidence in the electoral process

Panel A: Turnout	Turnout (share of registered voters)				
	(1)	(2)	(3)	(4)	
Information treatment	-0.003	-0.003	0.010*	0.010*	
	(0.004)	(0.006)	(0.006)	(0.006)	
× Incumbent malfeasance spending		-0.001	-0.187***		
		(0.018)	(0.057)		
× Incumbent malfeasance spending squared			0.364***		
			(0.108)		
× Intensity quartile 2				-0.014	
				(0.008)	
× Intensity quartile 3				-0.032***	
				(0.008)	
× Intensity quartile 4				-0.000	
				(0.006)	
Outcome range	[0.21,0.79]	[0.21,0.79]	[0.21,0.79]	[0.21,0.79]	
Control outcome mean	0.51	0.51	0.51	0.51	
Control outcome std. dev.	0.10	0.10	0.10	0.10	
Information treatment mean	0.60	0.60	0.60	0.60	
Information treatment std. dev.	0.49	0.49	0.49	0.49	
Interaction mean		0.22	0.22		
Interaction std. dev.		0.17	0.17		
R^2	0.70	0.70	0.70	0.70	
Observations	675	675	675	675	
Panel B: Confidence in system	Elections help to select competent candidates (did not help at all - helped a lot)				
	(1)	(2)	(3)	(4)	(5)
Information treatment	0.008	0.002	0.155	0.052	-0.066
	(0.042)	(0.042)	(0.493)	(0.078)	(0.059)
× Incumbent malfeasance prior		-0.054			
		(0.043)			
× Incumbent prior precision			-0.045		
			(0.153)		
× Incumbent malfeasant spending				-0.209	
				(0.255)	
× Unfavorable incumbent updating					0.081**
					(0.035)
Outcome range	{1,2,3,4,5}	{1,2,3,4,5}	{1,2,3,4,5}	{1,2,3,4,5}	{1,2,3,4,5}
Control outcome mean	2.86	2.86	2.84	2.86	2.86
Control outcome std. dev.	1.40	1.40	1.41	1.40	1.40
Information treatment mean	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.24	0.21	0.89
Interaction std. dev.		0.89	0.37	0.17	1.07
R^2	0.06	0.06	0.06	0.06	0.06
Observations	4,615	4,615	4,615	4,615	4,615

Notes: All specifications include block fixed effects, and are estimated using OLS. Panel A estimations are weighted by the share of the precinct that was treated. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

decrease depending on the level of malfeasant spending. Furthermore, examining a five-point scale of voters' beliefs that elections help to select honest and competent politicians in panel B, Column (4) again finds that high levels of malfeasance do not significantly alter voters' faith that elections can select good candidates.[41] Column (5) shows that if anything, voters who discovered high levels of malfeasance developed greater confidence in elections' function of selecting competent candidates.

7 Party responses to malfeasance revelations

The preceding results illuminate an accountability equilibrium in which voters are willing to reward or sanction their incumbent party depending on their level of malfeasance while in office, but are characterized by sufficiently low expectations that revelations of substantial levels of malfeasance are often regarded as good news. However, political parties' responses to the provision of malfeasance information could also influence voting behavior. For example, information provision reduced vote buying in India (Banerjee et al. 2011), while the opposite occurred in the Philippines (Cruz, Keefer and Labonne 2016). Such reactions are already incorporated into our overall point estimates, which may be the primary parameter of policy interest. Nevertheless, to better understand the general equilibrium effects of providing information, we explore whether party campaign strategies could account for voting outcomes.

Qualitatively, our intervention incited pushback from incumbent parties and challenger attempts to exploit the information in various instances. In many cases we encountered a strong response from the incumbent authorities, as Borde Político went on to explain publicly.[42] The response was sufficiently strong that the Permanent Commission of the Mexican Congress, a group of deputies and senators addressing urgent matters during the electoral recess, passed a resolu-

[41] Unreported results including a quadratic interaction with incumbent malfeasant spending provide no evidence to suggest that confidence mirrors the non-linear relationship with turnout.

[42] See their press release here.

tion exhorting federal authorities to investigate municipal abuses of power. Most notably, in four municipalities across Guanajuato and México, members of our team were arrested after local incumbent party operatives complained that they disrupted public order and (falsely) accused our team of illegally distributing political advertisements. All team members were quickly released. Moreover, in both Ixtapaluca and Juventino Rosas, the PRI and PAN, respectively, arrived shortly after the leaflets were delivered to confiscate them. However, incumbent responses were sometimes more subtle. In Apaseo el Alto in Guanajuato, people from the ruling MC attempted to justify their behavior to voters. Most creatively, the PRI incumbent in Cuatiltlán Izcalli in the state of México forged our leaflet and proceeded to disseminate a leaflet blaming local PAN politicians for government debt and accusing them of supporting local drug cartels. The opposition in some cases also responded by magnifying the impact of the information. For example, in Tamasopo in San Luis Potosí, an opposition party called a meeting to discuss the leaflet.

To examine this more systematically, we asked voters whether incumbents and challengers referred to the information reported in our leaflets through the following (non-exclusive) methods: i) campaign activities, ii) partisan leaflets, iii) visits from local political actors, iv) advertisements, or v) through the media. Around 17% of voters reported at least one type of incumbent response, and 16% reported at least one type of challenger response. According to our respondents, incumbents most frequently claimed that all parties were equally bad, while opposition parties were somewhat more likely to try to emphasize the content of the leaflets. In Columns (1)–(5) of Table 8 we use as a dependent variable the total number of politician responses reported by the respondent, ranging from 1 to 5, while in Columns (6)–(10) we examine indicators for each type of response. Column (1) of panels A and B identifies no significant change in incumbent responses and a slight (but significant) increase in challenger responses *on average* in treatment relative to control precincts.[43]

However, these modest increases in political activity mask the sharp increase where malfea-

[43]The non-zero number of activities in the control group likely reflects cross-precinct spillovers or recall failures.

Table 8: Effect of information treatment on political party responses

	Total party activities					Leaflets	Campaigning	Party visits	Adverts	Media
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Incumbent reactions										
Information treatment	0.032	0.030	0.639*	-0.131*	-0.012	-0.026	-0.020	-0.026	-0.013	-0.015
	(0.043)	(0.044)	(0.371)	(0.077)	(0.065)	(0.018)	(0.013)	(0.017)	(0.017)	(0.015)
× Incumbent malfeasance prior		-0.017								
		(0.032)								
× Incumbent prior precision			-0.188							
			(0.118)							
× Incumbent malfeasant spending				0.766***		0.085	0.096**	0.156**	0.076	0.100**
				(0.258)		(0.059)	(0.044)	(0.068)	(0.053)	(0.049)
× Unfavorable incumbent updating					0.048					
					(0.035)					
Control outcome mean	0.43	0.46	0.45	0.43	0.43	0.06	0.07	0.06	0.06	0.07
Control outcome std. dev.	1.18	1.17	1.19	1.18	1.18	0.24	0.25	0.23	0.24	0.26
R^2	0.12	0.12	0.12	0.12	0.12	0.15	0.15	0.14	0.17	0.16
Panel B: Challenger reactions										
Information treatment	0.102**	0.103**	0.920**	-0.024	0.085	-0.007	0.005	0.003	-0.011	-0.010
	(0.039)	(0.039)	(0.354)	(0.060)	(0.055)	(0.011)	(0.012)	(0.012)	(0.011)	(0.013)
× Incumbent malfeasance prior		0.009								
		(0.038)								
× Incumbent prior precision			-0.252**							
			(0.108)							
× Incumbent malfeasant spending				0.591***		0.060*	0.025	0.079	0.078*	0.086**
				(0.204)		(0.035)	(0.051)	(0.052)	(0.039)	(0.042)
× Unfavorable incumbent updating					0.019					
					(0.032)					
Control outcome mean	0.40	0.48	0.41	0.40	0.40	0.07	0.06	0.04	0.06	0.06
Control outcome std. dev.	1.17	1.24	1.18	1.17	1.17	0.26	0.25	0.20	0.23	0.24
R^2	0.12	0.12	0.12	0.12	0.12	0.15	0.15	0.14	0.17	0.16
Outcome range	{0,1,2,3,4,5}	{0,1,2,3,4,5}	{0,1,2,3,4,5}	{0,1,2,3,4,5}	{0,1,2,3,4,5}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.22	0.21	0.89	0.21	0.21	0.21	0.21	0.21
Interaction std. dev.		0.87	0.39	0.17	1.05	0.17	0.17	0.17	0.17	0.17
Observations	4,958	4,958	4,808	4,958	4,958	4,958	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

sance revelations were most severe. The large and significant positive interactions in Column (4) demonstrate that, for both incumbents and challengers, party activity increased substantially in municipalities in which high levels of malfeasance were revealed. In a treated precinct within a municipality with 50% malfeasant spending, activity almost doubled relative to a municipality with 0%. However, a comparison of Column (4) to Columns (2), (3), and (5) shows that political responses are driven by the *level* of malfeasance reported, rather than the extent to which voters updated their prior beliefs based on this information. This suggests that incumbent parties may overestimate the extent to which voters expect their representatives to engage in minimal malfeasant spending while in office. Columns (6)–(10) categorize the activities index and show that increased party activity in high-malfeasance treated precincts often occurs through the media. The incumbent, in particular, is also significantly more likely to engage in on-the-ground campaign and visiting tactics.[44]

The preceding evidence of increased party activity suggests that party responses may play an important role in understanding how information dissemination impacts incumbent party support. If such party activity influenced voting behavior, it could in part explain the positive average effect on incumbent vote share.[45] Nevertheless, it is important to emphasize the fact that political parties do not respond in low-malfeasance municipalities. This demonstrates that party responses cannot account for the heterogeneity in voter responses attributed to changes in voter beliefs.

8 Conclusion

This article demonstrates the importance of voters' prior beliefs in understanding when incumbent malfeasance revelations affect voting behavior. We find that Mexican voters—who, like voters in many developing contexts, have low expectations that their incumbents will correctly allocate

[44]Unreported estimates indicate that parties did not respond differently where the treatment was delivered publicly.

[45]In an effort to explore vote buying, we conducted a list experiment, which appeared to fail, given that it did not identify the presence of vote buying in general.

resources—on average actually *reward* municipal incumbent parties revealed to have engaged in non-trivial levels of malfeasance in office. However, consistent with voters' unfavorable prior beliefs, we document considerable support for our simple learning model. In particular, rewards are concentrated among voters who have particularly unfavorable prior beliefs about incumbent party malfeasance, who learn of lower incumbent malfeasance, and who update their beliefs about the incumbent most favorably. Furthermore, turnout responds to information non-linearly: surprising information increases turnout by shifting voters between parties, and relatively unsurprising information shifts voters towards indifference. By emphasizing voters' prior beliefs, and their relationship with the content of the information, these findings can help explain the mixed evidence that information induces electoral sanctioning or impacts political participation in developing democracies (e.g. Adida et al. 2016; Banerjee et al. 2011; Chong et al. 2015; de Figueiredo, Hidalgo and Kasahara 2013; Ferraz and Finan 2008; Humphreys and Weinstein 2012; Larreguy, Marshall and Snyder 2017).

The implications of these findings for using information interventions to improve governance are mixed. A clear reason for optimism is that voters with relatively low levels of education are able to understand incumbent performance information and incorporate it into their voting behavior in a simple Bayesian manner. However, the fact that some voters are so pessimistic that the misallocation of up to 40% of funds is considered good news is worrying for proponents of good governance. As the mixed evidence from previous studies suggests, such beliefs may not be uncommon in developing contexts—and may be consistent with incumbent behavior. Given the central importance of the interaction between voters' prior beliefs and information content, a key challenge for future research is understanding the origins of voters' prior beliefs.

Our findings suggest the need to improve voters' expectations of their elected representatives, which could induce politicians to perform better in office (Barro 1973; Ferejohn 1986), the need for better politicians to stand for office, or more effective audits and legal sanctions. Civic education or a critical media may be required to help voters understand what good performance entails (e.g.

Adida et al. 2016; Botero et al. 2015; Gottlieb 2016). Higher-quality candidates should also be encouraged to stand for office; some evidence suggests that increased wages can help (Ferraz and Finan 2011). More effective audits and legal sanctions may also help improve politicians' performance. Although it is difficult to distinguish the effects of monitoring from selection effects, the extensive use of audits also may help reduce incumbent malfeasance by causing parties to believe that they will be electorally sanctioned for malfeasance in office (Avis, Ferraz and Finan 2016; Bobonis, Fuertes and Schwabe 2016; Olken 2007; Zamboni and Litschig 2014).

From the perspective of providing information, it is important to understand how the *means* of information transmission can affect voters' responses. The largest documented effects of information on electoral accountability include the role of broadcast media (e.g. Ferraz and Finan 2008; Larreguy, Marshall and Snyder 2017), whereas leaflet-based delivery has typically yielded smaller effects. On the one hand, this is likely to partly reflect the comparatively limited reach and salience of leaflets relative to radio or television, as well as the media's greater potential to support coordination by establishing common knowledge (e.g. Adena et al. 2015; Adida et al. 2016; Arias 2016; Arias et al. 2017; Yanagizawa-Drott 2014).[46] The scale of information provision may also matter. As our discussion of political responses indicates, incumbents may be able to counteract small-scale interventions by targeting the locations exposed to damaging information. However, media coverage is normally more comprehensive, and may thus reach too many voters for incumbent parties to deploy targeted responses to mitigate electoral losses.

On the other hand, the nature of updating associated with media dissemination may also be qualitatively different. In contrast with this study, the estimates in Larreguy, Marshall and Snyder (2017) suggest that voters are willing to punish lower levels of malfeasance publicized by local media. Although the sample for this study was in part selected due to its high levels of malfea-

[46]Our treatment variant of including a loudspeaker to accompany leaflet delivery was designed to experimentally manipulate common knowledge. As shown in the Appendix, this had no additional effect, although the common knowledge treatment was relatively weak and the treatment could already have induced common knowledge.

sance, and likely greater prior expectations of malfeasance, future research is required to determine the extent to which differences in the sanctioning of the same revelation of malfeasance may be attributable to the media's greater capacity to frame (e.g. Iyengar 1991), provide credibility (e.g. Chiang and Knight 2011), or incite tacit or explicit voter coordination (e.g. Arias et al. 2017). This study takes the development of prior beliefs as given, which facilitates the careful identification of information processing, but leaves open the key question of how repeated media exposure shapes the long-term formation of such beliefs.

Finally, our study underscores the importance of investigating equilibrium political responses for understanding the impact of informational interventions. As with several other recent studies (Banerjee et al. 2011; Cruz, Keefer and Labonne 2016), we find clear evidence that politicians respond to such interventions. Although the patterns of political responses in this study do not confound our capacity to estimate the effects of belief updating, to the extent that such responses can explain the average effects, the responses may be highly consequential. To better understand when informational interventions are effective, political responses demand further attention.

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A Appendix

Contents

A.1 Proof of Proposition 1

Upon receiving a signal s_I, the share of voters that votes for each party and abstains is obtained by integrating over δ_i:

$$\bar{V}_I = 1 - F(\bar{\delta}_I), \tag{A1}$$

$$\bar{V}_C = F(\bar{\delta}_C), \tag{A2}$$

$$\bar{A} = F(\bar{\delta}_I) - F(\bar{\delta}_C), \tag{A3}$$

where:

$$\bar{\delta}_I := \mu_I + \kappa_I \Delta_I + \frac{\kappa_I}{2\rho_I} + \ln\left[c - \exp\left(\mu_C + \frac{1}{2\lambda_C}\right)\right], \tag{A4}$$

$$\bar{\delta}_C := \mu_I + \kappa_I \Delta_I + \frac{\kappa_I}{2\rho_I} - \ln\left[c + \exp\left(\mu_C + \frac{1}{2\lambda_C}\right)\right]. \tag{A5}$$

Similarly, without receiving a signal,

$$\hat{V}_I = 1 - F(\hat{\delta}_I), \tag{A6}$$

$$\hat{V}_C = F(\hat{\delta}_C), \tag{A7}$$

$$\hat{A} = F(\hat{\delta}_I) - F(\hat{\delta}_C), \tag{A8}$$

where the vote shares are defined by the following cut points:

$$\hat{\delta}_I := \mu_I + \frac{1}{2\lambda_I} + \ln\left[c - \exp\left(\mu_C + \frac{1}{2\lambda_C}\right)\right], \tag{A9}$$

$$\hat{\delta}_C := \mu_I + \frac{1}{2\lambda_I} - \ln\left[c + \exp\left(\mu_C + \frac{1}{2\lambda_C}\right)\right]. \tag{A10}$$

The differences in vote share between receiving and not receiving a signal are then given by $\bar{V}_p - \hat{V}_p$.

For $\Delta_I := s_I - \mu_I < \frac{1}{2\lambda_I}$, $\bar{V}_I - \hat{V}_I = F(\hat{\delta}_I) - F(\bar{\delta}_I) > 0$ because F is increasing and the condition ensures that $\hat{\delta}_I > \bar{\delta}_I$. Differentiating this difference yields the following comparative statics:

$$\frac{\partial[\bar{V}_I - \hat{V}_I]}{\partial s_I} = -F'(\bar{\delta}_I)\kappa_I < 0, \tag{A11}$$

$$\frac{\partial[\bar{V}_I - \hat{V}_I]}{\partial \Delta_I} = -F'(\bar{\delta}_I)\kappa_I < 0, \tag{A12}$$

$$\frac{\partial[\bar{V}_I - \hat{V}_I]}{\partial \mu_I} = F'(\hat{\delta}_I) - F'(\bar{\delta}_I)[1 - \kappa_I], \tag{A13}$$

$$\frac{\partial[\bar{V}_I - \hat{V}_I]}{\partial \lambda_I} = -\frac{F'(\hat{\delta}_I)}{2\lambda_I^2} + F'(\bar{\delta}_I)\left[\Delta_I + \frac{1}{2\rho_I}\right]\frac{\kappa_I}{\lambda_I + \rho_I}, \tag{A14}$$

which follow from $F' > 0$, and where a sufficient condition for the third comparative static to be positive is that $(1-\kappa_I)$ is sufficiently small (i.e. ρ_I/λ_I is sufficiently large) and a sufficient condition for the fourth comparative static to be negative is that $\Delta_I + \frac{1}{2\rho_I} < 0$.

For abstention, the sign of $\bar{A} - \hat{A}$ depends on F, where

$$\frac{\partial[\bar{A} - \hat{A}]}{\partial s_I} = \kappa_I[F'(\bar{\delta}_C) - F'(\bar{\delta}_I)]. \tag{A15}$$

The direction thus depends on the densities at the cut points after receiving information: s_I increases abstention when $F'(\bar{\delta}_C) - F'(\bar{\delta}_I) > 0$ and decreases abstention when $F'(\bar{\delta}_C) - F'(\bar{\delta}_I) < 0$.

■

A.2 Validation of the research design

A.2.1 Balance tests

Table A1 presents the results of our balance tests, at both the precinct and individual levels. The final eight variables are from our post-treatment survey.

A.2.2 Validation of measures of voters' prior beliefs

We also provide evidence to support our claim that post-treatment beliefs in the control precincts proxy for pre-treatment, prior beliefs for treated precincts within the same block. First, Table A2 shows that the 2015 *municipal*-level election outcomes are generally uncorrelated with the level of prior beliefs in the control group, conditioning on the municipal incumbent party's vote share in the previous election—a pre-treatment proxy for prior beliefs in the control group. This suggests that beliefs did not change between the treatment intervention and the post-election survey. Second, Table A3 reports the effects of spillovers from precincts in our experimental sample to neighboring precincts (any precinct that partially borders a precinct in our experimental sample) that were not in our experimental sample. Here, the unit of observation is the precinct-neighbor level; precincts

Table A1: Effect of 37 precinct-level and 8 individual-level pre-treatment variables

	Control mean	Treatment mean	Treatment effect	Standard error	Observations
Precinct-level covariates					
Area	10.0	10.5	-1.085	(0.790)	675
Population	1,372.6	1,392.7	12.058	(40.554)	675
Number of households	329.4	330.9	3.306	(9.522)	675
Number of private dwellings	395.9	398.6	1.807	(10.687)	675
Average occupants dwelling	4.10	4.16	0.017	(0.022)	675
Average occupants per room	1.15	1.19	0.009	(0.010)	675
Share of homes with 2+ rooms	0.66	0.65	-0.001	(0.007)	675
Share of homes with 3+ rooms	0.76	0.75	-0.002	(0.007)	675
Average years of schooling	8.12	7.73	-0.124*	(0.071)	675
Share married	0.55	0.55	0.001	(0.003)	675
Share working age	0.63	0.63	-0.002	(0.002)	675
Share economically active	0.38	0.37	-0.001	(0.002)	675
Share without health care	0.34	0.35	0.011*	(0.007)	675
Share with state workers health care	0.04	0.04	0.000	(0.002)	675
Share old	0.06	0.06	0.001	(0.002)	675
Average children per woman	2.47	2.58	0.063***	(0.019)	675
Share of households with male head	0.77	0.77	-0.003	(0.004)	675
Share born out of state	0.27	0.27	0.009	(0.007)	675
Share indigenous speakers	0.06	0.06	0.007	(0.005)	675
Share of homes without a dirt floor	0.92	0.92	-0.003	(0.005)	675
Share of homes with a toilet	0.89	0.88	0.004	(0.005)	675
Share of homes with water	0.84	0.84	0.009	(0.014)	675
Share of homes with drainage	0.83	0.82	0.002	(0.007)	675
Share of homes with electricity	0.96	0.96	0.004	(0.004)	675
Share of homes with water, drainage and electricity	0.76	0.74	0.000	(0.012)	675
Share of homes with a washing machine	0.58	0.57	0.003	(0.007)	675
Share of homes with a landline telephone	0.42	0.38	-0.020**	(0.009)	675
Share of homes with a radio	0.82	0.82	-0.002	(0.004)	675
Share of homes with a fridge	0.75	0.74	-0.002	(0.009)	675
Share of homes with a cell phone	0.55	0.53	0.001	(0.006)	675
Share of homes with a television	0.90	0.89	-0.004	(0.004)	675
Share of homes with a car	0.39	0.37	-0.012	(0.008)	675
Share of homes with a computer	0.25	0.21	-0.011	(0.007)	675
Share of homes with internet	0.17	0.14	-0.010	(0.006)	675
Turnout in 2012	0.63	0.63	0.008**	(0.003)	675
Incumbent vote margin in 2012	-0.17	-0.20	-0.026**	(0.011)	675
Incumbent vote share in 2012	0.42	0.44	0.018**	(0.008)	675
Survey-level covariates					
Female	0.62	0.64	0.020	(0.018)	4,958
Age	44.6	44.3	-0.528	(0.531)	4,869
Education	8.13	7.99	-0.062	(0.133)	4,948
Income	2.55	2.48	-0.043	(0.081)	4,402
Income (log)	1.15	1.14	-0.010	(0.017)	4,402
Employed	0.42	0.42	-0.006	(0.014)	4,950
Turnout in 2012	0.63	0.63	0.004	(0.012)	4,958
Incumbent vote in 2012	0.55	0.54	-0.007	(0.021)	3,122
Political knowledge Index	2.39	2.40	0.006	(0.025)	4,958

Notes: Specifications include block fixed effects and are estimated using OLS. Precinct-level specifications are weighted by the share of the precinct that was treated, whereas survey-level specifications are unweighted. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

are inversely weighted by the number of neighbors in the experimental sample. While the interaction with the precision of prior beliefs is consistent with the predictions of our model, this is not supported in our main specifications reported in the main paper. Moreover, the positive interaction with the malfeasance level reported is exactly opposite to our findings and model's prediction. It is then hard to see how these results could reflect our information treatment. Table A4 shows that leaflet recall is unaffected by the share of treated neighbors among respondents in control precincts. Finally, Table A5 shows that control respondents perceive their incumbent to be more malfeasant when shown a leaflet revealing high levels of malfeasance for the first time at the end of the post-election survey, or when this entails significant updating.

Finally, we use data from a similar intervention to ours conducted around the October 2016 Brazilian municipal elections by Taylor C. Boas, F. Daniel Hidalgo, and Marcus Melo. The study, titled "Accountability and Incumbent Performance in the Brazilian Northeast," is part of EGAP's Metaketa Initiative I that financed and coordinated several studies, including ours.[47] Critical for our purposes, their study collected voters' beliefs on local governments' performance at both baseline and endline, which allows us to look directly at the extent to which endline beliefs of respondents in control units are valid proxies for the prior beliefs of respondents in treated units.

The Brazilian study informed voters about the local government's use of funds (that we refer to as the "accounts" treatment) and about educational performance in the municipality (that we refer to as the "education" treatment). In addition, there was a pure control group. Assignment to treatment was randomized at the census tract level, which were treated as randomization blocks. The study surveyed around 3,000 individuals at baseline (before the intervention and the elections) and endline. One-third was exposed to the accounts treatment, one-third to the education treatment, and the remaining third was the control. In some census tracts there were eight survey respondents, while in others there were 16 (in both cases, evenly split between each treatment and control).

[47]For additional details about their study, visit EGAP's Metaketa I website: egap.org/content/accountability-and-incumbent-performance-brazilian-northeast.

Table A2: Correlation between municipal-level election outcomes and prior beliefs in the control group

	Incumbent malfeasance prior		Incumbent prior precision	
	(1)	(2)	(3)	(4)
Municipal incumbent won election (2015)	-0.516		0.197	
	(0.382)		(0.127)	
Municipal incumbent vote share (2012)	3.307*	3.723**	-0.865	-1.027
	(1.690)	(1.767)	(0.695)	(0.697)
Municipal incumbent vote share (2015)		-1.713		1.207**
		(1.661)		(0.481)
Constant	-1.198	-1.110	3.482***	3.238***
	(0.779)	(1.007)	(0.368)	(0.381)
Observations	1,038	1,038	1,081	1,081
R^2	0.06	0.04	0.02	0.02
Control outcome mean	-0.14	-0.14	3.25	3.25
Control outcome std. dev.	1.48	1.48	0.85	0.85
2015 election outcome mean	0.75	0.38	0.74	0.38
2015 election outcome std. dev.	0.44	0.08	0.44	0.08

Notes: Specifications are estimated using OLS. Standard errors clustered by municipality are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A3: Neighbor spillover effects of information treatment on incumbent party vote share

	Incumbent party vote share				
	(1)	(2)	(3)	(4)	(5)
Panel A: Incumbent party vote share (share of turnout)					
Neighbor information treatment	-0.001	-0.001	0.099**	-0.008**	-0.001
	(0.003)	(0.003)	(0.042)	(0.004)	(0.004)
× Neighbor incumbent malfeasance prior		0.002			
		(0.003)			
× Neighbor incumbent prior precision			-0.030**		
			(0.013)		
× Incumbent malfeasant spending				0.028**	
				(0.011)	
× Neighbor unfavorable incumbent updating					-0.000
					(0.003)
Outcome range	[0.05,0.89]	[0.05,0.89]	[0.05,0.89]	[0.05,0.89]	[0.05,0.89]
Control outcome mean	0.39	0.39	0.39	0.39	0.39
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12
R^2	0.49	0.48	0.48	0.49	0.48
Panel B: Incumbent party vote share (share of registered voters)					
Neighbor information treatment	-0.003*	-0.003	0.064***	-0.008***	-0.003
	(0.002)	(0.002)	(0.016)	(0.003)	(0.003)
× Neighbor incumbent malfeasance prior		0.001			
		(0.002)			
× Neighbor incumbent prior precision			-0.020***		
			(0.005)		
× Incumbent malfeasant spending				0.022***	
				(0.007)	
× Neighbor unfavorable incumbent updating					0.000
					(0.001)
Outcome range	[0.03,0.46]	[0.03,0.46]	[0.03,0.46]	[0.03,0.46]	[0.03,0.46]
Control outcome mean	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.06	0.06	0.06	0.06	0.06
R^2	0.50	0.50	0.50	0.50	0.50
Neighbor information treatment mean	0.56	0.56	0.56	0.56	0.56
Neighbor information treatment std. dev.	0.50	0.50	0.50	0.50	0.50
Interaction mean		-0.15	3.32	0.24	0.94
Interaction std. dev.		0.95	0.32	0.19	1.15
Observations	2,297	2,263	2,263	2,297	2,263

Notes: The sample contains all precinct-neighboring precincts pairs for which the neighboring precinct (which partially shares a border with a precinct in the experimental sample) is included in the experimental sample, but the spillover precinct is not. Specifications include neighbor-level block fixed effects, weight by the share of the neighboring precinct that was treated divided by the number of precincts in the experimental sample that a precinct neighbors, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (2), (3), and (5) reflect the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A4: Neighbor spillover of information treatment on self-reported engagement with leaflet in control precincts

	Remember leaflet (1)	Remember reading leaflet (2)	Correctly remember content (3)	Leaflet influenced vote (4)
Share of treated neighbors	-0.014	-0.013	-0.017	0.007
	(0.040)	(0.024)	(0.022)	(0.011)
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.09	0.05	0.06	0.02
Outcome std. dev.	0.28	0.22	0.25	0.14
Share of treated neighbors mean	0.41	0.41	0.41	0.41
Share of treated neighbors std. dev.	0.42	0.42	0.42	0.42
R^2	0.18	0.14	0.14	0.10
Observations	1,139	1,139	1,139	1,139

Notes: The sample includes all control precincts within our experimental sample. All specifications are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Analysis based on the eight-respondent census tracts is naturally noisier, since beliefs are based on the responses of only 2–3 control individuals and 2–3 individuals in each treatment. Thus in the analysis described below we focus only on large (16-respondent) census tracts, but the qualitative results are similar if we include small tracts as well.

All respondents were asked to evaluate the accounts management and educational performance of local governments in both baseline and endline, irrespective of which treatment they were assigned to. We simply pool the accounts and education treatments, though the patterns described below are very similar if we consider each treatment separately.[48]

Recall that our approach of using the beliefs of the control group at endline as proxies for the prior beliefs of the treated group requires two conditions:

1. The pre-treatment beliefs of control and treatment respondents are similar (on average).

[48]Since we pool treatments, each control individual appears twice: as control for the educational and accounts treatment.

Table A5: Effect of showing voters the leaflet in the post-treatment survey

	Perceived incumbent party malfeasance (very low - very high)				
	(1)	(2)	(3)	(4)	(5)
Shown leaflet for first time	0.061*	0.063*	-0.222	-0.008	-0.034
	(0.031)	(0.033)	(0.308)	(0.043)	(0.053)
× Incumbent malfeasance prior		0.017			
		(0.044)			
× Incumbent prior precision			0.087		
			(0.091)		
× Incumbent malfeasant spending				0.329*	
				(0.171)	
× Unfavorable incumbent updating					0.103***
					(0.031)
Perceived incumbent party malfeasance (pre-leaflet)	-0.001	-0.002	-0.002	-0.002	0.001
	(0.041)	(0.041)	(0.041)	(0.041)	(0.041)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	0.75	0.75	0.75	0.75	0.75
Control outcome std. dev.	1.07	1.07	1.07	1.07	1.07
Information treatment mean	0.23	0.23	0.23	0.23	0.23
Information treatment std. dev.	0.41	0.41	0.41	0.41	0.41
Interaction mean		-0.08	3.24	0.21	0.89
Interaction std. dev.		0.89	0.37	0.17	1.07
R^2	0.09	0.09	0.09	0.09	0.09
Observations	4,624	4,624	4,624	4,624	4,624

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

2. Absent any intervention, individual beliefs are fairly consistent over short periods of time. That is, there is persistence in the beliefs of control subjects before and after the implementation of the intervention.

We conduct some basic correlation tests to assess the extent to which the two conditions above hold in the context of the Brazilian experiment. First we generate average values of treated and control responses within census tracts for both endline and baseline. The notation of variables is straightforward. The middle two letters refer baseline (bl) or endline (el), and the last letter indicates whether the statistic refers to control respondents only (c) or treatment respondents only (t). Correlations are reported in Table A6.

The first thing to note is that the correlation of baseline priors for treatment and control (av_bl_t and av_bl_c) is large and positive (0.75). This is probably not surprising, given that treatment was randomly assigned within census tracts. Moreover, this correlation would most likely become larger as the survey sample size increases.

Next we look at the second condition. The correlation between the control group at baseline and endline is 0.69. Survey responses are noisy, and thus we would not expect a perfect serial correlation even absent any treatment, as other events between baseline and endline (i.e. the election) may change some people's preferences. So a positive and strong correlation of around 0.7 is consistent with condition 2.

Finally, we look at our object of interest: the extent to which the prior beliefs of the treated group (av_bl_t) are correlated with the endline evaluations of the control group (av_el_c). The correlation here is 0.70. This strong correlation is consistent with the correlations documented above in support of conditions 1 and 2, and suggests that the endline responses of the control group may be used as valid proxies for baseline responses of the treated.

Since this exercise was performed in the context of a different country and a different intervention, it is hard to assess the extent to which these correlations would be similar in the context of our experiment had we conducted a baseline survey. However, together with the evidence reported in

Table A6: Correlation analysis: both treatments pooled

Panel B: Only large tracts				
Variables	av_bl_c	av_bl_t	av_el_c	av_el_t
av_bl_c	1.000			
av_bl_t	0.749	1.000		
av_el_c	0.694	0.697	1.000	
av_el_t	0.562	0.770	0.628	1.000

Tables A2-A5, these results are encouraging regarding the use of our approach to proxy for voters' prior beliefs.

A.2.3 Manipulation checks: origin of the leaflets

Tables A7 and A8 examine the correlates of beliefs about the origins of the leaflets among treated voters. Column (1) of panels A and B in Table A7 shows that neither the public nor comparative versions of our information treatment significantly affected the belief that the treatment came from an NGO or political party. As the outcome mean at the foot of the table indicates, more voters—43%—believed that the leaflet was distributed by a non-partisan NGO than the total number of voters who believed that the leaflet originated from the federal, state, or municipal government, or the PAN, PRD, or PRI.[49] Columns (2)–(4) show that these beliefs are generally uncorrelated with block-level prior beliefs. Columns (5)–(8) show similar results when restricting the sample to those who recalled receiving the treatment. The results in Table A8 similarly show that the belief that the information was disseminated by the incumbent party or a challenger—both of which are rare in comparison to the belief that the information was distributed by a non-partisan NGO—are uncorrelated with the information treatment form and voters' prior beliefs and updating.

[49]Respondents were allowed to answer yes or no to eight different options. The non-political options were a non-partisan NGO and other.

Table A7: Correlates of voter beliefs about the leaflet's author (NGO and government or political party)

	All treated respondents				Treated respondents that remember the leaflet			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Outcome: believe leaflet was distributed by an NGO								
Public information treatment	0.021				0.034			
	(0.019)				(0.031)			
Comparative information treatment	-0.015				0.013			
	(0.018)				(0.026)			
Incumbent malfeasance prior		0.022				0.061		
		(0.022)				(0.047)		
Incumbent prior precision			-0.008				0.042	
			(0.039)				(0.043)	
Unfavorable incumbent updating				-0.011				-0.036
				(0.021)				(0.041)
Fixed effects	block	municipality	municipality	municipality	block	municipality	municipality	municipality
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.43	0.43	0.43	0.43	0.64	0.64	0.64	0.64
Outcome std. dev.	0.50	0.50	0.50	0.50	0.48	0.48	0.48	0.48
R^2	0.05	0.03	0.03	0.03	0.11	0.04	0.04	0.04
Observations	3,659	3,659	3,659	3,659	1,186	1,186	1,186	1,186
Panel B: Outcome: believe leaflet was distributed by the government (federal, state, municipal) or any political party (PAN, PRD, PRI)								
Public information treatment	0.005				-0.039			
	(0.020)				(0.034)			
Comparative information treatment	-0.024				0.018			
	(0.019)				(0.033)			
Incumbent malfeasance prior		0.032				0.020		
		(0.030)				(0.034)		
Incumbent prior precision			-0.049**				-0.020	
			(0.020)				(0.046)	
Unfavorable incumbent updating				-0.016				-0.011
				(0.025)				(0.027)
Fixed effects	block	municipality	municipality	municipality	block	municipality	municipality	municipality
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.41	0.41	0.41	0.41	0.42	0.42	0.42	0.42
Outcome std. dev.	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
R^2	0.07	0.04	0.04	0.04	0.14	0.08	0.08	0.08
Observations	3,659	3,659	3,659	3,659	1,186	1,186	1,186	1,186

Notes: All specifications contain only treated observations, and are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A8: Correlates of voter beliefs about the leaflet's author (incumbent and challenger parties)

	All treated respondents				Treated respondents that remember the leaflet			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Outcome: believe leaflet was distributed by the municipal incumbent party								
Public information treatment	0.009				-0.019			
	(0.018)				(0.026)			
Comparative information treatment	-0.031				-0.027			
	(0.021)				(0.026)			
Incumbent malfeasance prior		0.004				-0.007		
		(0.030)				(0.030)		
Incumbent prior precision			-0.013				-0.019	
			(0.018)				(0.029)	
Unfavorable incumbent updating				-0.002				0.029
				(0.024)				(0.026)
Fixed effects	block	municipality	municipality	municipality	block	municipality	municipality	municipality
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.26	0.26	0.26	0.26	0.24	0.24	0.24	0.24
Outcome std. dev.	0.44	0.44	0.44	0.44	0.43	0.43	0.43	0.43
R^2	0.05	0.02	0.02	0.02	0.12	0.06	0.06	0.06
Observations	3,659	3,659	3,659	3,659	1,186	1,186	1,186	1,186
Panel B: Outcome: believe leaflet was distributed by a municipal challenger party)								
Public information treatment	-0.005				-0.030			
	(0.013)				(0.023)			
Comparative information treatment	-0.011				-0.008			
	(0.012)				(0.026)			
Incumbent malfeasance prior		-0.022				-0.019		
		(0.020)				(0.025)		
Incumbent prior precision			-0.007				0.014	
			(0.041)				(0.062)	
Unfavorable incumbent updating				0.023				0.005
				(0.018)				(0.022)
Fixed effects	block	municipality	municipality	municipality	block	municipality	municipality	municipality
Outcome range	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}	{0,1}
Outcome mean	0.16	0.16	0.16	0.16	0.14	0.14	0.14	0.14
Outcome std. dev.	0.36	0.36	0.36	0.36	0.35	0.35	0.35	0.35
R^2	0.06	0.04	0.04	0.04	0.13	0.08	0.08	0.08
Observations	3,659	3,659	3,659	3,659	1,186	1,186	1,186	1,186

Notes: All specifications contain only treated observations, and are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

A.3 Beliefs about challengers

Although our intervention focuses on the effect of information on posterior beliefs about the incumbent party, the results could at least in part reflect changes in posterior beliefs about challengers. Tables A9-A11 show our survey-level estimates of the effect of the information treatment on voters' posterior beliefs about challenger malfeasance, deploying three definitions of municipal challengers.[50] Most importantly, column (4) of Tables A9-A11 shows that voters do not consistently update their beliefs about challengers from signals of challenger performance; only in Table A11 is the expected positive relationship observed. Tables A12-A14 further demonstrate that this null relationship continues to hold when the local and comparative information treatments are separated. Moreover, the positive relationship observed for our third definition of challengers is, if anything, driven by the local information treatment that did not provide information about challenger performance. Column (5) reinforces these findings by similarly showing that the difference between reported incumbent and challenger performance does not affect the posterior beliefs of treated voters. In contrast, Column (6) on the face of it suggests that unfavorable updating about the challenger may have induced treated voters to increase their belief that the challenger is malfeasant.[51] However, the results in Columns (4) and (5) suggest that this relationship is driven by the significant relationship with the position of voters' prior beliefs about the challenger shown in Column (2). The heterogeneous effects, driven by voters' prior beliefs, in Columns (2) and (6) may thus reflect voters' correlated beliefs about incumbent and challenger parties inducing updating about all candidates simultaneously. The correlation between the incumbent malfeasance prior and our measures of challenger malfeasance priors is around 0.7. We next show that to the extent that posterior beliefs about challengers changed, they do not seem to influence electoral outcomes.

Tables A15-A17 examine incumbent party vote share, and suggest that beliefs about chal-

[50]The single block from Tamasopo is dropped for our second challenger definition because we did not ask about the second-placed party (MC) in that municipality.

[51]For the construction of unfavorable challenger updating, we again use the responses of control respondents, who received the comparative information leaflet at the end of the survey.

Table A9: Effect of information treatment on voters' posterior beliefs about challenger party malfeasance, where the challenger is each voter's second-choice party

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Information treatment	-0.029	-0.134***	-0.292	-0.072	-0.024	-0.166***
	(0.032)	(0.042)	(0.304)	(0.062)	(0.042)	(0.039)
× Challenger malfeasance prior		-0.589***				
		(0.064)				
× Challenger prior precision			0.085			
			(0.096)			
× Challenger malfeasant spending				0.482		
				(0.677)		
× Difference in malfeasant spending (incumbent - challenger)					-0.038	
					(0.180)	
× Unfavorable challenger updating						0.213***
						(0.044)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19
Control outcome std. dev.	1.30	1.30	1.30	1.30	1.30	1.30
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.22	0.21	0.21	0.89
Interaction std. dev.		0.87	0.39	0.17	0.17	1.05
R^2	0.08	0.09	0.08	0.08	0.08	0.09
Observations	4,958	4,958	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A10: Effect of information treatment on voters' posterior beliefs about challenger party malfeasance, where the challenger is the party that received the second-largest vote share in the last municipal election

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Information treatment	-0.007	-0.109**	-0.560	-0.039	-0.005	-0.125***
	(0.038)	(0.053)	(0.393)	(0.073)	(0.051)	(0.043)
× Challenger malfeasance prior		-0.382***				
		(0.053)				
× Challenger prior precision			0.177			
			(0.125)			
× Challenger malfeasant spending				0.359		
				(0.908)		
× Difference in malfeasant spending (incumbent - challenger)					-0.010	
					(0.218)	
× Unfavorable challenger updating						0.162***
						(0.036)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.30	-0.30	-0.31	-0.30	-0.30	-0.30
Control outcome std. dev.	1.36	1.36	1.37	1.36	1.36	1.36
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.23	0.21	0.21	0.89
Interaction std. dev.		0.87	0.38	0.17	0.17	1.05
R^2	0.19	0.19	0.19	0.19	0.19	0.19
Observations	4,958	4,958	4,908	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Column (3) reflects a lack of data on prior beliefs about the challenger in Tamasopo. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A11: Effect of information treatment on voters' posterior beliefs about challenger party malfeasance, where the challenger is the average posterior belief across the PAN, PRD, and PRI where they are not the municipal incumbent

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Information treatment	0.009	-0.074*	-0.463	-0.119**	0.049	-0.100***
	(0.034)	(0.042)	(0.369)	(0.052)	(0.042)	(0.033)
× Challenger malfeasance prior		-0.288***				
		(0.050)				
× Challenger prior precision			0.147			
			(0.116)			
× Challenger malfeasant spending				1.425**		
				(0.691)		
× Difference in malfeasant spending (incumbent - challenger)					-0.320	
					(0.212)	
× Unfavorable challenger updating						0.144***
						(0.032)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33
Control outcome std. dev.	1.20	1.20	1.20	1.20	1.20	1.20
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.22	0.21	0.21	0.89
Interaction std. dev.		0.87	0.39	0.17	0.17	1.05
R^2	0.30	0.30	0.30	0.30	0.30	0.30
Observations	4,958	4,958	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A12: Effect of local and comparative information treatments on voters' posterior beliefs about challenger party malfeasance, where the challenger is each voter's second-choice party

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Local information treatment	-0.005	-0.106**	-0.178	-0.034	-0.030	-0.122***
	(0.037)	(0.047)	(0.348)	(0.073)	(0.047)	(0.044)
Comparative information treatment	-0.054	-0.162***	-0.410	-0.110	-0.017	-0.211***
	(0.041)	(0.047)	(0.345)	(0.080)	(0.056)	(0.044)
Local × Challenger malfeasance prior		-0.555***				
		(0.077)				
Comparative × Challenger malfeasance prior		-0.619***				
		(0.072)				
Local × Challenger prior precision			0.056			
			(0.109)			
Comparative × Challenger prior precision			0.115			
			(0.110)			
Local × Challenger malfeasant spending				0.319		
				(0.788)		
Comparative × Challenger malfeasant spending				0.627		
				(0.911)		
Local × Difference in malfeasant spending (incumbent - challenger)					0.195	
					(0.196)	
Comparative × Difference in malfeasant spending (incumbent - challenger)					-0.289	
					(0.222)	
Local × Unfavorable challenger updating						0.178***
						(0.049)
Comparative × Unfavorable challenger updating						0.249***
						(0.050)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19
Control outcome std. dev.	1.30	1.30	1.30	1.30	1.30	1.30
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.22	0.21	0.21	0.89
Interaction std. dev.		0.87	0.39	0.17	0.17	1.05
R^2	0.08	0.09	0.08	0.08	0.09	0.09
Observations	4,958	4,958	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A13: Effect of local and comparative information treatments on voters' posterior beliefs about challenger party malfeasance, where the challenger is the party that received the second-largest vote share in the last municipal election

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Local information treatment	0.027	-0.075	-0.527	-0.008	0.007	-0.086*
	(0.042)	(0.057)	(0.460)	(0.077)	(0.052)	(0.049)
Comparative information treatment	-0.042	-0.144**	-0.600	-0.069	-0.018	-0.165***
	(0.043)	(0.056)	(0.420)	(0.079)	(0.060)	(0.046)
Local × Challenger malfeasance prior		-0.370***				
		(0.054)				
Comparative × Challenger malfeasance prior		-0.391***				
		(0.062)				
Local × Challenger prior precision			0.177			
			(0.145)			
Comparative × Challenger prior precision			0.179			
			(0.135)			
Local × Challenger malfeasant spending				0.388		
				(0.960)		
Comparative × Challenger malfeasant spending				0.297		
				(1.024)		
Local × Difference in malfeasant spending (incumbent - challenger)					0.154	
					(0.228)	
Comparative × Difference in malfeasant spending (incumbent - challenger)					-0.186	
					(0.257)	
Local × Unfavorable challenger updating						0.151***
						(0.036)
Comparative × Unfavorable challenger updating						0.171***
						(0.043)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.30	-0.30	-0.31	-0.30	-0.30	-0.30
Control outcome std. dev.	1.36	1.36	1.37	1.36	1.36	1.36
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.23	0.21	0.21	0.89
Interaction std. dev.		0.87	0.38	0.17	0.17	1.05
R^2	0.19	0.19	0.19	0.19	0.19	0.19
Observations	4,958	4,958	4,908	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Column (3) reflects a lack of data on prior beliefs about the challenger in Tamasopo. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A14: Effect of local and comparative information treatments on voters' posterior beliefs about challenger party malfeasance, where the challenger is the average posterior belief across the PAN, PRD, and PRI where they are not the municipal incumbent

	Perceived challenger party malfeasance (very low - very high)					
	(1)	(2)	(3)	(4)	(5)	(6)
Local information treatment	0.032	-0.051	-0.405	-0.115**	0.064	-0.075**
	(0.037)	(0.045)	(0.401)	(0.056)	(0.044)	(0.037)
Comparative information treatment	-0.014	-0.097**	-0.528	-0.121**	0.033	-0.124***
	(0.039)	(0.046)	(0.373)	(0.060)	(0.051)	(0.038)
Local × Challenger malfeasance prior		-0.280***				
		(0.052)				
Comparative × Challenger malfeasance prior		-0.294***				
		(0.056)				
Local × Challenger prior precision			0.136			
			(0.125)			
Comparative × Challenger prior precision			0.159			
			(0.118)			
Local × Challenger malfeasant spending				1.631**		
				(0.721)		
Comparative × Challenger malfeasant spending				1.191		
				(0.815)		
Local × Difference in malfeasant spending (incumbent - challenger)					-0.266	
					(0.226)	
Comparative × Difference in malfeasant spending (incumbent - challenger)					-0.377	
					(0.236)	
Local × Unfavorable challenger updating						0.140***
						(0.033)
Comparative × Unfavorable challenger updating						0.148***
						(0.037)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.33	-0.33	-0.33	-0.33	-0.33	-0.33
Control outcome std. dev.	1.20	1.20	1.20	1.20	1.20	1.20
Information treatment mean	0.77	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.08	3.22	0.21	0.21	0.89
Interaction std. dev.		0.87	0.39	0.17	0.17	1.05
R^2	0.30	0.30	0.30	0.30	0.30	0.30
Observations	4,958	4,958	4,958	4,958	4,958	4,958

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

lengers did not substantially impact incumbent party electoral performance. In particular, and in sharp contrast with Table 4, Columns (4) and (6) consistently fail to find a significant positive interaction with the share of malfeasant spending engaged in by challengers or unfavorable updating about challengers, respectively. In both cases, we should expect to observe positive heterogeneous effects if voting behavior reflects posterior beliefs about challengers, given that higher values of both interaction terms indicate unfavorable challenger malfeasance revelations and updating. This suggests that the significant negative coefficients in Column (5), indicating that greater a differences between incumbent and challenger reported malfeasance decreases the incumbent party's vote share, are driven by voters' updating about the incumbent party. Moreover, the positive interaction with prior beliefs about challenger malfeasance in Column (2) indicates that treated precincts with the least favorable prior beliefs about challengers reward the incumbent party the most. Given that updating by the level of malfeasance priors was similar across incumbent and challenger parties along this dimension, and that malfeasance prior beliefs are highly correlated across parties, this suggests that posterior belief updating about the incumbent was more important for vote choice than posterior belief updating about challengers. Again, the precision of prior beliefs about challenger malfeasance does not influence voter beliefs and behavior.

A.4 Additional results and robustness tests

Table A18 seeks to explain the positive average treatment effect in the aggregate data, given that the beliefs of the average respondent were not significantly affected. First, consistent with our model's risk-aversion explanation, Column (1) shows that, on average, survey respondents may slightly increase the precision of their prior beliefs due to the treatment. However, given that the average respondent in the control group reports a precision of 3.25 (on our four-point scale from 1 to 4), there is obvious scope for ceiling effects. To address this possibility, Column (2) examines the interaction with our proxy for the block's average prior belief precision, and shows clear evidence that the treatment is substantially increasing the precision of posterior beliefs among

Table A15: Effect of information treatment on incumbent party vote share, using challenger prior beliefs and updating where the challenger is defined by each voter's second-choice party

	Incumbent party vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Incumbent party vote share (share of turnout)						
Information treatment	0.026***	0.028***	0.078	0.027**	0.034***	0.030***
	(0.006)	(0.006)	(0.069)	(0.011)	(0.006)	(0.006)
× Challenger malfeasance prior		0.015				
		(0.012)				
× Challenger prior precision			-0.017			
			(0.022)			
× Challenger malfeasant spending				-0.004		
				(0.116)		
× Difference in malfeasant spending					-0.064***	
(incumbent - challenger)					(0.024)	
× Unfavorable challenger updating						-0.007
						(0.007)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12	0.12
R^2	0.61	0.61	0.61	0.61	0.62	0.61
Panel B: Incumbent party vote share (share of registered voters)						
Information treatment	0.013***	0.016***	0.016	0.014**	0.018***	0.017***
	(0.003)	(0.003)	(0.040)	(0.006)	(0.003)	(0.003)
× Challenger malfeasance prior		0.015*				
		(0.008)				
× Challenger prior precision			-0.001			
			(0.013)			
× Challenger malfeasant spending				-0.011		
				(0.067)		
× Difference in malfeasant spending					-0.038***	
(incumbent - challenger)					(0.014)	
× Unfavorable challenger updating						-0.006
						(0.004)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07	0.07
R^2	0.64	0.64	0.64	0.64	0.64	0.64
Information treatment mean	0.60	0.60	0.60	0.60	0.60	0.60
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.24	0.22	0.22	0.85
Interaction std. dev.		0.90	0.34	0.17	0.17	1.07
Observations	675	675	675	675	675	675

Notes: All specifications include block fixed effects, weighted by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses.

* denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A16: Effect of information treatment on incumbent party vote share, using the challenger's prior beliefs and updating where the challenger is the party that received the second-largest vote share in the last municipal election

	Incumbent party vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Incumbent party vote share (share of turnout)						
Information treatment	0.026***	0.030***	0.093	0.027**	0.034***	0.031***
	(0.006)	(0.005)	(0.062)	(0.011)	(0.006)	(0.006)
× Challenger malfeasance prior		0.016**				
		(0.006)				
× Challenger prior precision			-0.022			
			(0.020)			
× Challenger malfeasant spending				-0.004		
				(0.116)		
× Difference in malfeasant spending (incumbent - challenger)					-0.064***	
					(0.024)	
× Unfavorable challenger updating						-0.008*
						(0.004)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12	0.12
R^2	0.61	0.62	0.61	0.61	0.62	0.61
Panel B: Incumbent party vote share (share of registered voters)						
Information treatment	0.013***	0.016***	0.036	0.014**	0.018***	0.016***
	(0.003)	(0.003)	(0.038)	(0.006)	(0.003)	(0.003)
× Challenger malfeasance prior		0.010**				
		(0.004)				
× Challenger prior precision			-0.007			
			(0.012)			
× Challenger malfeasant spending				-0.011		
				(0.067)		
× Difference in malfeasant spending (incumbent - challenger)					-0.038***	
					(0.014)	
× Unfavorable challenger updating						-0.005*
						(0.003)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07	0.07
R^2	0.64	0.64	0.63	0.64	0.64	0.64
Information treatment mean	0.60	0.60	0.60	0.60	0.60	0.60
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.25	0.22	0.22	0.85
Interaction std. dev.		0.90	0.33	0.17	0.17	1.07
Observations	675	675	668	675	675	675

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Column (3) reflects a lack of data on prior beliefs about the challenger in Tamasopo. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A17: Effect of information treatment on incumbent party vote share, using prior beliefs about the challenger and updating where the challenger is the average posterior belief across the PAN, PRD, and PRI where they are not the municipal incumbent

	Incumbent party vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Incumbent party vote share (share of turnout)						
Information treatment	0.026***	0.030***	0.094*	0.027**	0.034***	0.031***
	(0.006)	(0.005)	(0.056)	(0.011)	(0.006)	(0.005)
× Challenger malfeasance prior		0.014**				
		(0.005)				
× Challenger prior precision			-0.021			
			(0.017)			
× Challenger malfeasant spending				-0.004		
				(0.116)		
× Difference in malfeasant spending (incumbent - challenger)					-0.064***	
					(0.024)	
× Unfavorable challenger updating						-0.007*
						(0.004)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12	0.12
R^2	0.61	0.62	0.61	0.61	0.62	0.61
Panel B: Incumbent party vote share (share of registered voters)						
Information treatment	0.013***	0.016***	0.040	0.014**	0.018***	0.016***
	(0.003)	(0.003)	(0.033)	(0.006)	(0.003)	(0.003)
× Challenger malfeasance prior		0.009***				
		(0.003)				
× Challenger prior precision			-0.008			
			(0.010)			
× Challenger malfeasant spending				-0.011		
				(0.067)		
× Difference in malfeasant spending (incumbent - challenger)					-0.038***	
					(0.014)	
× Unfavorable challenger updating						-0.004*
						(0.002)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07	0.07
R^2	0.64	0.64	0.64	0.64	0.64	0.64
Information treatment mean	0.60	0.60	0.60	0.60	0.60	0.60
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.24	0.22	0.22	0.85
Interaction std. dev.		0.90	0.34	0.17	0.17	1.07
Observations	675	675	675	675	675	675

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses.

* denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

those who were initially relatively uncertain. This indicates that the treatment is indeed reducing voter uncertainty about incumbent malfeasance.

Second, we also address the concern that our results are explained by the effect of our information treatment on voter expectations of their incumbent's ability to extract federal funds. Columns (3) to (6) show that voters are no more likely to reward incumbent parties that received large quantities of FISM funds in absolute or per voter terms. These results then suggest that credit claiming is unlikely to be driving the average effect at the precinct level.

Table A19 shows the results when we separate voter updating into good, neutral, and bad news categories. Given voters' prior beliefs, the direction of updating should produce different responses (provided that the reduction in risk aversion is relatively low), such that good (bad) news about the incumbent party decreases (increases) voters' posterior beliefs that the incumbent party is malfeasant and increases (decreases) the incumbent party's vote share. Neutral news should leave both outcomes unchanged. Specifically, we test this hypothesis by further defining indicators for bad (average difference above 0.5), good (average difference below -0.5), and neutral (average difference between -0.5 and 0.5) news. Column (1) examines voters' posterior beliefs in our post-treatment survey, and shows that neutral news slightly reduce voters' posterior beliefs regarding malfeasance, while the interactive coefficients show that good news further decrease voters' posterior beliefs related to incumbent party malfeasance by around a sixth of a standard deviation, while bad news substantially increase such posterior by one seventh of a standard deviation. Comparing the effects of good and bad news (relative to voters' prior beliefs in the block), Columns (2) and (3) similarly document a substantially larger increase in incumbent party vote share when the information represents good news. Consistent with our model's predictions that even voters who do not update their posterior beliefs may increase their support for the incumbent because they are risk averse, receiving neutral information increases the incumbent party's vote share. Similarly, bad news have a limited effect on incumbent party vote share. However, as noted in the main text, we are cautious about interpreting these results because the cutoffs used to define good, bad, and

Table A18: Tests of explanations for the positive average effect of the information treatment on the incumbent party's vote share

	Precision of perceived incumbent party malfeasance (very low - very high)		Incumbent party vote share (share of turnout)		(share of registered voters)	
	(1)	(2)	(3)	(4)	(5)	(6)
Information treatment	0.016	1.729***	0.025**	0.027***	0.013*	0.013***
	(0.024)	(0.199)	(0.011)	(0.007)	(0.007)	(0.004)
× Incumbent prior precision		-0.529***				
		(0.060)				
× FISM funds received (1000s of pesos)			0.00002		0.00001	
			(0.00010)		(0.00006)	
× FISM funds received (1000s of pesos) per voter				-1.701		1.372
				(3.929)		(2.218)
R^2	0.11	0.12	0.61	0.61	0.64	0.64
Observations	4,673	4,673	675	675	675	675

Notes: Columns (1) and (2) are estimated using our post-election survey, while Columns (3)–(6) use the precinct electoral returns. All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A19: Effect of information treatment on voters' posterior beliefs about incumbent party malfeasance and incumbent party vote share, by direction of updating

	Perceived incumbent party malfeasance	Incumbent party vote share (share of turnout)	Incumbent party vote share (share of registered voters)
	(1)	(2)	(3)
Information treatment	-0.119*	0.022***	0.014***
	(0.064)	(0.006)	(0.003)
× Good news	-0.241**	0.075**	0.035**
	(0.091)	(0.031)	(0.015)
× Bad news	0.234**	-0.004	-0.008
	(0.090)	(0.011)	(0.006)
Outcome range	{-2,-1,0,1,2}	[0.07,0.85]	[0.03,0.47]
Control outcome mean	-0.14	0.38	0.19
Control outcome std. dev.	1.48	0.12	0.07
Information treatment mean	0.77	0.59	0.59
Information treatment std. dev.	0.42	0.49	0.49
Good news mean	0.04	0.04	0.04
Good news std. dev.	0.20	0.20	0.20
Bad news mean	0.52	0.51	0.51
Bad news std. dev.	0.50	0.50	0.50
R^2	0.30	0.61	0.64
Observations	4,624	651	651

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

neutral news rely on our updating measure, which, while reliable in relative terms, may not be reliable in absolute terms.

In another robustness check, we drop the municipality of Ecatepec de Morelos, where voters favorably updated their beliefs about the incumbent party when presented with 45% unauthorized spending. Table A20 shows that our survey-level estimates of the effect of the treatment on voters' posterior beliefs relating to incumbent malfeasance are robust to excluding this municipality. Similarly, Table A21 shows that the aggregate results generally become more precisely estimated.

Tables A22 and A23 show similar results defining prior beliefs and the updating of such using

Table A20: Effect of information treatment on voter posterior beliefs about incumbent party malfeasance, excluding Ecatepec de Morelos

	Perceived incumbent party malfeasance				
	(1)	(2)	(3)	(4)	(5)
Information treatment	0.019	-0.046	0.900**	0.002	-0.161**
	(0.041)	(0.057)	(0.336)	(0.067)	(0.073)
× Incumbent malfeasance prior		-0.283***			
		(0.054)			
× Incumbent prior precision			-0.272**		
			(0.107)		
× Incumbent malfeasant spending				0.091	
				(0.197)	
× Unfavorable incumbent updating					0.173***
					(0.042)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Outcome mean	-0.21	-0.21	-0.26	-0.21	-0.21
Outcome std. dev.	1.46	1.46	1.45	1.46	1.46
Information treatment mean	0.77	0.77	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42	0.42	0.42
Interaction mean		-0.20	3.23	0.19	1.00
Interaction std. dev.		0.85	0.38	0.16	1.05
Observations	4,181	4,181	4,181	4,181	4,181

Notes: Voters residing in precincts from Ecatepec de Morelos are excluded from all specifications. All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A21: Effect of information treatment on incumbent party vote share, excluding Ecatepec de Morelos

	Incumbent party vote share				
	(1)	(2)	(3)	(4)	(5)
Panel A: Incumbent party vote share (share of turnout)					
Information treatment	0.026***	0.025***	0.089	0.043***	0.034***
	(0.006)	(0.006)	(0.066)	(0.007)	(0.008)
× Incumbent malfeasance prior		0.010			
		(0.007)			
× Incumbent prior precision			-0.020		
			(0.020)		
× Incumbent malfeasant spending				-0.091***	
				(0.027)	
× Unfavorable incumbent updating					-0.011**
					(0.005)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.37	0.38	0.38	0.37	0.38
Control outcome std. dev.	0.13	0.13	0.13	0.13	0.13
R^2	0.62	0.61	0.61	0.62	0.61
Panel B: Incumbent party vote share (share of registered voters)					
Information treatment	0.013***	0.013***	0.011	0.024***	0.018***
	(0.003)	(0.003)	(0.037)	(0.004)	(0.004)
× Incumbent malfeasance prior		0.007**			
		(0.003)			
× Incumbent prior precision			-0.000		
			(0.011)		
× Incumbent malfeasant spending				-0.058***	
				(0.013)	
× Unfavorable incumbent updating					-0.007***
					(0.002)
Outcome range	[0.03,0.40]	[0.03,0.40]	[0.03,0.40]	[0.03,0.40]	[0.03,0.40]
Control outcome mean	0.19	0.20	0.20	0.19	0.20
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07
R^2	0.65	0.64	0.64	0.65	0.64
Information treatment mean	0.60	0.59	0.59	0.60	0.59
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.17	3.24	0.19	0.98
Interaction std. dev.		0.86	0.35	0.16	1.05
Observations	612	588	588	612	588

Notes: Precincts from Ecatepec de Morelos are excluded from all specifications. All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (2), (3), and (5) reflect the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

the control groups at the municipal level.

Table A22: Effect of information treatment on voters' posterior beliefs about incumbent party malfeasance, using prior beliefs and updating defined by control precincts at the municipal level

	Perceived incumbent party malfeasance (very low - very high)		
	(1)	(2)	(3)
Information treatment	-0.015	0.427	-0.096**
	(0.037)	(0.476)	(0.047)
× Incumbent malfeasance prior	-0.126***		
	(0.035)		
× Incumbent prior precision		-0.132	
		(0.149)	
× Unfavorable incumbent updating			0.102***
			(0.030)
Outcome range	{-2,-1,0,1,2}	{-2,-1,0,1,2}	{-2,-1,0,1,2}
Control outcome mean	-0.14	-0.14	-0.14
Control outcome std. dev.	1.48	1.48	1.48
Information treatment mean	0.77	0.77	0.77
Information treatment std. dev.	0.42	0.42	0.42
Interaction mean	-0.08	3.24	0.89
Interaction std. dev.	0.89	0.37	1.07
Observations	4,624	4,624	4,624

Notes: All specifications include block fixed effects, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A24 presents the robustness checks using incumbent vote share, as a share of registered voters, as the outcome.

A.5 Variants of the information treatment

Although the main focus of our experiment was to identify the effect of providing voters with information on their incumbent party's malfeasance, we also explored two variants of this informational treatment: providing comparative information on misallocated funding and public dissemination. Ultimately, we find that neither comparative malfeasance information nor public dissemination

Table A23: Effect of information treatment on incumbent party vote share, using prior beliefs and updating defined by control precincts at the municipal level

	Incumbent party vote share		
	(1)	(2)	(3)
Panel A: Incumbent party vote share (share of turnout)			
Information treatment	0.024***	0.168***	0.034***
	(0.005)	(0.062)	(0.006)
× Incumbent malfeasance prior	0.012**		
	(0.006)		
× Incumbent prior precision		-0.045**	
		(0.019)	
× Unfavorable incumbent updating			-0.012**
			(0.004)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12
R^2	0.60	0.60	0.60
Panel B: Incumbent party vote share (share of registered voters)			
Information treatment	0.012***	0.084**	0.018***
	(0.003)	(0.035)	(0.003)
× Incumbent malfeasance prior	0.007***		
	(0.002)		
× Incumbent prior precision		-0.022**	
		(0.011)	
× Unfavorable incumbent updating			-0.007***
			(0.002)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07
R^2	0.63	0.63	0.64
Information treatment mean	0.59	0.59	0.59
Information treatment std. dev.	0.49	0.49	0.49
Interaction mean	-0.06	3.23	0.88
Interaction std. dev.	0.83	0.24	0.99
Observations	651	651	651

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A24: Robustness of information treatment on incumbent party vote share (share of registered voters)

	Incumbent party vote share (share of registered voters)				
	(1)	(2)	(3)	(4)	(5)
Panel A: Controlling for 37 balancing covariates					
Information treatment	0.010***	0.009***	0.048	0.019***	0.014***
	(0.003)	(0.003)	(0.032)	(0.004)	(0.003)
× Incumbent malfeasance prior		0.007***			
		(0.002)			
× Incumbent prior precision			-0.012		
			(0.010)		
× Incumbent malfeasant spending				-0.045***	
				(0.014)	
× Unfavorable incumbent updating					-0.007***
					(0.002)
Panel B: Controlling for selected interactive standardized covariates					
Information treatment	0.009**	0.009***	-0.034	0.020***	0.015***
	(0.003)	(0.003)	(0.038)	(0.005)	(0.003)
× Incumbent malfeasance prior		0.007**			
		(0.003)			
× Incumbent prior precision			0.013		
			(0.011)		
× Incumbent malfeasant spending				-0.053**	
				(0.021)	
× Unfavorable incumbent updating					-0.008***
					(0.002)
Panel C: Unweighted precinct estimates					
Information treatment	0.008***	0.008***	0.021	0.014***	0.012***
	(0.002)	(0.002)	(0.025)	(0.003)	(0.003)
× Incumbent malfeasance prior		0.005**			
		(0.002)			
× Incumbent prior precision			-0.004		
			(0.007)		
× Incumbent malfeasant spending				-0.029**	
				(0.013)	
× Unfavorable incumbent updating					-0.005**
					(0.002)

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated (except those in panel C), and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

meaningfully alters the effect of information provision

A.5.1 Hypotheses

Our model can be extended to incorporate the impact of simultaneously providing challenger information, and thus allowing for *relative* malfeasance comparisons. We anticipated that such information would impact voters' posterior beliefs about the malfeasance of the challenger akin to Equation (2). However, the effect on vote choice depends on the relationship between incumbent and challenger signals. Empirically, we restrict attention to the case in which challenger party information is provided alongside either notably worse or notably better incumbent party malfeasance information. Comparative malfeasance information thus always provides a stronger signal, by compounding a single signal with a clear benchmark for comparing s_I to s_C.

For average malfeasance revelations, in our experimental sample where the majority of voters receive information indicating less malfeasance among challengers, we expected that:

A-H1. *Comparative malfeasance information, on average, decreases the incumbent party's vote share more than just incumbent malfeasance information.*

Furthermore, this anti-incumbent party effect was expected to be particularly large when voters learn of especially high incumbent malfeasance—in both absolute and relative terms:

A-H2. *The differential effect on incumbent party vote share of providing comparative malfeasance information, relative to providing only incumbent malfeasance information, is increasing in the level of reported incumbent malfeasance, and the difference relative to the reported malfeasance of the challenger.*

Another potentially important factor in explaining when information enhances political accountability is the method of information transmission. Public or social modes of transmission—through which voters become aware that other voters have also received a given piece of information—could produce powerful effects by inducing explicit or tacit voter coordination based on their com-

mon knowledge (e.g. Adena et al. 2015; Arias 2016; Yanagizawa-Drott 2014). Explicit discussion of the information may result in voters engaging heavily with the information received, and in turn consolidating their beliefs around such information. This could even result in agreement to harmonize vote choices. Alternatively, tacit coordination only relies on the delivery of information engendering the (higher-order) belief that others also received the information, and will likely act on such information. Such coordination may in part explain the large effects of local media found in Mexico (Larreguy, Marshall and Snyder 2017; Marshall 2017). Both such cases of coordinated behavior induce shifts that could not be achieved by providing the same information using private modes of information transmission.

In the context of our model, where we do not explicitly model voter communication or coordination, public delivery mechanisms are perhaps best interpreted as a clearer signal of malfeasance (lower $1/\rho_p$). We thus expected the social treatment to magnify any impact of incumbent malfeasance information:

A-H3. *The average and heterogeneous effects of incumbent malfeasance information on the incumbent party's vote share (H1-H6) are greater when the information is delivered through a public mechanism.*

As with the main hypotheses, these hypotheses were registered in our pre-analysis plan.

A.5.2 Treatment variants

To investigate how the mode of information provision impacts voters, we varied leaflet dissemination along two dimensions corresponding to the hypotheses above. First, to identify the impact of providing voters with a benchmark against which to compare their incumbent party's malfeasance, we produced a *comparative* leaflet. In contrast with the *local* leaflet shown in Figure 5, the comparative leaflet in Figure A1 entailed providing information about the mean outcome among all audited municipalities within the same state that were governed by a different political party (see

second and third panels). In this example, voters in the municipality of Salamanca were informed that, while their government did not spend any FISM funds on projects that did not benefit the poor, audited municipal governments run by other parties in Guanajuato spent 16% of funds on projects that did not benefit the poor.

Figure A1: Example of a comparative information leaflet in Salamanca, Guanajuato

Second, to vary the extent to which the distribution of the leaflets is common knowledge among voters within the precinct, we also varied whether the leaflet was delivered in a private or public manner. For the *public* mode of delivery, the door-to-door delivery was accompanied by a powerful portable loudspeaker carried on the back of a team member.[52] Akin to the vehicles commonly driving around before Mexican elections blaring campaign messages, a single *perifonista* walked

[52]We purchased these modified rucksack loudspeakers from a vendor in Mexico City that also serves political campaigns similarly seeking to broadcast their message.

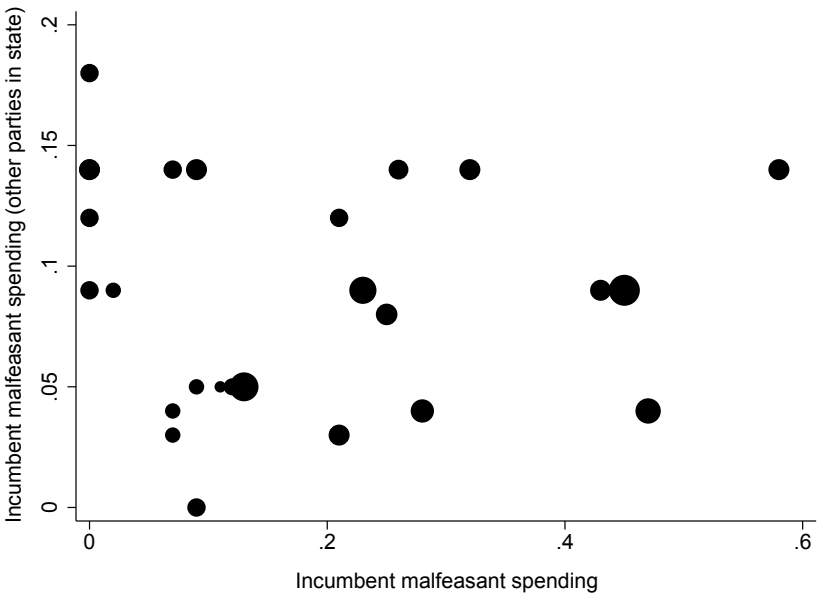

Figure A2: Precincts by share of malfeasant spending in our sample

Notes: Each point is one of our 26 municipalities. The size of points corresponds to the number of precincts in our sample from that municipality.

through the streets of each precinct alongside other team members distributing leaflets while playing a 30-second message on loop. The message informed voters that their neighbors would also receive information concerning the malfeasance of their municipal mayor, and encouraged them to share and discuss the information provided.

Figure A2 shows the distribution of malfeasant spending in our sample, both within a voter's municipality and the average among other parties governing audited municipalities within the state. The average precinct was informed of 21% malfeasant spending within their own municipality and 9% in municipalities within their states governed by other parties, while these variables ranged from 0% to 58% and 0% to 18%, respectively.

A.5.3 Slightly weaker effects of comparative malfeasance information

Theoretically, we expected that providing voters with a benchmark—especially one that contrasts the incumbent party's malfeasance with that of challenging parties, like the one we provide (see

Figure A2)—might elicit stronger responses to our information treatment. In particular, if comparative malfeasance plays a key role in helping voters to differentiate party malfeasance, we expected a particularly strong response to treatments revealing high levels of incumbent malfeasance.

Before testing this hypothesis, we first verify that voters absorbed the information contained in the different treatments as we intended. Based on our post-treatment survey, Column (1) of Table A25 shows that voters who received both the local and comparative treatments were more likely to recall receiving information about other parties in their state.[53] The effect in precincts receiving only information about their own municipal government indicates fuzzy recall. Nevertheless, voters receiving the comparative information treatment were 2 percentage points more likely to recall receiving comparative information. Although relatively small, this differential is statistically significant, as demonstrated at the bottom of Column (1).

Table A26 indicates that our comparative malfeasance information treatment did not accentuate the effect of providing local incumbent malfeasance information. The positive coefficients in Column (1) are statistically indistinguishable, and thus—in contrast with hypothesis A-H1—suggest that both types of information equally impact voter behavior on average. If anything, the larger effect of the comparative information treatment on incumbent vote share in Column (1) is surprising, given that the vast majority of treatments informed voters that the challenger was performing better. Furthermore, offering little support for A-H2, the interactive estimates again suggest that, if anything, voters are less likely to respond to comparative information in a Bayesian fashion: Column (2) weakly suggests that voters punish incumbent parties less for high rates of malfeasance when presented with comparative malfeasance information, Column (3) shows similar results when we instead interact the comparative information treatment with the difference in malfeasance spending between the incumbent and the average challenger elsewhere in the state, and Column (4) also suggests a weaker response to the comparative information treatment by voter updating of poste-

[53]The dependent variable in Column (1) is a dummy variable that indicates whether the respondent reports that the leaflet also included information on other parties in the state.

Table A25: Effect of variants of information treatment on self-reported treatment engagement

	Remember opposition benchmark (1)	Remember loud speaker (2)	Share of community received (3)
Local information treatment	0.046***		
	(0.010)		
Comparative information treatment	0.066***		
	(0.010)		
Private information treatment		0.006	0.483***
		(0.007)	(0.062)
Public information treatment		0.057***	0.566***
		(0.008)	(0.064)
Outcome range	{0,1}	{0,1}	{1,2,3,4,5}
Control outcome mean	0.03	0.03	1.45
Control outcome std. dev.	0.18	0.16	1.01
Local/private information treatment mean	0.39	0.39	0.39
Local/private information treatment std. dev.	0.49	0.49	0.49
Comparative/public information treatment mean	0.38	0.38	0.38
Comparative/public information treatment std. dev.	0.49	0.49	0.49
Test: same treatment effect (p value)	0.03	0.00	0.06
R^2	0.05	0.05	0.09
Observations	4,958	4,958	4,929

Notes: All specifications include block fixed effects, and are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

rior beliefs about the incumbent party. Unreported estimates for turnout also suggest that local and comparative information impacted turnout similarly.

The lack of an additional effect associated with providing comparative information could reflect several possibilities. First, voters may not believe that the malfeasance of parties in other municipalities represents a good proxy for how such parties would perform in their municipality.

Second, this null finding is also consistent with voters struggling to comprehend comparative information, which some of our enumerators pointed out when they were conducting the survey. Consistent with both explanations, unreported survey estimates show no differential updating about the incumbent party's malfeasance across local and comparative treatments. However, the average treatment effect associated with the comparative treatment information is not lower than local information, which suggests that the comparative information did not cause voters to struggle to understand the information relating to their own municipality. Third, as a comparison of Figures 8 and A3 illustrates, voters in the control group *already* believed the main local challenger—the party that placed second in the last election—to be less malfeasant. Consequently, the information we provided broadly coincided with voters' prior beliefs, and may thus have induced limited voter updating. Unfortunately, it is difficult to distinguish empirically between these potential explanations.

A.5.4 Limited additional impact of public information dissemination

While our information treatment's effects are not magnified by comparative malfeasance information, it is possible that public transmission is more effective. Table A25 shows that the public dissemination treatment elicited the expected responses. Column (2) confirms that voters receiving the private information treatment were as likely as control respondents to recall a loudspeaker. However, voters in precincts subject to public dissemination were 6 percentage points more likely

Table A26: Effect of local and comparative information treatments on incumbent party vote share

	Incumbent party vote share			
	(1)	(2)	(3)	(4)
Panel A: Incumbent party vote share (share of turnout)				
Local information treatment	0.022***	0.041***	0.042***	0.033***
	(0.007)	(0.010)	(0.010)	(0.007)
Comparative information treatment	0.031***	0.042***	0.037***	0.031***
	(0.008)	(0.011)	(0.009)	(0.008)
Local × Incumbent malfeasant spending		-0.091*	-0.093**	
		(0.046)	(0.046)	
Comparative × Incumbent malfeasant spending		-0.052		
		(0.036)		
Comparative × Difference in malfeasance spending			-0.055	
(incumbent - challenger)			(0.036)	
Local × Unfavorable incumbent updating				-0.015**
				(0.007)
Comparative × Unfavorable incumbent updating				-0.005
				(0.006)
Panel B: Incumbent party vote share (share of registered voters)				
Local information treatment	0.012***	0.022***	0.022***	0.019***
	(0.004)	(0.006)	(0.006)	(0.004)
Comparative information treatment	0.015***	0.023***	0.020***	0.016***
	(0.005)	(0.007)	(0.005)	(0.005)
Local × Incumbent malfeasant spending		-0.048*	-0.050*	
		(0.026)	(0.026)	
Comparative × Incumbent malfeasant spending		-0.037*		
		(0.020)		
Comparative × Difference in malfeasance spending			-0.040**	
(incumbent - challenger)			(0.020)	
Local × Unfavorable incumbent updating				-0.010***
				(0.003)
Comparative × Unfavorable incumbent updating				-0.004
				(0.003)

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. For summary statistics, see Table 4. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

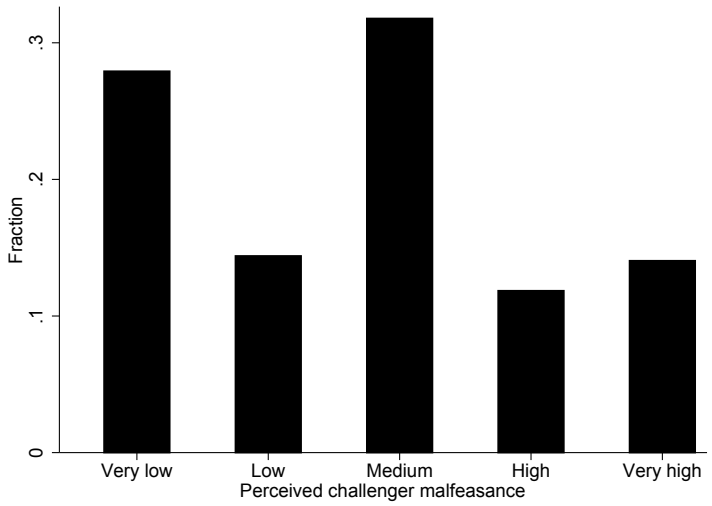

Figure A3: Perceived malfeasance (unauthorized spending) and not spending on the poor of second-placed party in the election among voters in control precincts

to correctly recall that the leaflets were delivered accompanied by a loudspeaker.[54] Moreover, the tests at the bottom of Column (3) indicate that voters in such precincts were also more likely to believe that a large fraction of their community received the leaflets.[55]

Despite increasing common awareness of our leaflets, public dissemination produced broadly similar (but somewhat weaker) behavioral responses. Column (1) of panels A and B in Table A27 shows a smaller increase in incumbent vote share associated with public dissemination. While this could reflect a less sanguine response to generally high levels of malfeasance, Columns (4) and (5) also document similar or smaller slopes with respect to the level of malfeasance reported and belief updating. In sum, we find little evidence supporting hypothesis A-H3.

The limited impact of adding a loudspeaker contrasts with the large effects of media found in similar contexts (Ferraz and Finan 2008; Larreguy, Marshall and Snyder 2017; Marshall 2017). One potential explanation for this limited voter response is the greater capacity of broadcast me-

[54]The dependent variable in Column 2 is a dummy variable that indicates whether the respondent recalled listening to a loudspeaker with a recording accompanying the leaflet distribution.

[55]The dependent variable in Column 3 measures on a five-point scale the fraction of community members that the respondent believes received a leaflet; 1=very few, 2=less than half,... and 5=almost everyone.

Table A27: Effect of private and public information treatments on incumbent party vote share

	Incumbent party vote share				
	(1)	(2)	(3)	(4)	(5)
Panel A: Incumbent party vote share (share of turnout)					
Private information treatment	0.035***	0.032***	-0.007	0.060***	0.040***
	(0.009)	(0.008)	(0.062)	(0.013)	(0.009)
Public information treatment	0.017**	0.015*	0.194**	0.023	0.023**
	(0.008)	(0.008)	(0.075)	(0.014)	(0.009)
Private × Incumbent malfeasance prior		0.010			
		(0.008)			
Public × Incumbent malfeasance prior		0.009			
		(0.008)			
Private × Incumbent prior precision			0.012		
			(0.020)		
Public × Incumbent prior precision			-0.055**		
			(0.023)		
Private × Incumbent malfeasant spending				-0.117***	
				(0.035)	
Public × Incumbent malfeasant spending				-0.029	
				(0.045)	
Private × Unfavorable incumbent updating					-0.010
					(0.006)
Public × Unfavorable incumbent updating					-0.010
					(0.007)
Panel B: Incumbent party vote share (share of registered voters)					
Private information treatment	0.020***	0.018***	-0.028	0.033***	0.024***
	(0.005)	(0.005)	(0.037)	(0.008)	(0.006)
Public information treatment	0.007	0.006	0.058	0.012	0.011**
	(0.004)	(0.004)	(0.040)	(0.007)	(0.005)
Private × Incumbent malfeasance prior		0.009**			
		(0.004)			
Public × Incumbent malfeasance prior		0.005			
		(0.004)			
Private × Incumbent prior precision			0.014		
			(0.012)		
Public × Incumbent prior precision			-0.016		
			(0.012)		
Private × Incumbent malfeasant spending				-0.063***	
				(0.021)	
Public × Incumbent malfeasant spending				-0.023	
				(0.021)	
Private × Unfavorable incumbent updating					-0.008**
					(0.003)
Public × Unfavorable incumbent updating					-0.006*
					(0.003)

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. For summary statistics, see Table 4. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A28: Effect of variants of information treatment on social transmission

	Social discussion of leaflet (1)	Discussion created vote coordination (2)	Discussion of leaflet changed vote (3)
Private information treatment	0.111***	0.022***	0.028***
	(0.015)	(0.008)	(0.007)
Public information treatment	0.125***	0.030***	0.030***
	(0.014)	(0.008)	(0.008)
Outcome range	{0,1}	{0,1}	{0,1}
Control outcome mean	0.05	0.02	0.02
Control outcome std. dev.	0.23	0.13	0.12
Test: same treatment effect (p value)	0.22	0.26	0.82
R^2	0.08	0.07	0.06
Observations	4,958	4,958	4,958

Notes: All specifications include block fixed effects and are estimated using OLS. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

dia to foster either explicit or tacit coordination through common knowledge (Adena et al. 2015; Yanagizawa-Drott 2014). Consistent with the relative weakness of loudspeakers as an explicit social coordination device, Columns (1)–(3) in Table A28 find no significant difference in discussion of the leaflet, vote coordination on the basis of the leaflet, or changes in voting behavior on the basis of discussions of the leaflet between the private and public forms of dissemination.[56] It is nevertheless possible that the leaflet became fully public even with private transmission, although this seems unlikely given the low recall rates in Table 2 and the relatively low social transmission in Table A28.

Another difference from existing studies examining the role of the media is the direction of

[56]The dependent variable in Column 1 is a dummy variable for whether the respondent discussed the contents of the leaflets with other members of the community. The dependent variable in Column 2 is a dummy variable for whether, following discussions about the leaflet, people in the community coordinated to vote for the same party. Finally, the dependent variable in Column 3 is a dummy for whether discussions about the leaflet with other members of the community changed the respondent's vote choice.

updating: Larreguy, Marshall and Snyder (2017) find that local media access induces punishment of considerably lower levels of malfeasance than we document here. Given that television coverage of audit reports is not uncommon, it is possible that voters' prior beliefs have already been shaped by news reports, although followers of the news were no less likely to respond to our treatment and possess similar posterior beliefs. More plausibly, television reports simply represent more effective signals, due to their relatively high credibility, broad reach in the population, and capacity to hold voters' attention. Likewise, it is possible that the loudspeakers led voters to perceive our intervention as being more partisan, since political parties frequently use these loudspeakers as part of their campaigns. This could have led respondents to discount the information in the leaflets, which could explain the somewhat weaker effects. However, based on our survey data, there is no evidence that the public treatment increased voter perceptions that the leaflet was delivered by the PAN, PRD, or PRI.

A.5.5 Comparing all treatment configurations

Tables A29 and A30 report the precinct-level estimates distinguishing each of our four treatment configurations. The results reinforce the analysis above separating local from comparative information and public from private dissemination.

Table A29: Effect of information treatment variants on incumbent party vote share (share of turnout)

	Incumbent party vote share (share of turnout)				
	(1)	(2)	(3)	(4)	(5)
Private local treatment	0.039***	0.039***	-0.021	0.061***	0.041***
	(0.010)	(0.010)	(0.085)	(0.018)	(0.011)
Public local information treatment	0.005	0.003	0.205	0.021	0.025*
	(0.014)	(0.012)	(0.124)	(0.025)	(0.014)
Private comparative information treatment	0.031**	0.025**	0.003	0.059***	0.039***
	(0.012)	(0.011)	(0.063)	(0.016)	(0.012)
Public comparative information treatment	0.030***	0.029***	0.176	0.024	0.022**
	(0.010)	(0.009)	(0.108)	(0.015)	(0.011)
Private local × Incumbent malfeasance prior		0.003			
		(0.009)			
Public local× Incumbent malfeasance prior		0.030***			
		(0.011)			
Private comparative× Incumbent malfeasance prior		0.018*			
		(0.010)			
Public comparative × Incumbent malfeasance prior		-0.011			
		(0.008)			
Private local × Incumbent prior precision			0.019		
			(0.027)		
Public local× Incumbent prior precision			-0.063		
			(0.038)		
Private comparative× Incumbent prior precision			0.007		
			(0.020)		
Public comparative × Incumbent prior precision			-0.046		
			(0.033)		
Private local × Incumbent malfeasant spending				-0.106**	
				(0.052)	
Public local× Incumbent malfeasant spending				-0.074	
				(0.089)	
Private comparative× Incumbent malfeasant spending				-0.128***	
				(0.041)	
Public comparative × Incumbent malfeasant spending				0.023	
				(0.062)	
Private local × Unfavorable incumbent updating					-0.001
					(0.008)
Public local× Unfavorable incumbent updating					-0.027**
					(0.010)
Private comparative× Unfavorable incumbent updating					-0.018**
					(0.008)
Public comparative × Unfavorable incumbent updating					0.008
					(0.008)
Outcome range	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]	[0.07,0.85]
Control outcome mean	0.38	0.38	0.38	0.38	0.38
Control outcome std. dev.	0.12	0.12	0.12	0.12	0.12
Information treatment mean	0.60	0.59	0.59	0.60	0.59
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.24	0.22	0.85
Interaction std. dev.		0.90	0.34	0.17	1.07
R^2	0.62	0.62	0.61	0.62	0.62
Observations	675	651	651	675	651

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (2), (3), and (5) reflect the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.

Table A30: Effect of information treatment variants on incumbent party vote share (share of registered voters)

	Incumbent party vote share (registered voters)				
	(1)	(2)	(3)	(4)	(5)
Private local treatment	0.022***	0.023***	-0.011	0.036***	0.025***
	(0.007)	(0.007)	(0.046)	(0.013)	(0.008)
Public local information treatment	0.001	0.001	0.054	0.008	0.013
	(0.008)	(0.007)	(0.072)	(0.013)	(0.009)
Private comparative information treatment	0.017**	0.013**	-0.048	0.031***	0.022***
	(0.007)	(0.006)	(0.043)	(0.010)	(0.007)
Public comparative information treatment	0.013**	0.012**	0.059	0.015*	0.009
	(0.006)	(0.005)	(0.066)	(0.009)	(0.007)
Private local × Incumbent malfeasance prior		0.006			
		(0.006)			
Public local× Incumbent malfeasance prior		0.018***			
		(0.006)			
Private comparative× Incumbent malfeasance prior		0.013**			
		(0.005)			
Public comparative × Incumbent malfeasance prior		-0.007			
		(0.005)			
Private local × Incumbent prior precision			0.010		
			(0.015)		
Public local× Incumbent prior precision			-0.017		
			(0.022)		
Private comparative× Incumbent prior precision			0.018		
			(0.013)		
Public comparative × Incumbent prior precision			-0.014		
			(0.020)		
Private local × Incumbent malfeasant spending				-0.064*	
				(0.033)	
Public local× Incumbent malfeasant spending				-0.031	
				(0.046)	
Private comparative× Incumbent malfeasant spending				-0.063**	
				(0.025)	
Public comparative × Incumbent malfeasant spending				-0.013	
				(0.033)	
Private local × Unfavorable incumbent updating					-0.003
					(0.005)
Public local× Unfavorable incumbent updating					-0.015***
					(0.005)
Private comparative× Unfavorable incumbent updating					-0.012***
					(0.004)
Public comparative × Unfavorable incumbent updating					0.005
					(0.004)
Outcome range	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]	[0.03,0.47]
Control outcome mean	0.19	0.19	0.19	0.19	0.19
Control outcome std. dev.	0.07	0.07	0.07	0.07	0.07
Information treatment mean	0.60	0.59	0.59	0.60	0.59
Information treatment std. dev.	0.49	0.49	0.49	0.49	0.49
Interaction mean		-0.05	3.24	0.22	0.85
Interaction std. dev.		0.90	0.34	0.17	1.07
R^2	0.64	0.65	0.64	0.65	0.65
Observations	675	651	651	675	651

Notes: All specifications include block fixed effects, weight by the share of the precinct that was treated, and are estimated using OLS. Lower-order interaction terms are absorbed by the block fixed effects. The smaller sample in Columns (2), (3), and (5) reflect the lack of data on prior beliefs about the incumbent party in Apaseo el Alto. Standard errors clustered by municipality-treatment are in parentheses. * denotes $p < 0.1$, ** denotes $p < 0.05$, *** denotes $p < 0.01$.