# Can More Information Lead to More Voter Polarization? Experimental Evidence from Turkey

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**Abstract**

Many claim that increased availability of information via both old and new media drives political polarization, possibly undermining democratic institutions. However, rigorous evidence on this topic remains limited. I address this gap by conducting two experiments during a recent Turkish referendum that was on an important institutional change to weaken constraints on the executive. First, I designed a randomized door-to-door campaign. In this campaign, the opposition party gave uniform information on poor economic performance and increased terrorist activity under the incumbent's leadership to more than 130,000 voters. I show that voters, despite receiving the same information, diverged further in their vote choice on aggregate, leading to a significant increase in ideological polarization. The result is consistent with a model where polarization in vote choice is driven by differences in reaction to the same information and not self-segregation to different information sources, as others have assumed. The opposition failed to increase its vote share in this campaign, on aggregate, because it lacked the necessary data to target the subset of constituents that interpreted the information in their favor. In a second experiment with politicians, I confirm that the opposition had inadequate data on voters relative to the incumbent based on an analysis of roughly one million of their tweets. The evidence from both experiments, taken together, suggests that the incumbent party can exploit its access to higher quality data on voters to maintain its grip on power and advance an agenda that weakens democratic checks and balances.

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# 1 Introduction

Democratic norms are in decline - civil liberties and political rights around the globe have deteriorated for eleven consecutive years (Freedom House, 2017). The erosion of these measures runs counter to a priori expectations that circumstances would improve: the number of democracies had doubled within the past five decades and information is increasingly available to voters due to a growing and diverse set of media sources. The availability of information has been linked to improved political accountability, a fundamental factor of development (Dréze and Sen, 1989; Besley and Burgess, 2002). On the other hand, increased access to information has also been found to polarize voters, offering a possible explanation for the backsliding of democratic norms (Downs, 1957).[1]

The recent research on political polarization assumes that people start with a shared set of beliefs, and then self-segregate into different sources of information, leading to divergent beliefs (Sunstein, 2001; Gentzkow and Shapiro, 2011). Other research on the interpretation of new information, however, often relaxes the assumption of shared initial beliefs. With this assumption relaxed, disagreement can occur, increase, and persist in response to the *same* information.[2] For example, in Piketty's (1995) seminal paper, people with different social origins can maintain different views on redistribution and the effectiveness of individual effort over the long-run, even if they experience the same income levels. Whether voters interpret the same information differently has policy implications for the abundance of information interventions that aim to increase political accountability. Most of these interventions assume that voters will converge to the same belief in response to common signals.

In this paper, I document the first field evidence that exposure to the same information drives political polarization. Moreover, the polarization is over an important vote choice to institutionalize weakened constraints on the executive branch during the April 2017 Turkish referendum. Specifically, the door-to-door information campaign that was implemented by the opposition for the referendum, and which I designed, resulted in increased partisanship in moderate areas. The results suggest that politicians should deploy information selectively

[1] For studies on increased access to information and ideological polarization see Gentzkow and Shapiro (2011), Mullainathan and Shleifer (2005), and Sunstein (2001).

[2] Most of this research is theoretical; such as, Dixit and Weibull (2007), Andreoni and Mylovanov (2012), Acemoglu et al. (2016), Loh and Phelan (2017), and Benoit and Dubra (2016). Empirical evidence that also relaxes the assumption of share initial beliefs includes mostly lab experiments in the psychological literature; such as, the infamous study by Lord et al. (1979). An empirical example in the economics literature is the lab experiment in Andreoni and Mylovanov (2012).

to voters who interpret information in their favor, rather than to the entire public. My second experiment provides suggestive evidence that the opposition in Turkey lacked the knowledge to execute this strategy - they did not know which voters to target. I conducted these experiments after spending more than a year in Turkey engaged in fieldwork during a period of conflict, high terrorist activity, and mass arrests.[3] The duration of my time there allowed me to build institutional knowledge and strategically time the implementation of the two experiments; both were conducted right before the referendum, which was scheduled with limited notice, just months after the attempted coup in July of 2016.[4] By exploiting the context, I could study the impact of exposure to new information on an important voter policy choice, measured with administrative vote share data.

In the voter experiment, volunteer canvassers from the opposition party implemented the door-to-door information campaign to a group of neighborhoods that I randomly selected. The opposition party's strategy in this campaign was to give voters information on poor economic performance and increased terrorist activity under the governance of Recep Tayyip Erdoğan, the incumbent. Voters were also told to choose "No" in the referendum, against weakening constraints on Erdoğan.

Though voters received the same information, they could interpret it in different ways. I had access to a survey showing that Erdoğan supporters attributed poor conditions to factors they believed to be outside the leadership's control; such as, the attempted coup, the U.S. elections, and the global recession. Opposition supporters instead blamed the incumbent party. In this example, voters have different views on why conditions are poor, but they can have a similar noisy signal on the state of poor conditions. Opposing vote choices in response to the same information can then be explained in the following framework with rational Bayesian voters. Upon receipt of a signal that conditions have deteriorated, some voters who planned to vote "No," but had relatively more uncertainty on whether external factors are to blame, can switch to a "Yes" vote.[5] Upon receipt of the very same signal, some voters who planned to vote "Yes," but had relatively more uncertainty on whether leadership

[3]Turkey is a fitting context to study the relationship between information, political polarization, and the backsliding of democratic norms. Across countries, Turkey ranks second in absolute decline in an index of civil liberties and political rights over the past decade (Freedom House, 2017). Figure 1 shows the decline in civil liberty and political rights rankings globally and in Turkey over the past decade.

[4]The possibility of a referendum had been discussed for a number of years, but its timing was unknown. The coup attempt was viewed as a catalyst to hold the referendum.

[5]As an example, in this case, voters may choose weakened constraints so that policies can be implemented more intensely and quickly to improve conditions that are affected by external threats.

quality is to blame can switch to a "No" vote. In this framework, both voter types will change their planned vote choice in response to new information if they are moderate, as determined by a small differential in mean priors between the two factors affecting vote choice.

Before the randomization, I grouped neighborhoods by quartiles of the difference in vote share between Erdoğan's party and the opposition party in previous elections. This method ensured that both treatment and control groups had a mix of both moderately and strongly partisan neighborhoods. I could then test whether the campaign only had an effect where the concentration of moderate voters was highest. I also pre-specified a test of the treatment effect in each quartile to detect whether the campaign had both a positive and negative effect on the "No" vote share depending on past partisanship.

I find that the information campaign only changed vote choice in moderate areas. In moderate areas where the opposition was stronger, the information increased the "No" vote share by 1.8 percentage points (2.6 percent). In moderate areas where the opposition was weaker, the information *decreased* the "No" vote share by 3.7 percentage points (5.9 percent).

Since the effect of the information campaign on turnout was close to zero in each quartile of past vote share, it must be that the information worked through persuasion. Therefore the increase in the share voting "No" is driven by voters who would have voted "Yes" in the absence of the campaign; the campaign switched the policy choice among previously pro-incumbent voters living in moderately pro-opposition areas. The decrease in the "No" vote share is driven by voters who would have voted "No" in the absence of the campaign; the campaign switched the policy choice among previously pro-opposition voters living in moderately pro-incumbent areas. Since the voting behavior was changed among pro-opposition (incumbent) voters living in pro-incumbent (opposition) areas, the campaign resulted in divergence, or political polarization, in the average vote choice.

In summary, I provide experimental evidence of information-driven polarization in response to a common signal outside of a lab. Moreover, the effect is on vote choice over an actual policy that directly affects the long-term economic development of Turkey. In response to the same information, voters further disagreed about whether increased authoritarianism is desirable.

In Turkey, religious beliefs determine partisanship to a large extent. Religious conservatives back the incumbent party, whereas secular liberals support the opposition. In this study,

the results show that individual voters from both sides crossed partisan lines in response to the same information. On aggregate, however, this led to a larger difference in vote share between moderately pro-incumbent and pro-opposition areas. This result provides evidence that is in contrast to studies finding that more information moderates identity or ideology based divisions (Casey, 2015; Bidwell et al., 2016).[6]

The opposition failed to change the aggregate "No" vote share in this specific campaign because it did not target the information using individual level data to identify voter type. The opposition assumed that in an environment with high media censorship, a campaign on conditions under the incumbent would have a non-negative effect among voters who overestimate incumbent performance. The opposition might have succeeded with a more targeted information campaign. Did they have enough data on voters to execute such a strategy? To answer this question, I conducted interviews with over 40 members of parliament (MPs) from both parties over a three-month period. To test MPs' knowledge of the electorate, I performed the following experiment. First, in January of 2016, I gave a subset of MPs information that was based on the voter survey I conducted after the attempted coup in mid-October of 2016, three months before the referendum.

Hypothetically, the information would only affect their public behavior if it was better than the voter information they had at the time. Analyzing approximately one million tweets across politicians from both parties, and using a difference-in-differences estimation strategy, I find suggestive evidence that the information is novel to the opposition, but not the incumbent. These results corroborate the qualitative evidence from my interviews that the incumbent party invests heavily in acquiring high quality voter data. This advantage is one factor that potentially contributed to weakened checks and balances becoming the majority policy choice among voters in Turkey.[7]

The remainder of this paper is organized as follows: Section 2 discusses the literature and the contributions of this study to existing research; Section 3 provides background information on democratization, the origins of the ideological divide in Turkey, the attempted coup, and the referendum; Section 4 provides a brief timeline of the two field experiments with politicians and voters; Section 5 outlines a voter model that provides the empirical predictions for the voter experiment; Section 6 discusses the experimental design of the voter campaign and

[6] In the study by Bidwell et al. (2016), information on politicians is given to voters through debates. In this study, the information is given by a partisan source.

[7] In the referendum, 51% voted "Yes" and 49% voted "No."

the results; Section 7 summarizes the voter experiment and connects it to the politician experiment; Section 8 describes the qualitative interviews with politicians, the design of the politician experiment, and the results; Section 9 discusses the implications of the politician experiment; and Section 10 concludes by discussing the implications of voter polarization on the electoral strategies and competition among the political parties.

# 2 Connections and Contributions to the Literature

This study provides some of the first empirical evidence of polarization in response to a common signal outside of a lab setting. This behavior is distinct from ideological polarization driven by people selecting into different sources of information, often called "echo chambers" in the literature (Gentzkow and Shapiro, 2011).[8] An exception is Autor et al. (2016), who find that the negative impact of trade-exposure on local labor markets results in ideological realignment. They find that voters in moderately Republican areas increase support for more conservative Republican legislators in response to a shock. They also find that voters in moderately Democratic areas increase support for both more liberal Democratic legislators and conservative Republican legislators. Since moderately Democratic areas diverge in their support for both more conservative and liberal legislators, the authors state that they are unable to conclude evidence of ideological polarization. In this study, it is more plausible that the signal, an information campaign, had an effect on vote choice through a change in beliefs. An added benefit of this study is that endogeneity concerns are mitigated; the common signal is randomly varied and it is randomly varied at different parts of the distribution of past vote share. In addition, I find ideological polarization in an important setting where voters were choosing on an institutional change to increase authoritarianism.

There are a couple of theoretical studies explaining why voters may support or tolerate weak constraints on the executive (Padró i Miquel (2007) and Acemoglu et al. (2013)). In Padró i Miquel (2007), followers of the ruling leader, with whom they share an identity, such as

[8]Mullainathan and Shleifer (2005) show theoretically that increasing the number of available sources can make it easier for consumers to self-segregate ideologically to different sources of information. The internet has been discussed as one channel that has increased access to information and ideological self-segregation (Sunstein, 2001). In contrast to the conclusions in Sunstein (2001) and Mullainathan and Shleifer (2005), Gentzkow and Shapiro (2011) find that ideological segregation of online news consumption is higher than the segregation of most offline news consumption but low in absolute terms and lower than the segregation of face-to-face interactions.

ethnicity or religiosity, tolerate rent extraction. They fear discrimination by the leader of the excluded group were the opposing leader to come into power. In applying this framework to the referendum in Turkey, followers of the ruling leader face counteracting forces. If they vote "Yes" in the referendum, then more rent can be extracted, but they also lower the probability that the leader of the excluded group can come into power in the future. In Turkey, religiosity predicts partisanship. However, results show that information on policy outcomes under the incumbent, which is a signal of weak accountability, does cause followers to cross party lines and vote against lowering constraints on the executive. On the other hand, we also see voters from the excluded group also cross partisan lines and choose to lower constraints in response to the same information. The results in this study cannot rule out that the fear of discrimination motivates some voters, but in the least, it finds that moderate voters do cross partisan lines and made contrasting choices in the referendum.

Another set of related literature is on the incumbency advantage through control of the media (Boas and Hidalgo, 2011; Ansolabehere et al., 2006). Relative to these studies, I show evidence of a mechanism in which the incumbent can gain an electoral advantage if it has control over higher quality voter data. These gains can be particularly large with a polarized electorate and, in the context of this study, they can be used to pursue an agenda to weaken constraints on the executive.

This study adds to the literature investigating the effect of providing information on incumbent performance, including corruption, in lower-income countries. The studies estimate whether or not voters punish the incumbent, consistent with a retrospective voter model (Banerjee et al., 2010; Humphreys and Weinstein, 2012; Chong et al., 2015; Ferraz and Finan, 2008; Cruz et al., 2017). Similar to this study, Cruz et al. (2017) also suggest that voters may not hold the incumbent accountable because they face uncertainty on whether or not the incumbent has the capacity to perform well. In this study, relative to the research by Cruz et al. (2017), voters also face uncertainty in whether the incumbent can be expected to perform well, but because they attribute poor conditions to external threats outside of the incumbent's control. In this case, voters may instead choose to strengthen the incumbent to increase the intensity of their policies.

There is also a large body of literature on the effectiveness of political campaigns. According to a meta-analysis on 40 campaign experiments held before primary and ballot measure elections in the U.S., only four were found to be effective (Kalla and Broockman, 2017). The

majority of the studies cited in the meta-analysis use survey data to measure vote choice and do not have access to administrative data. On the other hand, two campaign experiments conducted in Europe, which have administrative outcome data on vote share, both find an effect of campaigns on changing vote share (Pons, 2016; Kendall et al., 2015). In conclusion, the effectiveness of partisan political campaigns is mixed. In the first partisan campaign in an "illiberal" democracy, I show that information via a political campaign does affect vote share, but there are countervailing effects.[9] I simultaneously show the ineffectiveness of a blanket campaign and empirically verify that better voter information for targeting would lead to increased vote share.

There is a more recent literature on targeting campaign information. Data analytical firms are playing a growing role in affecting major elections.[10] These firms collect detailed data on voters and assist in targeting campaign information to optimize vote share. Despite the increasing significance of these firms, research on the effectiveness of targeted political campaign information is limited.[11] In addition, the existing studies focus on targeting based on predicted voter responsiveness.[12] Voters may have different degrees of uncertainty, which affects their responsiveness to a signal. The studies do not take into consideration that voters may have different views and interpret the same information differently. This study contributes to the literature in its empirical design to allow for the fact that voters may have different interpretations of the same information. The design allows me to simultaneously show the ineffectiveness of a "blanket" campaign and the benefits from a targeted information campaign.

Finally, this study provides the first experimental results from a campaign conducted by a political party in a country where civil liberties and political inclusivity are very low. Turkey's Freedom House ranking was below Kenya, Pakistan, and Bangladesh at the time of this study. Studies that work with non-partisan companies are important for understanding political participation and the effects of increased transparency on voter behavior. The benefit of working with a specific political party, combined with the politician experiment in this study,

[9]Zakaria (1997) and Mukand and Rodrik (2017) label countries with elections, but low civil liberties as illiberal.

[10]Examples include the data analytics team that worked in the 2012 Obama campaign and the role of Cambridge Analytica in both Trump's campaign and recent presidential elections in Kenya.

[11]See Nickerson and Rogers (2014) for a review on this topic.

[12]An exception is evident in a political campaign that was meant to change "inaccurate" beliefs that voters may have had of a candidate who unexpectedly supported abortion in the state of Oregon. The campaign used a survey to identify and target voters based on whether they were pro-choice, but used self-reported survey data to measure the effectiveness of the campaign (Rogers and Nickerson, 2013).

is that the results have implications for electoral competition. There is limited evidence on oppositional behavior in illliberal democracies. Moreover, a large scale, representative project with a non-partisan company is difficult and unlikely to be feasible in countries like Turkey.

# 3 Institutional Background

## 3.1 Democratization in Turkey

The Republic of Turkey was founded in 1923. Mustafa Kemal Atatürk, an army officer, was the founder of both Turkey and the Republican People's Party (CHP). The CHP is currently the main opposition party. Atatürk immediately established a secular state, clamped down on the freedom of religious expression, and imposed a new language and culture on a majority pious population. The military played a significant role in politics and the country was under one-party rule for the first two decades. It is commonly believed that the political elite's transformation of Turkey's society, by sharply reducing religious expression and imposing secularism, had modernizing effects on Turkey. However, it also instigated the ideological cleavage between liberal secular and religious conservatives, or rather, elites versus non-elites and the suppression of minority groups that continues today. Moreover, despite the important gains from Atatürk's modernizing of Turkey, the lack of inclusive founding institutions is regarded as creating a lasting impediment to Turkey's development.

## 3.2 Modern Turkey

Multi-party elections were introduced to Turkey in 1946 and since then Turkey has experienced periods of competitive elections. However, its strong military, weak state institutions, and the society's ideological cleavage led to long periods of economic and political instability. These periods of instability have resulted in a number of military interventions, including two outright coups. In 2001, there was a devastating economic recession and the country was under the unstable leadership of a multi-party coalition. The current ruling party, the Justice and Development Party (AK Party), was founded by Recep Tayyip Erdoğan in 2001 and first entered a general election in 2002. The AK Party came into power and the 2002

General Election marked the first time Turkey was ruled by a single party government since 1987. Only one other party, the CHP, also gained seats in parliament. The AK Party has had a majority in parliament since coming into power.

Under the AK Party, the ability of the military to intervene in politics weakened. The military had threatened the party because of its religious tendencies, but, with the help of an alliance with an Islamic cleric, Fethullah Gülen, and strong voter support, the party continued its rule uninterrupted. The party was also successful in expanding freedom of religious expression, such as allowing women to wear headscarves in public institutions, including universities and the parliament. During the peak of the party's alliance with the Gülenists, there were a series of controversial trials and arrests of military officials for an alleged "Sledgehammer" plan to overthrow the government. However, the alliance between the AK Party and Gülen soon dissolved.

In fact, while strong evidence on the details of the attempted coup is limited, there is consensus that some of the individuals involved in the 2016 coup attempt are Gülenists, who comprise a large and powerful international movement. Gülenists had infiltrated various institutions of Turkey for years, including the educational system, the military, judiciary, police force, etc. The coup attempt itself was poorly organized and failed rapidly, but was a catalyst in the calling of a referendum. Citizens were directly affected by the coup attempt; thousands took to the streets to prevent the coup and hundreds were killed. Citizens across party lines and leaders from the opposition parties all publicly decried the coup attempt.

Voters in Turkey have mixed views on whether the coup attempt can partly be blamed on Erdoğan's past relationship with Gülen. Others do not place any blame on Erdoğan and view the coup attempt as an incident that was completely outside of his control. Following the attempted coup, a state of emergency was enacted and more than 150,000 civil servants, academics, and journalists were detained. Despite the arrests being internationally condemned, in a survey that I conducted, the majority of sampled voters self-reported as supporting these mass arrests. The arrests are viewed as a measure of national security.

## 3.3 2017 Referendum

The referendum was held in 2017, less than a year after the attempted coup. The referendum was on switching from a parliamentary system to a presidential system and on eighteen amendments to the constitution. Until the referendum, the highest level of leadership was the prime minister and the role of the president was largely viewed as ceremonial. Erdoğan served as prime minister from 2002 to 2014, stepping down just before his term limit. In 2007, Erdoğan called for a referendum that would change a law, allowing the president to be nationally elected in 2014. Therefore, in 2014, Erdoğan became the first nationally elected president of Turkey and was able to retain a leadership position before his term as prime minister ended. A number of the proposed amendments to the constitution would consolidate power under the president. For example, a new power granted to the president is the ability to bypass the parliament completely and introduce legislation by issuing decrees with the force of law (Jenkins, 2016).

Aside from the coup attempt, Turkey was already on an unstable path. Terrorist activity had reached an unprecedented level, civil conflict had restarted, hundreds of thousands of civilians from Kurdish-majority areas had been displaced, and the economy was doing poorly.[13] The AK Party argued that switching to a presidential system and the proposed amendments would bring more stability and increased national security. The opposition argued that the current leadership, who had already taken steps over the past few years to consolidate power, was to blame for the deteriorating conditions and increasing their power would only exacerbate the problems.

In Turkey, there are four parties with representation in parliament. Before the referendum, one of the small opposition parties, the Nationalist Movement Party (MHP), declared that it was in support of weakening constraints on the executive ("Yes" vote). The main opposition party and the minority pro-Kurdish party, the Peoples' Democratic Party (HDP), declared that they were against the constitutional changes that were being voted on ("No" vote). In the empirical section for the voter experiment, whether the analysis is conducted with all four parties or just between the main opposition party and the incumbent does not change any of the results. For the remainder of this paper, I will just refer the political parties as the incumbent party or the opposition party.

[13]Figure 2 shows the number of terrorist attacks in Turkey over time. It shows that the number of attacks had risen significantly even before the coup attempt.

# 4 Timeline and Order of Experiments

A timeline and flowchart of the two field experiments are shown in Figure 3. I first conducted a voter survey in October 2016 with more than 1,770 voters. The survey identified policy issues most important to voters and their preferences regarding various policies. In the survey, voters reported that the economy and terrorism are policy issues most important to them. The purpose of the survey was twofold. First, I used the survey results to compile information on voters that would be used in the politician experiment. As part of the experiment, in mid-January, the MPs were sent a voter report based on the survey right after the vote to go to a referendum had occurred and three months before the referendum was held. At the time that the report was sent, the MPs faced uncertainty on the exact timing of the referendum, but knew that it would take place within six to twelve weeks.

The report discussed the sampling procedure, disclosed the funders of the survey, and included details on my background.[14] Then, it showed that terrorism and the economy are most important to voters and provided the survey results on voter policy preferences regarding those two issues.[15]

When the voter report was sent to the MPs, they were also asked whether they would be interested in conducting a voter experiment before the election. I followed up with everyone who responded. This interaction is what created an opportunity to conduct a randomized door-to-door campaign. Specific individuals from the opposition party implemented the randomized door-to-door campaign in one province. This leads to the second objective of the voter report: the information provided on the economy and terrorist activity in the door-to-door campaign was informed by the fact that voters had reported these two issues as most important to them in the survey that I had conducted. However, the details of the information provided in the door-to-door campaign and the decision to use information from the voter survey was decided by individuals from the opposition.

The door-to-door campaign reflects the best strategy that individuals from the opposition had to increase their vote share. Simultaneously, I could test the effect of giving information

[14]MPs were informed that UC Berkeley and MIT funded the survey that I conducted. Background information included that I am a PhD candidate at UC Berkeley and that the report was a part of a research project.

[15]The report was thirteen pages long and examples of two pages from the report are provided in Figure 16 in the Appendix section A.2.

on self-reported voter policy preferences through the door-to-door campaign and whether this is the best strategy the MPs had on average through the politician experiment.

# 5 Voter Model: Different Interpretations of a Common Signal

## 5.1 Motivation for Voter Model

Since 2013, when Turkey started experiencing significant instability, the value of the local currency in Turkey, the lira, has been falling. The rate of depreciation rapidly escalated toward the end of 2016, after the attempted coup. In January 2017, after a record drop in the value of the lira, a nationally representative survey was conducted in Turkey covering issues such as the referendum and the economy.[16] In the survey, voters were asked the degree to which the drop in the value of the Turkish lira had an impact on their personal life. Figure 4 shows that voters who self-report as either incumbent or opposition supporters both agree that the depreciation of the lira had a negative impact on their lives. However, we see in Figure 5 that voters have different views of why the value of the lira dropped, based on their party affiliation. Opposition voters predominantly blame the current leadership (president and parliament). Incumbent voters blame external factors outside the control of the leadership (coup attempt, global crisis, and the U.S. election).[17]

In the referendum, voters were choosing to weaken constraints on the executive. The survey results on the lira suggest that increased information on policy outcomes under the incumbent, such as economic conditions or terrorist activity, could have an ambiguous effect on voter choice. Consider voters who underestimate how poor the economy is and blame poor conditions on external factors. They may choose "Yes" in the referendum because they believe that less constrained efforts to increase national security, such as the mass arrests, will reduce a source of instability and subsequently improve the economy. More generally, they may support removing constraints from incumbent policies so that they can be more

[16]The survey was done by an American polling company, which cannot be identified in this study. I was not involved with the survey.

[17]Voters in Turkey have mixed views on whether the coup attempt can be blamed partly on Erdoğan's past relationship with Gülen. Some do not place any blame on Erdoğan and view the coup attempt as an incident that was completely outside of his control.

effective when external threats are high. On the other hand, voters who also underestimate the economy, but blame current leadership for poor economic policy, or for being the cause of threats to national security in the first place, will vote against increasing authoritarianism. Using the language in the literature on disagreement or polarization in response to a common signal, the information on policy outcomes provided in the campaign is an "equivocal signal" (Benoit and Dubra, 2016). Voters are provided with a unidimensional signal to a multidimensional problem (Loh and Phelan, 2017). The effect on voter choice of giving voters more information on incumbent policy outcomes, i.e. the economy and terrorist activity, depends on views, and levels of uncertainty, over this ancillary issue, which is whether the incumbent is to blame or not (Benoit and Dubra, 2016).

Before continuing to the model, consider an example on persistent polarization, or disagreement, among economists themselves. A stimulus package is implemented, but the GDP results are poor. Even sitting in the same room, a Keynesian and a Neoclassical will respond differently to the same results. A Keynesian will declare that the stimulus package should have been larger. In contrast, the Neoclassicist will believe more strongly that stimulus does not work.[18]

## 5.2 Voter Model

The purpose of the model outlined in this section is to provide a framework to interpret the results in the voter experiment. The framework explains (i) why we expect the voter information campaign to have an effect among moderate voters and (ii) why the campaign could have different effects on vote choice depending on voter type.

Consider that rational Bayesian voters have a signal, $e$, about the state of the economy, the noise of which has variance $\sigma_E^2$. Providing them with more information on economic conditions reduces the variance in the signal. The common assumption in the literature is that rational Bayesian voters will converge to the signal if they have common beliefs (Dixit and Weibull, 2007). Similar to Dixit and Weibull (2007), Loh and Phelan (2017), and Benoit and Dubra (2016), I also maintain rational Bayesian voters and relax the assumption of common beliefs.

[18]Dixit and Weibull (2007) and Loh and Phelan (2017) provide similar examples.

Motivated by the survey evidence, let the state of the economy (e.g. value of the lira) be a function of incumbent quality, $Q$, and external factors affecting the economy, like national security, $S$. When $S$ is high, external threats are low. I assume that the economy is increasing and linear in both factors, $E(S,Q) = S + Q$. Let a higher $A$ denote further weakening constraints on the executive, or increased authoritarianism, for brevity. I assume that the optimal value of $A$ is increasing in incumbent quality and decreasing in external threats to national security; for example, the lower the external threats to national security, the lower the optimal level of authoritarianism. The signal that voters have about the economy affects a voter's optimal choice for $A$. In summary, I assume that $A^*(S,Q) = Q - S + \epsilon$ is a voter's optimal level of authoritarianism, where $\epsilon \sim N[0,1]$.[19] The important assumptions here are that both $S$ and $Q$ are positively correlated with $E$, but $S$ is inversely correlated with $A^*$, and $Q$ is positively correlated with $A^*$. I will show that while voters receive information on the economy, their mean priors and relative certainty about $S$ and $Q$ determine their choice on optimal $A$, i.e. "Yes/No" in the referendum.[20]

I assume a voter has initial unbiased priors over $S$ and $Q$ distributed $N[\mu, V]$, where $\mu = \begin{pmatrix} \mu_S \\ \mu_Q \end{pmatrix}$ and $V = \begin{pmatrix} \sigma_S^2 & \sigma_{SQ} \\ \sigma_{SQ} & \sigma_Q^2 \end{pmatrix}$. Given the assumptions that $E$ is increasing and a linear function of both $S$ and $Q$, we have $E \sim N(\mu_S + \mu_Q, \sigma_S^2 + 2\sigma_{SQ} + \sigma_Q^2 + \sigma_E^2)$

The information in the campaign increases the precision of the signal and therefore lowers $\sigma_E^2$. A voter chooses "Yes", to increase authoritarianism, if $A^*(S,Q) \geq A$.

Under these assumptions, the standard result for the density $f(S,Q|E=e)$ holds. Let $(\mu_S)'$ and $(\mu_Q)'$ be the posterior means of this density. Despite receiving the same signal, people in different places end up with different posterior means. Let $E[A^*(S,Q)|e] = A'^*(S,Q) = (\mu_Q)' - (\mu_S)'$ be an individual's posterior mean optimal level of authoritarianism. The expressions for $(\mu_Q)'$ and $(\mu_Q)'$ are:

$$\begin{pmatrix} (\mu_S)' \\ (\mu_Q)' \end{pmatrix} = \begin{pmatrix} \mu_S \\ \mu_Q \end{pmatrix} + (e - \mu_S - \mu_Q) \begin{pmatrix} \frac{\sigma_S^2 + \sigma_{SQ}}{\sigma_S^2 + 2\sigma_{SQ} + \sigma_Q^2 + \sigma_E^2} \\ \frac{\sigma_{SQ} + \sigma_Q^2}{\sigma_S^2 + 2\sigma_{SQ} + \sigma_Q^2 + \sigma_E^2} \end{pmatrix}$$

[19] I am agnostic about the full model determining $A$, but an assumption made here is that $A$ and $E$ are not perfectly collinear.

[20] This framework will generalize to the case where $A^*$ and $E$ are linear in $Q$ and $S$, as long as $A^*$ and $E$ are increasing in $Q$, $A^*$ is decreasing in $S$, and $E$ is increasing in $S$.

Which then gives:

$$A'^{*}(S,Q) = \mu_Q - \mu_S + (e - \mu_S - \mu_Q)\frac{\sigma_Q^2 - \sigma_S^2}{\sigma_S^2 + 2\sigma_{SQ} + \sigma_Q^2 + \sigma_E^2}$$

The effect of providing more information on the economy, and therefore reducing $\sigma_E^2$, affects the voter's optimal level of authoritarianism through updating on relative priors on the factors that are correlated with the economy, $S$ and $Q$, in the following way:

1. Whether the voter is "moderate" or "extreme." A voter is extreme in its support for the opposition if the difference $\mu_Q - \mu_S$ is very negative and "extreme" in its support for the incumbent if the difference is very positive. For moderates, the differential, $|\mu_Q - \mu_S|$, is small. Moderates will be the most responsive to the information.

2. A voter who is more (less) uncertain about incumbent quality relative to national security will vote "Yes" ("No") in the referendum after receiving the signal $e$ through the information campaign. Therefore, the direction of the effect of the information campaign on an individual depends on whether $\sigma_Q^2 > \sigma_S^2$ or $\sigma_Q^2 < \sigma_S^2$.

However, it is necessary that the expression is written in terms of vote share because that is observable at the neighborhood level to all political parties, rather than individual vote choice. Assume there's a continuum of individuals in each location, $g$, with initial unbiased priors over $S$ and $Q$. In this case, the vote share in location $g$ is

$$P[A^*(S,Q) \geq A|g] = 1 - \Phi\left(A - \left[\left(\mu_Q^g\right)' - \left(\mu_S^g\right)'\right]\right)$$

The derivative of this expression with respect to $\sigma_E^2$ gives us the effect of the treatment and the same predictions as above. After going through the details of the treatment and experimental design, I will tie the individual voter model to the empirical estimation procedure.

Similar to Loh and Phelan (2017), Dixit and Weibull (2007), and Benoit and Dubra (2016), voters in this study are learning based on a multidimensional model after receiving unidimensional information, and have different beliefs. Under more traditional assumptions, voters would be given unidimensional information and updating on one dimension. Here, the vote choice depends on voters' relative certainty on each dimension in the learning model and the mean relative value of their priors for each dimension (i.e. how moderate they are). One

can then wonder why the opposition would not just give information to voters that directly show whether or not the incumbent is to blame for the economy. The trouble here is that it is not possible to prove this relationship; therefore, in trying to persuade a voter who is leaning toward the incumbent, the voter will now face uncertainty about the source of the signal. Voters can also have different interpretations of the signal if they think the signals come from a biased source (Acemoglu et al., 2016). However, in the empirical section we will see that both types of voters respond to the information. This result implies that neither type completely discounts the information because of uncertainty in the source of the signal.

# 6 Voter Campaign Experiment

## 6.1 Voter Campaign Experiment: Campaign Content

The intention of the opposition's door-to-door campaign was to increase the share voting "No" in the referendum, against weakening constraints on the executive. In the campaign, voters were provided with information describing the economic loss and increase in terrorist activity under the current leadership over the past few years. The party highlighted worsening conditions since 2014 because that is when Erdoğan transitioned from prime minister to president to extend his political leadership. The party also chose to omit issues of a deteriorating democracy and increasingly limited civil liberties from the door-to-door campaign because of the results in the voter report. The results from the survey show that the majority of citizens across party lines support the arrests conducted after the state of emergency.

The campaign was randomized at the neighborhood level, because this is the level at which administrative outcome data is available. Control neighborhoods did not receive campaign information. The information was conveyed to voters in treatment neighborhoods both orally, if they opened their door, and in a pamphlet. The pamphlets were left with every household in a treatment neighborhood regardless of whether they opened the door. The original print of the pamphlet can be seen in Figure 6. The canvassers also received training on how to give the same information provided in the pamphlet orally and personably. For example, in addition to giving the same facts as in the pamphlet, they were trained to convey the information by discussing personal accounts of how they were affected by the deteriorating economy or recent terrorist attacks.

The issues covered in the campaign were based on the voter survey I had conducted and I designed the campaign. The implementation, funding, and details of the content were determined by a campaign manager and staff from the opposition party. The experiments reflect the strategy of individuals from the opposition party.

## 6.2 Voter Experiments: Party Strategy

In terms of the voter model, the opposition party assumed that voters would only update their views on the quality of the incumbent in response to increased information on the economy. They did not take into consideration that voters could have different interpretations of the same information. Going back to the voter model, the party assumed that voters would behave according to equation (1) rather than equation (2):[21]

$$A'^{*}(S,Q) = \mu_Q + (e - \mu_Q)\frac{\sigma_Q^2}{\sigma_Q^2 + \sigma_E^2} \tag{1}$$

$$A'^{*}(S,Q) = \mu_Q - \mu_S + (e - \mu_S - \mu_Q)\frac{\sigma_Q^2 - \sigma_S^2}{\sigma_S^2 + 2\sigma_{SQ} + \sigma_Q^2 + \sigma_E^2} \tag{2}$$

If voters have better information that the economy is poor and only attribute poorly performing economy to the incumbent, then they will vote against weakening constraints on the incumbent. This strategy is sensible. First, this is a common assumption in most campaign experiments designed by researchers. Second, particularly in Turkey, media censorship is high and voters may receive limited or selective information on performance indicators when conditions are poor.

Given these factors, the opposition party chose to use the campaign as an opportunity to disseminate information on negative changes in the economy and national security since President Erdoğan was voted into the presidency in 2014. Similar to the literature, the campaign strategy was consistent with the assumption that voters would respond to the information according to a retrospective voter model.[22]

[21] Please note that it is assumed, and empirically confirmed, that the effect is among both voter types who underestimate how bad conditions are.

[22] In Appendix section A.5, I also describe a randomized online Facebook campaign that the opposition implemented and that I designed. This is an alternative campaign strategy that they also used.

## 6.3 Voter Campaign Experiment: Sampling

The door-to-door campaign was implemented in the third largest province in Turkey, Izmir.[23] Figure 7 shows the distribution of the share that voted "No" across the country and in the sample for this experiment, among the control group. We see that the experiment was conducted in an oppositional stronghold, but that there is a large overlap with the distribution across the country. Izmir was selected because it is a region in which the party could immediately organize group of party volunteers that were willing to canvass during a state of emergency. Recruiting volunteers during this period is difficult because a person could be detained without trial for three months.

The sampling procedure and implementation of the campaign were affected by a number of factors. First, since it was a state of emergency, it was possible that voters would be hesitant to open their door. Second, the party was constrained in terms of its budget available for transportation and the number of canvassers. To address the first issue, every household in a treated neighborhood was visited to increase the likelihood that a sufficient share of voters opened their doors and engaged with the canvassers. In-person conversation is considered one of the most effective methods to affect voter behavior (Pons, 2016). While a less salient method, the possibility of a low response rate to the door-to-door campaign explains the use of pamphlets. The pamphlets were left with every household that was visited regardless of whether the voter opened the door.

The second issue, the budget and capacity constraint, would also affect the power of the study. A sufficient number of neighborhoods needed to be reached and the compliance rate within each neighborhood needed to be sufficiently high. Therefore, before conducting the randomization I restricted the sample to neighborhoods based on whether they would be too difficult to reach or take too long to complete. There are 1294 neighborhoods and 30 districts in Izmir. I dropped districts and neighborhoods that were too rural. Rural areas were dropped because if neighborhoods were too far away, this would affect the sample size and, therefore, the power of the study. First, following the procedure of surveying companies in Turkey, I classified neighborhoods as "rural" if they had 500 or fewer registered voters in the most recent general election in 2015. Then, I classified a district as rural if more than 50% of the neighborhoods are rural. Then, I dropped neighborhoods where the number of

[23]There are 81 provinces in Turkey. Each province is a constituency, except the larger provinces Izmir, Ankara, and Istanbul are split into two to three constituencies.

registered voters was in the top 5% or bottom 5% of the distribution. Here, I also dropped large neighborhoods because, while they could be easy to reach, it would take too long to cover all households in a neighborhood. In the end, the experiment was conducted in 14 of the 30 districts and 498 out of 1294 neighborhoods. Over 130,000 registered voters were treated across 48 neighborhoods in Izmir and were compared to voters in 450 control neighborhoods.

In order to further increase efficiency and monitor whether the campaign could even be implemented during such a risky period, I geocoded every street in each neighborhood and provided the canvassers with an optimal route. Every couple of days, they sent me the number of people they spoke to per street and whether or not they canvassed all households in a street. All streets in every neighborhood were canvassed and it was reported that they visited the door of every household, or apartment. However, 20% of neighborhoods could not be canvassed because the party volunteers reported that they faced threats (aggressive behavior, threats to call the police, etc.). Table 3 provides the average number of registered voters reached per neighborhood among the full sample. Table 4 shows the same descriptive statistics for the subsample that does not include the neighborhoods that the party volunteers could not canvass. Importantly, we see that the average reach is similar across each quartile. None of the results change depending on whether I include or drop the neighborhoods where the reach was zero. Here, I show the results with all neighborhoods included.

## 6.4 Voter Campaign Experiment: Design

Randomization was stratified by quartile of past neighborhood level vote share for the opposition.[24] The vote share and turnout data were scraped from the government website.[25]. It was specified in a submitted pre-analysis plan that a two-tailed test would be conducted in each quartile. This was pre-specified in case of countervailing effects.[26] Below, $Y_{nq}$ is neighborhood level "No" vote shares or turnout. $T_{nq}$ is an indicator for whether the neighborhood is in the treatment group and $\gamma_q$ are quartile fixed effects. $X_{nq}$ includes past voter data from the past two general elections, which were both held in 2015. The regressions, including the

[24]This is the same as stratifying on the vote share differential between the opposition and the incumbent.
[25]https://sonuc.ysk.gov.tr/module/GirisEkrani.jsf
[26]Baysan, C. (2017, April) Canvassing in Turkey. osf.io/hhqej

randomization inference exercises, follow the pre-specified specifications.[27] $\beta$ captures the treatment effect across quartiles and I also estimate $\beta_q$ by estimating the treatment effect within each quartile.

$$Y_{nq} = \alpha + \beta T_{nq} + \gamma X_{nq} + \gamma_q + \epsilon_{nq} \tag{3}$$

Table 5 shows balance between the treatment and control groups across the quartiles. Tables 6 and 7 show balance within each quartile.

## 6.5 Predictions Based on the Voter Model and Results

Based on the voter model, we expect that voters will respond to the treatment if they are moderate ($|\mu_Q - \mu_S|$ is small). In addition, the direction of the vote depends on their relative certainty between each factor affecting the economy (i.e. the relative values of $\sigma_Q$ and $\sigma_S$). We expect that we can reject the null of no effect on "No" vote share in quartiles of past vote share where the concentration of moderate voters is highest and where the number of neighborhoods with a high concentration of moderate voters is highest. We may expect that quartiles where the vote share differential is close to zero is where we will be able to reject no effect. To substantiate this claim, I use individual-level data.

The individual level data that I have on policy preferences is from the voter survey I conducted before the referendum in mid-October.[28] While the data on policy preferences were not collected in Izmir, they were collected in the other largest provinces of western Turkey. Importantly, individuals were randomly sampled within each neighborhood for the survey. Therefore, this allows me to use the policy preference data and predict the likelihood that an individual self-reported as being a supporter of the incumbent or opposition party and merge it with neighborhood level vote share data. I take the distribution of these predicted values and label the top and bottom 25th percentiles of the distribution as "extreme." Within each

[27] I show the results for both the unweighted and weighted regressions. Weighted regressions account for the number of registered voters per neighborhood. I did not pre-specify including weights; both results are provided, but the weighted version is my preferred specification. The results without weighting are provided in Tables 11 and 12

[28] It was not possible to do an additional voter survey immediately before the referendum for a variety of reasons. As an example of one the constraints, the major data collection companies were completely occupied with their main source of revenue, which was providing predictions for the referendum. The smaller firms could not organize a sufficient surveyors willing to work during the state of emergency.

neighborhood, I calculate the proportion of extreme voters. I then match the data with the administrative neighborhood level vote share data.

First, I find that the proportion of extreme voters in a neighborhoods is higher where the differential vote share between the two parties is higher. Moderate voters are concentrated where the vote share differential is low and therefore where I have more power to reject no effect. It is not surprising that moderates mostly live together and more partisan voters mostly live together. Table 1 shows the average proportion of extreme voters across the vote share distribution for the sampled neighborhoods in the survey. We see that the lowest mean shares are .55 and .59. In Table 1, I show seven of the deciles of the differential vote share distribution for the voter survey sample because they overlap with the distribution of vote share differentials for the experiment. Within these seven deciles, I count the total number of neighborhoods that have a proportion of extreme voters that is less than .55. The fourth and fifth deciles, where the vote share differential between the incumbent and opposition is .07 and .17 respectively, are where I am most likely to reject an effect and observe polarization. Table 2 shows the difference in vote share between the opposition and the incumbent. Therefore, we see that the fourth and fifth deciles for the voter survey sample are closest to the vote share differentials in quartiles 2 and 3 of the experiment. Among quartiles two and three, for the experiment, which correspond to the deciles with a larger number of neighborhoods with a high concentration of moderate voters, we are mostly likely to be able to detect an effect of the campaign on the vote share.

Table 8 shows the aggregate result: I cannot reject no effect across all quartiles and we see that the treatment had no effect on turnout across quartiles. Figure 8 shows the effect of the treatment by quartile of past vote share. However, I am able to reject no effect in quartiles 2 and 3. Recall that the campaign was meant to increase the "No" vote share. Instead, in quartile 2, we see that the "No" vote share decreased by 5.9% (3.7 percentage points). The campaign did have a positive effect of 2.6% (1.8 percentage points) in quartile 3. Therefore, we are able to detect population polarization between quartiles 2 and 3 (Benoit and Dubra, 2016). The fact that partisanship (among moderates) is correlated with the relative certainty between the two factors is not a prediction of the model or something that I could have tested ex ante. However, this result is consistent with assumptions made in other studies on polarization where people have a lack of common beliefs.[29] Or, it may be the case that incumbent voters living with more opposition voters adopt the views of their

[29]See Benoit and Dubra (2016) and Loh and Phelan (2017)

neighbors once they have more information.

Next, I show that the effect of the campaign cannot be explained by turnout. In Table 10, we cannot reject no effect in quartiles 2 and 3. In addition, we can rule out an effect of between .8 and .5% in those quartiles, respectively. In Figures 14 and 15, I also show the results of conducting randomization inference within quartiles 2 and 3 to calculate an exact p-value under the sharp null of no treatment effect, which also allows me to avoid making assumptions on the distribution of errors (Imbens and Rubin, 2015). To implement randomization inference, I run 10,000 permutations of the treatment to the neighborhoods in the sample and estimate the coefficient. This generates a distribution of coefficients. In quartile 3, I find that the p-value is .09 and in quartile 2, I find that the p-value is .03.

# 7 Connecting the Voter and Politician Experiment

In summary, we cannot reject the null hypothesis that the opposition's campaign had no effect on the aggregate "No" vote share across the sampled distribution. However, we find that the treatment resulted in countervailing effects and polarization. Areas where there is a high concentration of moderate voters, but lean ideologically toward the opposition increased their "No" vote share and moderate areas where voters lean ideologically toward the incumbent reduced their "No" vote share. Therefore, the opposition party failed to change its vote share because it did not target voters accordingly. In Section 5.2, where we outlined the voter model, we noted that in order to target the information correctly, one would need individual level voter data. First, data would be needed to identify whether a voter is moderate or not and second, data on their level of certainty over each factor that affects their vote choice is also necessary. The next section allows a test of whether the opposition party had low quality voter data, more generally, before the referendum. Recall that only select individuals from the opposition party conducted the door-to-door campaign.

# 8 Politician Experiment

## 8.1 Interviews and Treatment Intervention

In mid-October 2016, three months after the attempted coup, 1,770 voters in 11 constituencies of Turkey were surveyed on their policy preferences for this study. I partnered with KONDA, a reputable data collection firm based in Istanbul and with a network of surveyors all over the country.[30] After responding to basic questions on demographics, respondents were asked to list the issues most important to them and were asked in an open format. Respondents were then asked on a 7-point Likert scale the degree to which they agreed or disagreed with various policies. Topics included the economy, religious freedom and practices, terrorism and national security, the state of emergency and arrests, the Kurdish issue, and gender equality.[31] To construct the questionnaire, I referenced a number of resources: KONDA's database with all voter survey questions it has asked since its inception; the 2011 Turkish Election Study (TES); issues most mentioned in Tweets by MPs, focus groups with voters, and the interviews with MPs.

After completing a report based on the voter survey, I engaged in structured interviews with over 40 MPs from all four political parties starting at the end of October 2016.[32] The purpose of the interviews was to learn the voter information that MPs already have access to and the source of their voter information. In each interview, the MPs were asked the share of voters in their constituency that Completely Disagreed, Disagreed, Agree, and Completely Disagreed to various questions that had been asked in the voter survey. They were then asked their own position on each issue. The average time of the interviews was 42 minutes, with the minimum being 20 minutes and the maximum was 90 minutes.

During these interviews, it became obvious that the incumbent party systematically and nearly monthly collects voter information at a geographically disaggregated level (province or district). In addition, they collect data after terrorist attacks and other major events.

[30] http://konda.com.tr

[31] During the interview, respondents were shown a colored Likert scale on a card where only the endpoints were labeled with "Completely disagree" and "Completely agree."

[32] In January 2016, I started building relationships with politicians from the incumbent party and opposition parties. These relationships started from cold calling politician's offices, their affiliates, and connected journalists. Once I could set up meetings with willing MPs within the parliament, I was able to knock on doors of other MPs' offices. It was more difficult to secure meetings with the incumbent party. Among the 40 MPs that I interviewed, 10 were from the incumbent party.

In some interviews, MPs from the incumbent party were emphatic that targeting voter preferences is a fundamental part of a democracy and reflects the values of their party. For example, they made statements like "Democracy hinges on voter preference." While not all MPs directly view the results of the survey conducted by incumbent party, they know that their party collects them and that instructions on how to approach their constituents are based on this information.

Interviews with the opposition party were a stark contrast to those with the incumbent. It was clearly established that MPs from the opposition party only access surveys that are nationally representative, despite not having any representation in 38 out of 81 provinces. These surveys solely provide predictions for upcoming elections. Many of the MPs were enthusiastic about the prospect of receiving the results to my voter survey and it became clear that the results would be novel information to them. It was even arranged for me to meet the party leader. It was unclear if the opposition did not have access to voter information because their leadership and other members of the party did not want to align their policies with the majority of voters for ideological reasons or because they faced a resource constraint.

To test whether the incumbency resource advantage translates into a voter information advantage, MPs were sent the voter report. When the MPs were sent the report by e-mail they were asked to respond to two questions at the end of the report. With the help of a couple of staff members in parliament, all of the treated MPs' doors were knocked on to notify them that a voter report had been sent. MPs are rarely in their offices, since the plenary sessions are in a separate building, but their three advisors are in the office every day. Staff members and MPs are not necessarily responsive by e-mail and so knocking on the doors increased the likelihood that the report would be seen. If someone did not open their door, they received a follow-up phone call. The two questions at the end of the report asked if the MP would want additional voter information and the type of information they wanted. Importantly, 25% of MPs from the opposition party and only 1% of the incumbent MPs responded to the e-mail.

All MPs who responded to the first e-mail were eventually contacted and asked if they wanted to do a research project with their own resources. It is this interaction that led to the voter campaign experiment. Given the interviews and response rate to the e-mail with the voter report, it was not expected for the incumbent to express any interest and only a

few party members from the opposition had an organized set of volunteers that could carry out a reasonable project. So, the opportunity to do a research project was non-partisan, but it became clear that only the opposition would take up the offer because they were not already investing in learning voter information.

## 8.2 Politician Experiment: Data

The report was sent in mid-January 2016. The timing of the report was purposely after the proposal to go to a referendum had passed within the parliament. At the time that the report was sent, the MPs did not know the exact date of the referendum, but it was expected to be within 2-4 months.

In developed countries, legislator voting behavior is observable to the public. In Turkey, many policy proposals are voted on secretly. In addition, the incumbent party has had a majority in Parliament since 2003. For this reason, the opposition rarely shows up to vote on policies. So, how do voters in countries like Turkey form preferences on their legislators? One possibility is that politicians inform their voters through the media. However, there is also high censorship in Turkey. Therefore, social media, like Twitter, provides an alternative platform for voters to form opinions of their politicians through social media. Even in the U.S., we have seen how Twitter is used to bypass traditional forms of communication with the public. In another example, a recent study provides evidence that joining Twitter increases contributions politicians receive from individual donors (Petrova et al. (2017)).

Twitter activity is high among politicians in Turkey. 95% of MPs in both the incumbent and opposition parties use Twitter. Over a ten month period in 2016, the average number of tweets per day among the opposition party is 3 and the median is .8. The average number of tweets per day for the incumbent was 2.4 and the median was .88 over the same period.

Figure 9 shows a measure of the most used words within each party. After scraping the tweets of all MPs, I dropped all words that were of length one and that were retweets.[33] I also dropped words that were in the top 3 percentile in terms of most used words. I then manually stemmed all words.[34] To construct Figure 9, I restricted the data to the most used

[33]Approximately 30% of tweets are retweets across both parties.

[34]I originally intended to use a package that conducts stemming in Turkish, but at the time of analysis, the stemmer under the Porter website performed poorly. However, a package in R called Resha came out

words within each party. For the sake of providing information on what MPs tweet about, I removed words without substantial meaning, like "today."

We see that the incumbent tweets substantially about terrorism; words like "casualty" are also strongly associated with terrorist activity. The incumbent's Twitter behavior is consistent with the fact that in the voter survey, incumbent voters report terrorism as the issue of highest concern to them. Figure 9 shows that the opposition party does not discuss the economy that much. While they do discuss terrorism, they are more likely to use words related to human rights and the media. This is in contrast to the fact that even the majority of opposition party supporters do not disagree with the arrests. In addition, opposition voters report the economy as the most important issue to them. Overall, the opposition party's Twitter behavior is less consistent with the results from the voter survey and provides descriptive evidence of the asymmetry of voter knowledge across the two parties.

## 8.3 Politician Experiment: Empirical Design

The first part of the voter report stated that MIT and UC Berkeley funded the survey, my affiliation, and that the survey had been implemented in partnership with KONDA. The sampling scheme was also outlined and the confidence intervals were provided for each result. The first result mentioned in the voter report was that the two issues most important to voters were reported as the economy and terrorism. The rest of the report then included voter preferences on policies regarding those two issues; for example, voters were asked whether they supported the government funded large infrastructure projects, welfare programs are insufficient, the arrests made during the ongoing state of emergency were necessary, etc. MPs in the treatment group received the voter report and the control group received nothing. Figure 16 provides an example of the content in the report.

Randomization was conducted at the MP level for the incumbent party. Across 9 constituencies, 48 MPs were randomly selected into the treatment group and 48 were randomly selected into the control group.

later. I compared the manual stemming procedure to this one and find that the results do not change.

Estimation for AKP follows the randomization design:

$$Y_{it}^{j} = \alpha + \beta T_{it} + \epsilon_{it} \tag{4}$$

Where $Y_{it}^{j}$ is the number of times MP $i$ said word $j$ per week $t$. $T$ indicates whether MP $i$ is in the treatment group.

A series of arrests among members of the opposition party started at the end of October and this led to a reduction in sample size.[35] Since I wanted to estimate the treatment effect separately for the incumbent and opposition parties, I had to switch to a difference-in-differences experimental design with the opposition party. For this reason, instead of randomly selecting MPs from the opposition party into treatment or control within the 9 constituencies, as I did for the incumbent, all opposition MPs in the 9 constituencies were treated. In the end, there are 70 MPs from the opposition party in the 9 Treatment constituencies and 61 MPs in the 38 control constituencies.

Estimation for the CHP follows a difference-in-difference design:

$$Y_{irt}^{j} = \delta_i + \gamma_t + \sum_{-6}^{-1} \beta_{-t} D_{rt} + \sum_{1}^{5} \beta_t D_{rt} + \epsilon_{irt} \tag{5}$$

where $D_{rt}$ is the interaction of the time dummies and the treatment; the lead coefficients ($\beta_{-t}$) are for the pre-intervention period and lag coefficients for post; $Y_{irt}^{j}$ is the number of times MP $i$ said word $j$ per week $t$ in constituency $r$; $\delta_i$ are MP fixed effects; $\gamma_t$ are week fixed effects; standard errors are clustered at the province level. The words of interest, $j$, include "Ekonomi" (economy) and "Teror" (terrorism) since these are the words most used by respondents when reporting the issues most important to them.

## 8.4 Politician Experiment: Results

I show the results for both parties in terms of figures and looking at the difference-in-difference between the treatment and control groups. However, in the figures, I include more leads than in the difference-in-differences specification in equation 2, which is shown in the

[35] Originally, MPs from both the HDP and the CHP were a part of the experiment as the opposition parties. Starting at the end of October, many MPs from the HDP were detained and so I could only conduct the experiment with the main opposition party, the CHP.

results provided in Table 17. In Figure 11, we see that there is no discernible effect of the treatment on the number of times an incumbent MP used the word "terrorism," but we do see an increasing among the opposition in Figure 10. The spikes in the figure relate to actual terrorist attacks during this period. The treatment has a large effect on the number of times that an MP uses the word "economy." Since there are a small number of treatment clusters for the difference-in-differences estimate, I conducted randomization inference to correct the standard errors. The results of this exercise can be found in Figure 17 Again, we do not see any effect among the incumbent MPs. The balance test and estimation results for the incumbent are shown in Tables 14, 15, and 16.

It is worth noting that neither party discusses the economy that much. This could be because they use other words to describe the economy, but we see that the opposition party was most responsive to the word "economy." This may reflect that they realized it is more important to voters than issues like civil liberties. Moreover, it is not surprising that the incumbent discusses the economy infrequently because economic conditions are doing poorly and they are unable to implement successful policy when national security is so low. In contrast, they can have a successful platform on increasing national security to lower terrorist activity. This sort of platform is consistent with their desire to hold the referendum right after the attempted coup and argue that weakening constraints on the executive would increase stability. The voter survey also indicates that the majority of their core voters stated terrorism as their primary issue of concern. However, a fuller analysis of party tweets would be needed to make this argument rigorously.

# 9 A Discussion: Incumbent Resource Advantage in Voter Information Acquisition

Results from the politician experiment show that the opposition responds to basic information on voters, suggesting that, on average, they did not have high quality voter data to change any of the votes in the referendum. Hypothetically, they should only have responded to the information if it was better than what they had.[36] In contrast, we cannot reject that the incumbent responds to the same basic information on voters. Moreover, in the

[36]It should also be noted that they did not cite this study in their tweets. Instead, the tweets made in response to the voter report specifically increased discussion on the economy and terrorism.

interviews, it was clear that the incumbent invests heavily in collecting voter data.

In this section, I summarize an explanation as to why the opposition does not have high quality voter data and why there is an asymmetry between the parties. First, the voter model, which is supported by the empirical evidence, clarifies that expensive voter data is necessary in order to target information. Moreover, the entire experiment that was conducted resulted in a monetary loss for the party because they could not increase the aggregate "No" vote share in the sampled areas. This implies that there is an upfront fixed cost required for a targeted door-to-door campaigning before one can expect to increase vote share. Without investing to learn through experimentation, the party would not know how to increase its vote share. In contrast, "blanket" door-to-door campaigning requires less information about voters, but any marginal investment will not increase vote share, as seen in the door-to-door campaign. The fact that only the opposition responds to basic voter information suggests that one reason they have been unable to learn how to effectively contest for votes is that they are resource constrained.

In the case of Turkey, an incumbent resource advantage was institutionalized by the current incumbent party in 2003 after a period of instability in which it swept into power. The article that was reconstituted by the incumbent stipulates that state funding is proportional to vote share. At the time, the incumbent had a large majority in the Parliament and could implement this policy without dissent. Therefore, since its first term in office starting 14 years ago, the incumbent has had double the state funding relative to the second largest party. In this case, they simply are able to use state financing to collect sophisticated voter information. In contrast, the opposition would have to supplement its state funding from private sources in order to be as competitive as the incumbent in contesting for non-ideological votes. In section A.5 of the Appendix, I describe this argument more formally and extend the argument under the consideration that the opposition could access private capital. I refer to theories of rational predation to explain a persistent competitive advantage even if private sources of capital were available (Bolton and Scharfstein, 1990).

# 10 Conclusion

This study analyzes the impact of a randomized voter information campaign on vote choice to institutionalize increased authoritarianism in a referendum in Turkey. The campaign, which was implemented by the opposition party, provided voters with partisan information on economic conditions and terrorist activity under the incumbent. I find that the opposition party's efforts to reduce voter support for more authoritarianism instead polarized voters and they failed to change aggregate vote share. This is the first experimental evidence of ideological polarization in response to a common signal outside of a lab. Moreover, I provide suggestive evidence that the ruling party had higher quality voter information and data. Such data can be used to target voters that will interpret information in the incumbent's favor and choose increased authoritarianism as their preferred policy. This advantage is one factor that potentially contributed to weakened constraints on the executive becoming the majority policy choice among voters. This is a particularly salient outcome given the evidence that institutions are causal factors of economic development (Robinson et al., 2005).

The limited literature on targeting and data intensive campaigning is at odds with the proliferation of data analytical firms providing consulting services for major elections. In Obama's campaign in 2012, "big data" was used to contest for votes (Issenberg, 2012). More recently, attention has been given to the role of Cambridge Analytica in providing the strategic framework for Trump's campaign. In fact, it was recently reported that Cambridge Analytica was involved in efforts to re-elect President Uhuru Kenyatta in Kenya. More generally, to understand how a voter information advantage interacts with the context of lesser developed countries, consider the following quote from a former Cambridge Analytica employee: *"SCL Elections went on to be bought by Robert Mercer, a secretive hedge fund billionaire, renamed Cambridge Analytica. That was before we became this dark, dystopian data company that gave the world Trump... We were just doing it to win elections in the kind of developing countries that don't have many rules."* (Cadwalladr, 2017).

Future research will address in more detail why the opposition is unable to secure private capital to effectively contest for votes, as discussed in Section 9. After all, we have seen resources pooled from outside countries and among influential individuals that have affected electoral outcomes. Second, this study opens the question to understanding why some voters chose to weaken constraints on the executive after receiving campaign information on poor

conditions. Without the information, these voters would have voted "No." Are these voters driven by a desire for increased stability from one-man rule when threats to national security are salient, like the attempted coup?[37] Finally, future research will determine under what circumstances voters do or do not have different interpretations of the same information that affects their policy choice.

[37]In the political science literature, this type of voter has been described as "authoritarian." (Stenner, 2005)

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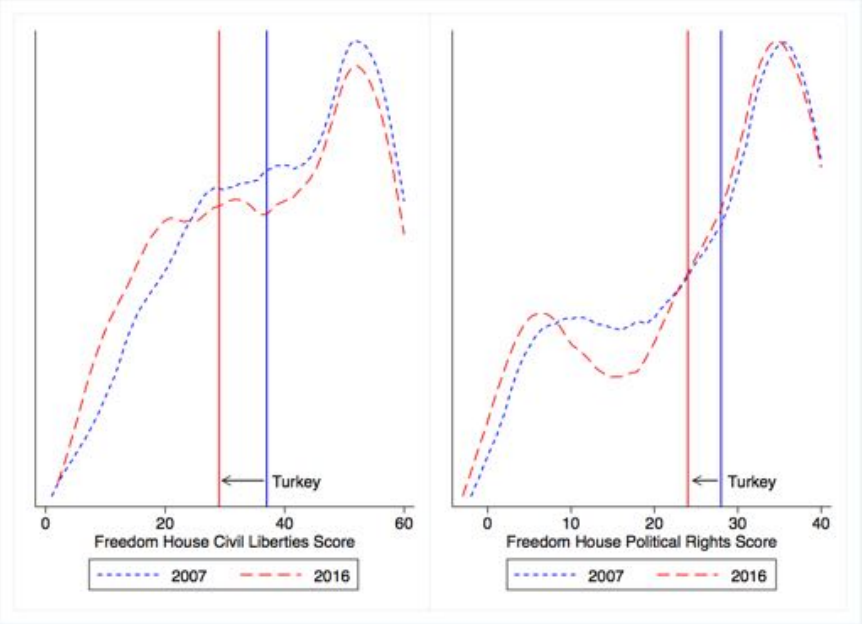
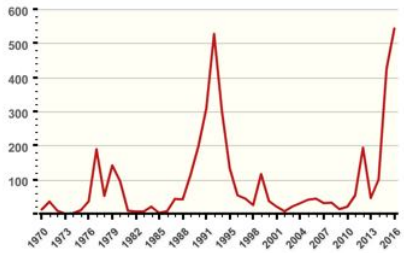
# Figures

Figure 1: **Density of Aggregate Scores for Civil Liberties and Political Rights Across Countries**




Freedom House aggregate scores across countries for civil liberties (0-60) and political rights (0-40) between 2007 and 2016. 193 countries are included in 2007 and 198 in 2016

Figure 2: **Terrorist Attacks in Turkey**




This figures shows the number of terrorist attacks in Turkey from 1970-2016. This figure was generated through via the Global Terrorism Database which, includes systematic data on domestic as well as international terrorist incidents. It shows that terrorist attacks in Turkey were already on the rise before the attempted coup in July 2016.

Figure 3: Timeline and Flow Chart of Study

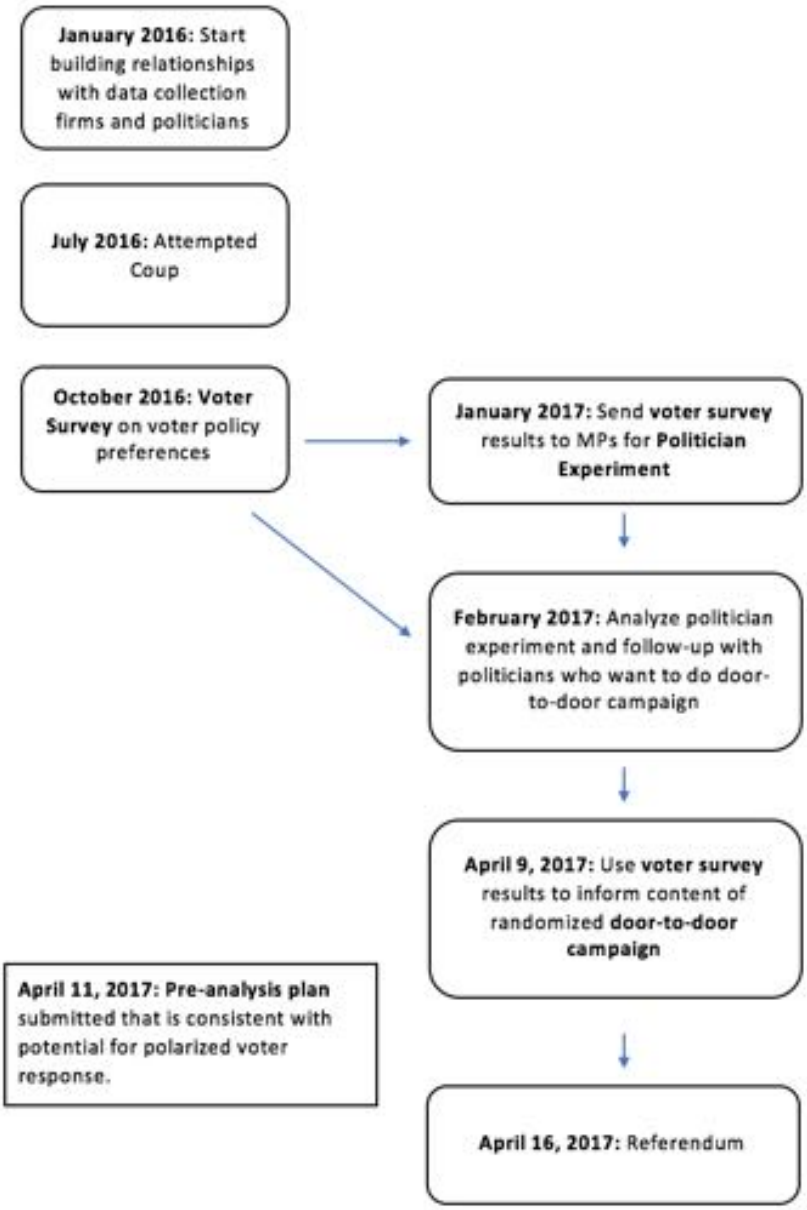


Figure 4: Does the drop in the value of Turkish Lira have any impact on your personal life?

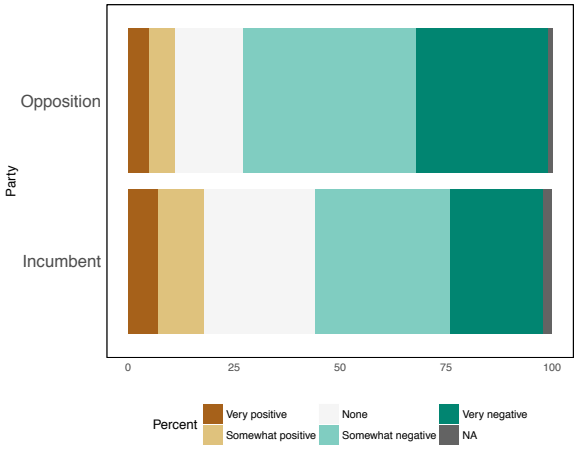
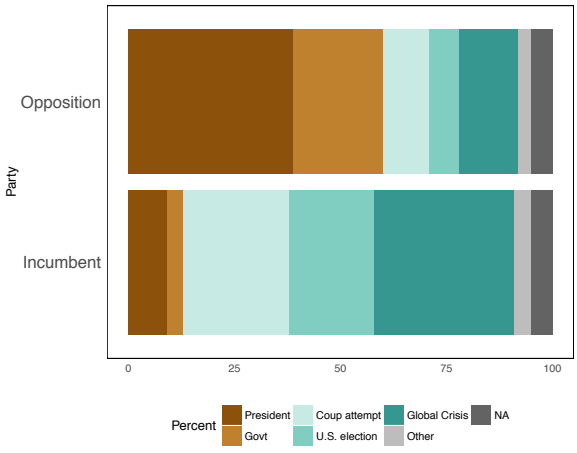



Figure 5: Who is most responsible for the latest devaluation of Turkish Lira?

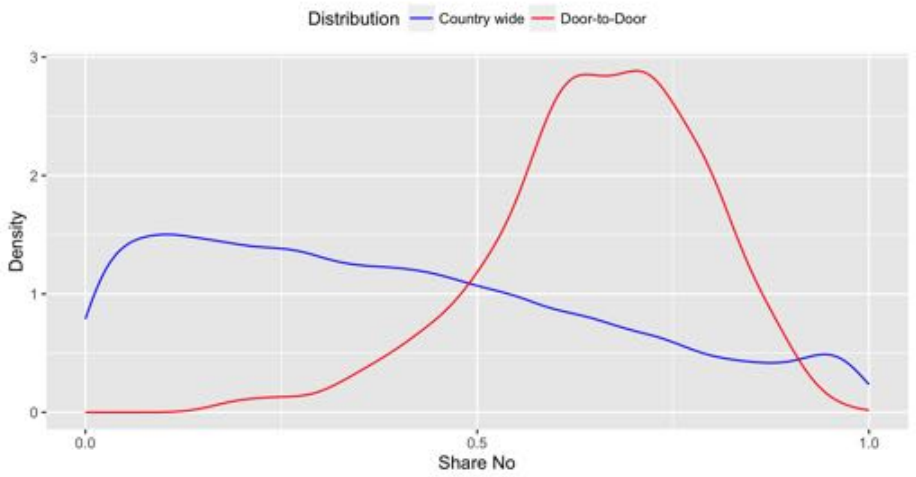



These figures are from a survey conducted by a U.S. based firm in Turkey with a sample of approximately 1,215 voters. [38] The survey is nationally representative. The survey was conducted in January of 2017 after the record low drop in the value of the local currency and before the referendum.

Figure 6: Pamphlet on Economy and Terrorism


- The pamphlet outlines the following:
  - Since 2014, there has been poor leadership
  - Under which 1 million citizens have lost their job
  - The per capita income has dropped by $1,000 in the past one year
  - The economy has contracted and inflation has increased
  - Turkey is losing under one leader
  - Since 2014, unprecedented level of terrorist activity
  - Terrorist organizations are more easily able to conduct attacks
  - Security is weak
  - More power should not be given if terrorism could not be reduced
  - The headlines state: "#NO Turkey will win," "NO to poor economic policy," "NO to terrorism."

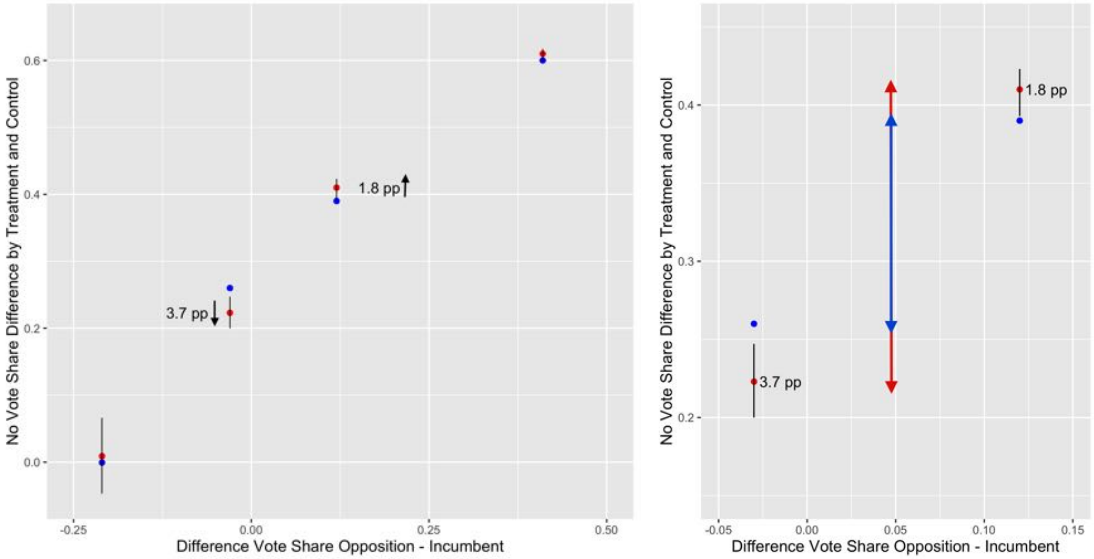
Figure 7: Density of "No" Vote Share Across Country and Sample




This table shows the density of "No" vote share across Turkey and across the sample for the voter experiment.

Figure 8: Treatment Effect by Quartile

T No-Yes Treatment C No-Yes Control




The y-axis shows the difference between the "No" and "Yes" vote share in the referendum. The x-axis shows the vote share differential between the incumbent and the opposition parties from the last general election in 2015. I stratified treatment on quartiles of this distribution. Polarization occurs in quartiles two and three, where the vote share differential is small. All pre-specified controls were included in each estimation; including, past voting and turnout data. The estimates can also be found in Table 9

Figure 9: Stems

| AKP | | | CHP | | |
|---|---|---|---|---|---|
| Stem | Stem Share | Bigram | Stem | Stem Share | Bigram |
| president | 3,99% | president honorable | president | 3,52% | president republic |
| casualty | 3,07% | casualty done | republic | 2,48% | republic democracy |
| terrorism | 2,90% | terrorism organization | kilicdaroglu | 2,37% | kilicdaroglu talking |
| republic | 2,79% | republic erdogan | person | 2,12% | human rights |
| god | 2,64% | god mercy | nation | 2,08% | country govern |
| mercy | 2,48% | mercy injure | constitution | 1,84% | constitution change |
| prime | 2,37% | prime minister yildirim | terrorism | 1,76% | terror attack |
| citizen | 2,18% | citizen between | news | 1,75% | #newspaperspokes |
| nation | 2,06% | nation people | coup | 1,62% | coup entry |
| district | 1,90% | district head | democracy | 1,60% | democracy secularism |
| july | 1,69% | july coup | feto | 1,45% | feto effort |
| attack | 1,67% | attack casualty | casualty | 1,45% | casualty one |
| feto | 1,57% | feto coup | tbmm | 1,33% | tbmm board |
| coup | 1,48% | coup entry | attack | 1,30% | attack casualty |
| unity | 1,41% | unity together | parliament | 1,26% | parliament president |
| person | 1,37% | person thanks | children | 1,25% | children come |
| minister | 1,36% | minister honorable | district | 1,14% | district organization |
| parliament | 1,35% | parliament meet | citizen | 1,09% | citizen holiday |
| work | 1,28% | work about | state | 1,08% | state govern |
| family | 1,28% | family responsible | student | 1,08% | student student |
| pkk | 1,23% | pkk terror | ataturk | 1,05% | ataturk his |
| turk | 1,23% | turk people | organization | 1,05% | organization unity |
| visit | 1,21% | visit found | visit | 1,02% | visit did |
| tbmm | 1,12% | tbmm general | unity | 0,99% | unity together |
| national | 1,11% | national space/recipient | mercy | 0,99% | mercy injured |
| democracy | 1,09% | democracy casualty | struggle | 0,99% | struggle continue |
| veteran | 1,08% | veteran is | law | 0,94% | law state |
| constitution | 1,03% | constitution change | god | 0,92% | god mercy |
| organization | 1,02% | organization effort | media | 0,90% | media follow |
| healing | 1,01% | healing wish | director | 0,89% | director board |
| state | 1,01% | state people | freedom | 0,84% | freedom democracy |
| injured | 0,99% | injured urgent | arrest | 0,80% | arrest journalist |
| erdogan | 0,94% | #reppresterdogan terror | minister | 0,80% | minister board |
| struggle | 0,94% | struggle doer | rights | 0,80% | rights day |
| province | 0,91% | province head | blame | 0,79% | blame not |
| traitor | 0,90% | traitor attack | power | 0,79% | power party |
| yildirim | 0,84% | binali yildirim | education | 0,76% | education student |
| municipality | 0,81% | municipality head | work | 0,76% | work continue |
| teacher | 0,81% | teacher day | municipality | 0,76% | municipality head |
| chp | 0,80% | chp general | turk | 0,74% | turk people |
| board | 0,77% | board member | young | 0,74% | young arm |
| urgent | 0,77% | urgent healing | woman | 0,74% | woman arm |
| holiday | 0,76% | holiday celebrate | peace | 0,71% | peace sibling |
| head | 0,72% | head condolence | government | 0,69% | government terror |
| opening | 0,71% | opening ceremony | soldier | 0,66% | soldier god |
| program | 0,70% | program join | learn | 0,66% | learn student |
| director | 0,69% | director board | verdict | 0,66% | verdict tie |
| woman | 0,69% | women arm | holiday | 0,63% | holiday cellebrate |
| young | 0,69% | young arm | province | 0,58% | province head |
| service | 0,62% | service do | live | 0,58% | live broadcast |
| soldier | 0,60% | soldier god | economy | 0,57% | economy crisis |
| committee | 0,58% | commission meet | foreign | 0,57% | foreign politics |

Stem share ranks the most used words by party after the coup and before the experiment with voters. Bigram shows the most used subsequent word for each most used word. To construct this table, I restricted the data to the most used words within each party. For the sake of providing information on what MPs tweet about, I removed words without substantial meaning, like "today."

Figure 10: Terrorism tweets by Opposition

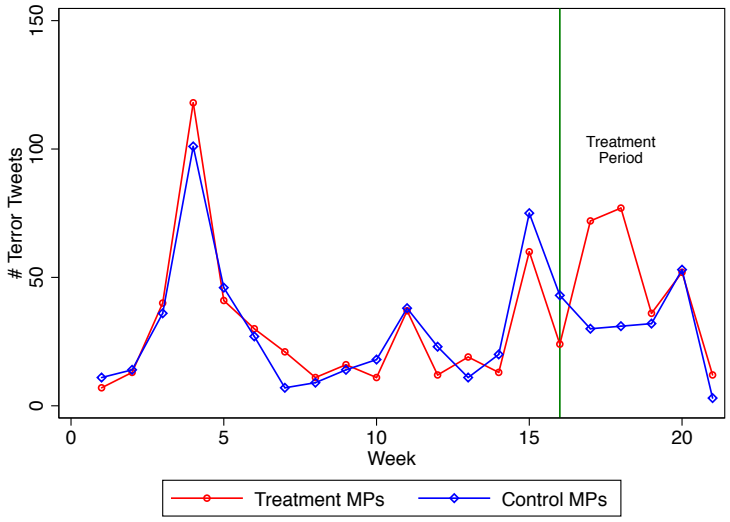
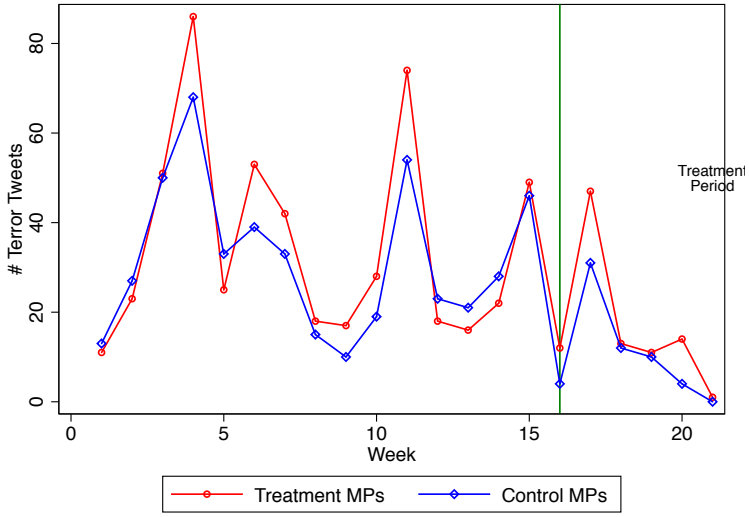



Figure 11: Terrorism tweets by Incumbent




The outcome variable includes the total number of times that an MP from the incumbent tweeted the word Economy and Terrorism in a given word in a week. The green line marks when the voter information report was sent. The x-axis includes each week.

Figure 12: Economy tweets by Opposition

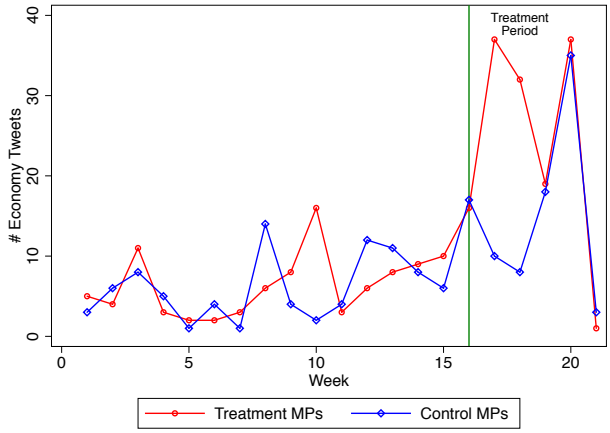
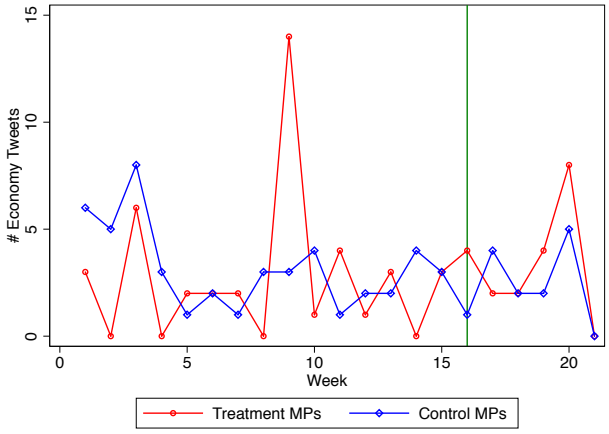



Figure 13: Economy tweets by Incumbent




The outcome variable includes the total number of times that an MP from the opposition tweeted the word Economy and Terrorism in a given word in a week. The green line marks when the voter information report was sent. The x-axis includes each week.

# Tables

Table 1: Individual Level Data Extreme Voter

| Quartile | Decile | Share Extreme | Vote Share Diff |
|---|---|---|---|
| Q1 | 2 | 0.64 | -0.33 |
| Q1 | 3 | 0.75 | -0.15 |
| Q2 | 4 | 0.55 | 0.07 |
| Q3 | 5 | 0.59 | 0.17 |
| Q4 | 6 | 0.76 | 0.24 |
| Q4 | 7 | 0.68 | 0.32 |
| Q4 | 8 | 0.67 | 0.43 |

This table uses the individual level data from the survey I conducted with more than 1,770 voters. This data include voter policy preferences. I use the vector of policy preferences to predict whether someone self-reports that they support the incumbent or opposition. I then calculate the distributions of these predicted values and label the top and bottom 25th percentiles of the distribution as "extreme." Within each neighborhood, I calculate the proportion of extreme voters. I then match the data with the administrative neighborhood level vote share data. Decile corresponds to the distribution of the vote share differential between the incumbent and the opposition. Quartile corresponds to the distribution of vote share from the sample in the voter experiment. First, I find that the proportion of extreme voters in a neighborhoods is higher where the differential vote share between the two parties is higher. Moderate voters are concentrated where the vote share differential is low. Table 1 shows the average proportion of extreme voters across the distribution. We see that the lowest mean shares are .55 and .59. Within each of the 7 deciles, which overlap with the distribution of vote share differentials for the experiment, I count the total number of neighborhoods that have a proportion of extreme voters that is less than .55. The fourth and fifth deciles, where the vote share differential between the incumbent and opposition is .07 and .17 respectively, are where I am most likely to observe polarization.

Table 2: Past Vote Share by Party

| Quartiles | No | Vote Share Diff |
|---|---|---|
| 1 | 0.50 | -0.21 |
| 2 | 0.63 | -0.03 |
| 3 | 0.69 | 0.12 |
| 4 | 0.80 | 0.41 |
| N | 450 | 450 |

The second column includes the average "No" vote share across neighborhoods within each quartile. The third column shows the average vote share differential between the incumbent and opposition party by quartile. The first quartile is where the incumbent is strongest. The sample here only includes the control group.

Table 3: Neighborhood Average of People Reached per Street

| Quartile | Mean Reach | SD Reach |
|---|---|---|
| 1 | 0.12 | 0.04 |
| 2 | 0.18 | 0.13 |
| 3 | 0.15 | 0.13 |
| 4 | 0.17 | 0.23 |
| N | 48 | 48 |

Mean reach is the average number of registered voters who opened their door to the canvassers. SD is the standard deviation. Statistics are shown for each quartile separately.

Table 4: Neighborhood Ave of People Reached per Street, Excluding Dropped Neighborhoods

| **Quartile** | **Mean Reach** | **SD Reach** |
|---|---|---|
| 1 | 0.11 | 0.05 |
| 2 | 0.15 | 0.14 |
| 3 | 0.12 | 0.13 |
| 4 | 0.15 | 0.22 |
| N | 38 | 38 |

Mean reach is the average number of registered voters who opened their door to the canvassers. SD is the standard deviation. Statistics are shown for each quartile separately. Neighborhoods that the party volunteers could not reach because of the threat of arrest have been dropped.

Table 5: Balance Across Quartiles

| | Aggregate | |
|---|---|---|
| | Control Mean | Coefficient |
| Num Reg Voters 2015 Nov | 2719.938 | 7.871 |
| Num Valid Casts 2015 | 2364.375 | 15.583 |
| Num Opp Votes 2015 June | 1102.021 | 85.431 |
| Num Opp Votes 2015 Nov | 1148.521 | 80.692 |
| Opp Neigh Share 2015 June | 0.442 | 0.007 |
| Opp Neigh Share 2015 Nov | 0.445 | 0.004 |
| Turnout 2015 Nov | 0.873 | 0.007 |

Balance test across the treatment and control groups across all pre-specified variables. Balance is tested across the whole sample and within each quartile. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 6: Balance Q1 and Q2

| | Q1 | | Q2 | |
|---|---|---|---|---|
| | Control Mean | Coefficient | Control Mean | Coefficient |
| Num Reg Voters 2015 Nov | 2065.333 | -450.791 | 2155.250 | -553.723 |
| Num Valid Casts 2015 | 1761.000 | -399.796 | 1855.333 | -493.256 |
| Num Opp Votes 2015 June | 448.667 | -46.581 | 710.417 | -179.182 |
| Num Opp Votes 2015 Nov | 454.333 | -56.490 | 725.583 | -201.685 |
| Opp Neigh Share 2015 June | 0.252 | 0.019 | 0.400 | 0.010 |
| Opp Neigh Share 2015 Nov | 0.247 | 0.018 | 0.397 | 0.003 |
| Turnout 2015 Nov | 0.852 | -0.010 | 0.877 | 0.011 |

Balance test across the treatment and control groups across all pre-specified variables. Balance is tested across the whole sample and within each quartile. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 7: Balance Q3 and Q4

| | Q3 | | Q4 | |
|---|---|---|---|---|
| | Control Mean | Coefficient | Control Mean | Coefficient |
| Num Reg Voters 2015 Nov | 3275.667 | 448.684 | 2155.250 | 587.330 |
| Num Valid Casts 2015 | 2872.833 | 410.621 | 1855.333 | 544.780 |
| Num Opp Votes 2015 June | 1358.167 | 174.768 | 710.417 | 392.753 |
| Num Opp Votes 2015 Nov | 1411.167 | 165.264 | 725.583 | 415.723 |
| Opp Neigh Share 2015 June | 0.493 | 0.000 | 0.400 | 0.000 |
| Opp Neigh Share 2015 Nov | 0.495 | -0.005 | 0.397 | 0.001 |
| Turnout 2015 Nov | 0.891 | 0.020* | 0.877 | 0.006 |

Balance test across the treatment and control groups across all pre-specified variables. Balance is tests across the whole sample and within each quartile. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 8: Door-to-Door Results: All Quartiles No Share and Turnout (Weighted)

| | (1) Share No | (2) Share No Controls | (3) Turnout | (4) Turnout Controls |
|---|---|---|---|---|
| Treatment | -0.000 | 0.004 | 0.004 | 0.001 |
| | (0.012) | (0.009) | (0.004) | (0.001) |
| Mean of Outcome | 0.654 | 0.654 | 0.866 | 0.866 |
| N Reg Voters | 133389 | 133389 | 133389 | 133389 |
| N Neighborhoods | 498 | 498 | 498 | 498 |
| R squared | .743 | .868 | .139 | .831 |

The dependent variable in columns 1 and 2 is the share that voted "No" at the neighborhood level. The dependent variable in columns 3 and 4 is the turnout rate. Quartile fixed effects are included. The regression is weighted by the number of registered voters. Columns 2 and 4 include all pre-specified controls; including, past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 9: No Vote Share by Quartile (Weighted)

| | (1) No Share Q1 | (2) No Share Q2 | (3) No Share Q3 | (4) No Share Q4 |
|---|---|---|---|---|
| Treatment | 0.010 | -0.037*** | 0.018** | 0.003 |
| | (0.029) | (0.012) | (0.008) | (0.004) |
| Mean of Outcome | 0.496 | 0.628 | 0.694 | 0.798 |
| Weights | Yes | Yes | Yes | Yes |
| N Reg Voters | 319166 | 341565 | 369172 | 357413 |
| N Neighborhoods | 125 | 124 | 125 | 124 |
| R squared | .352 | .626 | .691 | .834 |

The dependent variable is the share that voted "No" at the neighborhood level. Each column shows the estimation result for each quartile of the past vote share distribution. Regressions are weighted by the number of registered voters. All pre-specified controls are included in the regression; including, past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 10: Turnout Share by Quartile (Weighted)

| | (1) Turnout Q1 | (2) Turnout Q2 | (3) Turnout Q3 | (4) Turnout Q4 |
|---|---|---|---|---|
| Treatment | 0.004** | 0.003 | -0.000 | -0.001 |
| | (0.002) | (0.002) | (0.003) | (0.003) |
| Mean of Outcome | 0.860 | 0.865 | 0.878 | 0.876 |
| Weights | Yes | Yes | Yes | Yes |
| N Reg Voters | 319166 | 341565 | 369172 | 357413 |
| N Neighborhoods | 125 | 124 | 125 | 124 |
| R squared | .768 | .82 | .824 | .868 |

The dependent variable is the turnout rate at the neighborhood level. Each column shows the estimation result for each quartile of the past vote share distribution. Regressions are weighted by the number of registered voters. All pre-specified controls are included in the regression; including past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

# A Appendix

## A.1 Voter Experiment

Table 11: Door-to-Door Results: All Quartiles No Share and Turnout (Unweighted)

| | (1) Share No | (2) Share No Controls | (3) Turnout | (4) Turnout Controls |
|---|---|---|---|---|
| Treatment | 0.011 | 0.014 | 0.008 | 0.002 |
| | (0.011) | (0.010) | (0.005) | (0.002) |
| Controls | No | Yes | No | Yes |
| Mean of Outcome | 0.654 | 0.654 | 0.654 | 0.654 |
| N Reg Voters | 133389 | 133389 | 133389 | 133389 |
| N Neighborhoods | 498 | 498 | 498 | 498 |
| R squared | .642 | .776 | .0371 | .751 |

The dependent variable in columns 1 and 2 is the share that voted "No" at the neighborhood level. The dependent variable in columns 3 and 4 is the turnout rate. Quartile fixed effects are included. Columns 2 and 4 include all pre-specified controls; including, past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 12: No Vote Share by Quartile (Unweighted)

| | (1) No Share Q1 | (2) No Share Q2 | (3) No Share Q3 | (4) No Share Q4 |
|---|---|---|---|---|
| Treatment | 0.042 | -0.035*** | 0.024* | 0.007 |
| | (0.029) | (0.012) | (0.012) | (0.009) |
| Mean of Outcome | 0.496 | 0.628 | 0.694 | 0.798 |
| N Reg Voters | 319166 | 341565 | 369172 | 357413 |
| N Neighborhoods | 125 | 124 | 125 | 124 |
| R squared | .396 | .427 | .519 | .672 |

The dependent variable is the share that voted "No" at the neighborhood level. Each column shows the estimation result for each quartile of the past vote share distribution. All pre-specified controls are included in the regression; including, past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 13: Turnout Share by Quartile (Unweighted)

| | (1) Turnout Q1 | (2) Turnout Q2 | (3) Turnout Q3 | (4) Turnout Q4 |
|---|---|---|---|---|
| Treatment | 0.002 | 0.012** | -0.004 | -0.001 |
| | (0.004) | (0.005) | (0.004) | (0.003) |
| Mean of Outcome | 0.860 | 0.865 | 0.878 | 0.876 |
| N Reg Voters | 319166 | 341565 | 369172 | 357413 |
| N Neighborhoods | 125 | 124 | 125 | 124 |
| R squared | .704 | .795 | .709 | .786 |

The dependent variable is the turnout rate at the neighborhood level. Each column shows the estimation result for each quartile of the past vote share distribution. All pre-specified controls are included in the regression; including past voting and turnout data. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Figure 14: Randomization Inference Quartile 2 for Voter Experiment

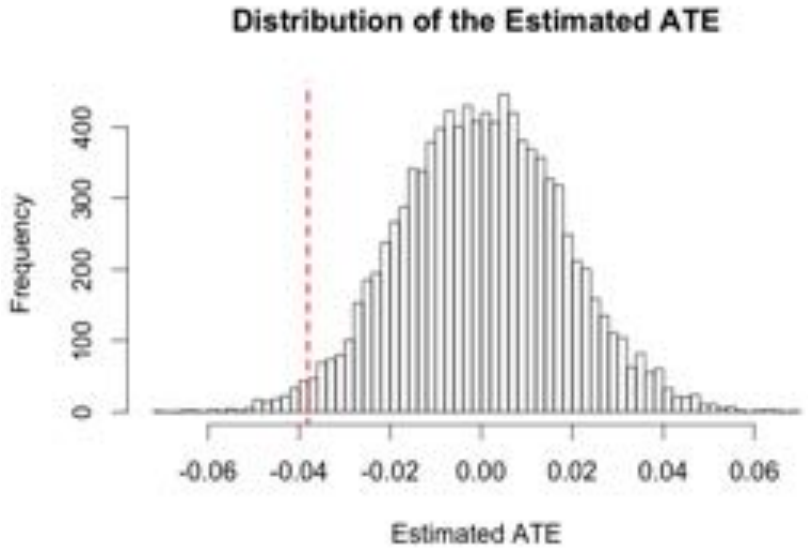
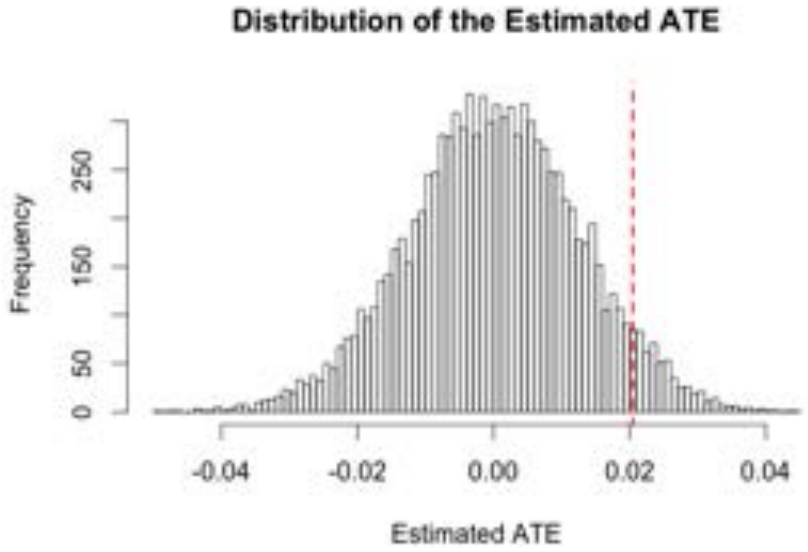


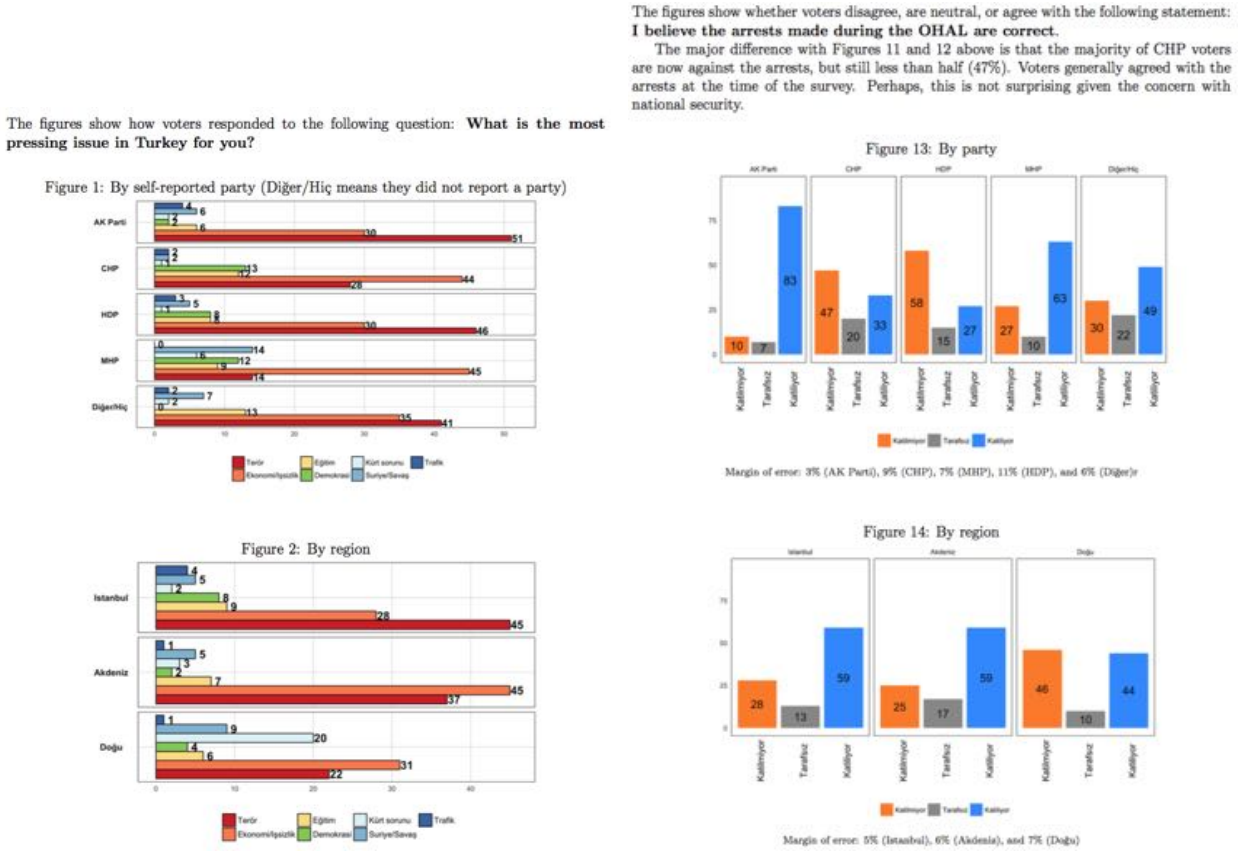

Figure 15: Randomization Inference Quartile 3 for Voter Experiment




Here I conduct randomization inference within quartiles 2 and 3 to calculate an exact p-value under the sharp null of no treatment effect. To implement randomization inference, I ran 10,000 permutations of the treatment to the neighborhoods in the sample and estimate the coefficient. This generates a distribution of coefficients. In quartile 3, I find that the p-value is .09 and in quartile 2, I find that the p-value is .03.

## A.2 Politician Twitter Experiment

Figure 16: **Sample from Report Sent to MPs**



The figures show how voters responded to the following question: **What is the most pressing issue in Turkey for you?**

Figure 1: By self-reported party (Diğer/Hiç means they did not report a party)

Figure 2: By region

The figures show whether voters disagree, are neutral, or agree with the following statement: **I believe the arrests made during the OHAL are correct.**

The major difference with Figures 11 and 12 above is that the majority of CHP voters are now against the arrests, but still less than half (47%). Voters generally agreed with the arrests at the time of the survey. Perhaps, this is not surprising given the concern with national security.

Figure 13: By party

Margin of error: 3% (AK Parti), 9% (CHP), 7% (MHP), 11% (HDP), and 6% (Diğer)r

Figure 14: By region

Margin of error: 5% (Istanbul), 6% (Akdeniz), and 7% (Doğu)

This figure shows two sample pages from the voter report that was sent to the politicians. All results were shown by self-reported party and by region. The panel on the left shows the first figures that were provided on the issues that voters self-reported as most important to them. The figures on the right-hand side provide information on an issue that relates to terrorism. The attempted coup was widely regarded as a terrorist attack. The figures provide information on how voter responded to the statement: "I agree with the arrests made during the state of emergency." The reports were sent in Turkish.

## A.3 Politician Twitter Experiment: Twitter Analysis

Table 14: Balance for RCT with Incumbent

| | (1) |
|---|---|
| | treat |
| Economy | -0.022 |
| | (0.060) |
| Unemployment | -0.534 |
| | (0.316) |
| Terror | 0.004 |
| | (0.015) |
| Casualty | 0.002 |
| | (0.012) |
| Democracy | -0.035 |
| | (0.036) |
| Arrest | 0.537 |
| | (0.589) |
| N | 86 |
| $R^2$ | .069 |
| p-value | .77 |

Standard errors in parentheses
$^{*}$ $p < 0.05$, $^{**}$ $p < 0.01$, $^{***}$ $p < 0.001$

Covariate balance across treatment and control. A treatment indicator is regressed on the total number of each pre-treatment Tweets individuals had. In expectation, from random assignment, the covariates should be independent of treatment assignment. As a summary statistics, we also report the p-value from the F-statistic of this multivariate regression. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 15: Treatment Effect for RCT with Incumbent

| | (1) Economy | (2) Unemployment | (3) Terror | (4) Casualty | (5) Democracy | (6) Arrest |
|---|---|---|---|---|---|---|
| Treatment | -0.042 | -0.023 | -0.541 | -0.346 | -0.359 | -0.021 |
| | (0.151) | (0.023) | (0.517) | (0.791) | (0.371) | (0.024) |
| Outcome of Mean | 0.34 | 0.01 | 1.66 | 3.15 | 0.70 | 0.01 |
| N | 86 | 86 | 86 | 86 | 86 | 86 |
| $R^2$ | .044 | .084 | .1 | .067 | .043 | .026 |

Standard errors in parentheses

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

The outcome variable includes the total number of times that an MP tweeted a given word in a week. The main outcomes are the number of times the MP tweeted the Economy and Terrorism. Other possible outcomes are included as a placebo check. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Table 16: Treatment Effect with Covariates for RCT with Incumbent

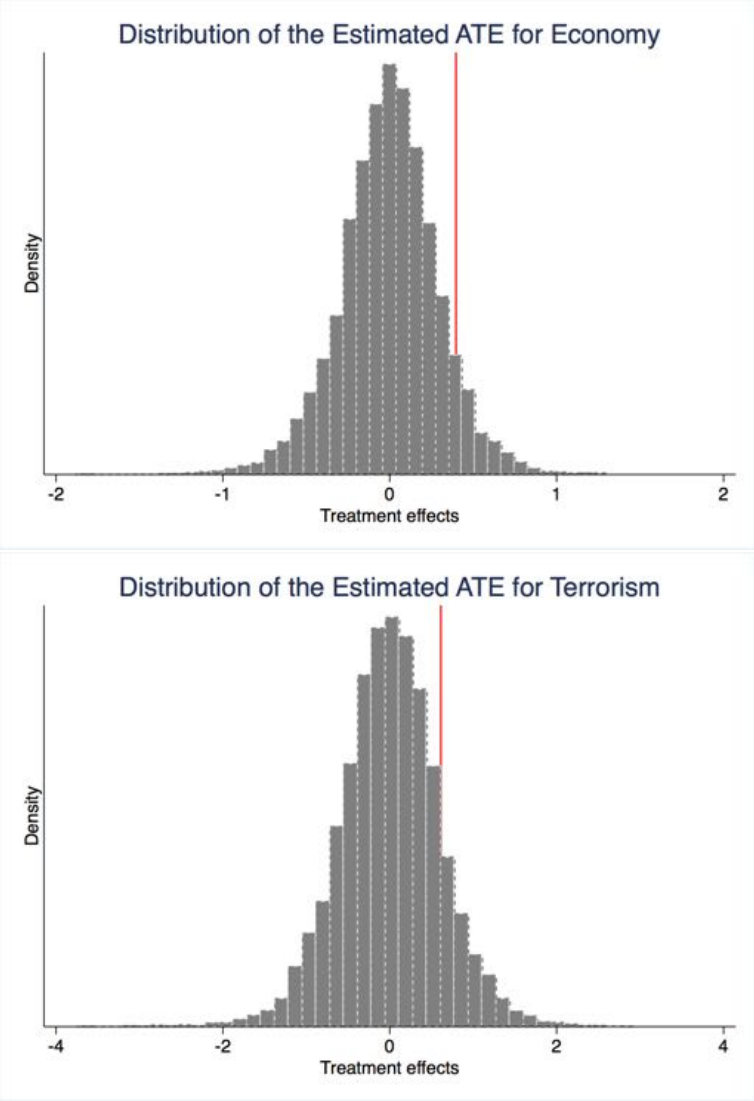
| | (1) Economy | (2) Unemployment | (3) Terror | (4) Casualty | (5) Democracy | (6) Arrest |
|---|---|---|---|---|---|---|
| Treatment | -0.008 | -0.026 | -0.493 | -0.422 | -0.236 | -0.021 |
| | (0.142) | (0.023) | (0.430) | (0.581) | (0.346) | (0.024) |
| Baseline | Yes | Yes | Yes | Yes | Yes | Yes |
| Mean of Outcome | 0.34 | 0.01 | 1.66 | 3.15 | 0.70 | 0.01 |
| N | 86 | 86 | 86 | 86 | 86 | 86 |
| $R^2$ | .17 | .089 | .38 | .5 | .19 | .026 |

Standard errors in parentheses

$^{*}$ $p < 0.10$, $^{**}$ $p < 0.05$, $^{***}$ $p < 0.01$

The outcome variable includes the total number of times that an MP tweeted a given word in a week. The main outcomes are the number of times the MP tweeted the Economy and Terrorism. Other possible outcomes are included as a placebo check. Covariates includes baseline tweets. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

Figure 17: Randomization Inference for DiD with Opposition




Here I conduct randomization inference for the difference-in-differences estimate for the total number of times the incumbent used the word economy. To implement randomization inference, I ran 10,000 permutations of the treatment to the MPs in the sample and estimate the coefficient. This generates a distribution of coefficients. I find that the p-value is .08 for the effect on the word economy and .14 for the effect on the word terrorism.

Table 17: Treatment Effect for DiD with Opposition

| | (1) **Economy** | (2) Unemployment | (3) **Terror** | (4) Casualty | (5) Democracy | (6) Arrest |
|---|---|---|---|---|---|---|
| **Lag 5** | -0.096 | -0.048 | 0.039 | -0.044 | -0.127 | -0.115 |
| | (0.138) | (0.054) | (0.134) | (0.244) | (0.196) | (0.198) |
| **Lag 4** | -0.145 | -0.031 | -0.251 | 0.121 | -0.110 | -0.027 |
| | (0.238) | (0.072) | (0.207) | (0.354) | (0.224) | (0.147) |
| **Lag 3** | -0.118 | -0.033 | -0.119 | 0.349 | -0.335** | 0.085 |
| | (0.172) | (0.049) | (0.201) | (0.251) | (0.157) | (0.191) |
| **Lag 2** | 0.285** | -0.021 | 0.545 | -0.100 | -0.156 | -0.040 |
| | (0.115) | (0.049) | (0.372) | (0.216) | (0.196) | (0.131) |
| **Lag 1** | 0.317 | -0.188 | 0.483** | 0.314 | 0.266 | -0.015 |
| | (0.229) | (0.193) | (0.224) | (0.203) | (0.396) | (0.210) |
| Lead 1 | -0.005 | 0.017 | -0.454 | -0.103 | 0.153 | 0.089 |
| | (0.104) | (0.018) | (0.606) | (0.254) | (0.131) | (0.144) |
| Lead 2 | -0.055 | -0.033 | -0.188 | -0.308 | -0.061 | 0.183* |
| | (0.059) | (0.021) | (0.186) | (0.260) | (0.212) | (0.099) |
| Lead 3 | -0.114 | 0.068 | 0.108 | -0.149 | -0.088 | -0.017 |
| | (0.138) | (0.121) | (0.125) | (0.225) | (0.219) | (0.169) |
| Lead 4 | -0.188* | -0.219 | -0.264 | -0.166 | -0.161 | -0.029 |
| | (0.097) | (0.149) | (0.166) | (0.247) | (0.213) | (0.154) |
| Lead 5 | -0.060 | -0.062 | -0.156 | 0.075 | -0.322* | -0.146 |
| | (0.079) | (0.061) | (0.192) | (0.166) | (0.172) | (0.188) |
| Lead 6 | 0.182 | 0.004 | -0.175 | -0.191 | -0.270 | -0.035 |
| | (0.157) | (0.064) | (0.149) | (0.182) | (0.174) | (0.122) |
| Mean of Outcome | 0.232 | 0.106 | 0.577 | 0.528 | 0.702 | 0.146 |
| Number of Observations | 1326 | 1326 | 1326 | 1326 | 1326 | 1326 |
| R squared | .0705 | .088 | .0765 | .0903 | .155 | .0597 |

The outcome variable includes the total number of times that an MP tweeted a given word in a week. Every specification includes week and MP fixed effects. The main outcomes are the number of times the MP tweeted the Economy and Terrorism. Other possible outcomes are included as a placebo check. Lags include the weeks after the voter report was sent. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels.

## A.4 Framework Details for Incumbent Resource Advantage in Voter Information Acquisition

Let there be two parties, one of which is the incumbent, $I$, and the other is the opposition, $O$. The parties can take two actions: low cost method of campaigning, which has a cost of 0, or the high cost method to campaigning, which has a cost $f \in (0, 1)$ measured in vote shares (as an opportunity cost)[39]. Consider that the low cost method is just showing up and holding rallies, which guarantees that each party gets its ideological vote share. These are the voters who always vote for one party or the other. We normalize the vote share each party gets from the low cost method to 0. There is some uncertainty in the expected increase from implementing the high investment method, but both parties will increase their vote share to either $\frac{V_1}{2}$ or $\frac{V_2}{2}$ where $0 < V_1 < V_2$. Each party's payoff is their expected utility from investing $f$: $E(U) = p\frac{V_1}{2} + (1-p)\frac{V_2}{2} - f > 0$. In an extensive form game with perfect information and equal access to funding, where the party $I$ chooses a method first, the unique subgame perfect equilibrium is for both parties to invest $f$ and implement the high investment method. If party $O$ does not have access to funds for $f$ then it is disadvantaged and its payoff is 0.

If we assume that state funding cannot be a sufficient financial constraint for the opposition and that politicians in Turkey can access private capital, we can extend the argument further. Consider theories of rational predation that have been used to explain the persistence of competitive advantage among firms (Bolton and Scharfstein (1990)). In this literature, a company with more resources can maintain an advantage by using various methods to "prey" on its competitor. In this case, Party $I$ has a "deep pocket" and can use state funds to increase its vote share through the high investment method, such as targeted door-to-door campaigning. Party $O$ has to raise funding from private sources. The private source can be thought of as a lobbyist that wants to change legislation and so gives transfers based on expected electoral performance. An increase in vote share for Party $O$ increases its representation and therefore the investor's ability to control legislation. Therefore, the utility of the private source is also a function of $p, V_1,$ and$V_2$. Between elections, at time period 0, the private investor gives a take-it-or-leave-it offer to the opposition party where the opposition party repays the investor if their vote share is not sufficiently high. The opposition party only takes the transfer if its expected vote share is above a certain threshold.

Suppose we further extend this framework. Party $I$ can increase $p$ for just party $O$, which we now denote $p_O$, by threatening to arrest their canvassers or the legislators themselves at a cost of $t$. If $p_O$ if large enough relative to $V_1$ and $V_2$, then the opposition will only be able to engage in the low cost method because it will not be able to take the transfer.

This study was implemented during a state of emergency set by the incumbent party in which canvassers could be detained and jailed without trial for an extended period. Of the neighborhoods sampled for the randomized door-to-door campaign, 20% could not be completed because of the threat of arrest. This effectively increased the probability $p_O$ that the door-to-door campaign yield a low payout in terms of voter share.

[39]State funding is allocated to the party headquarters and is therefore centralized. The opportunity cost could be thought of as personal gains the party leader gets that they cannot get from increased vote share

## A.5 Facebook Experiment

Finally, in considering the effectiveness of alternative strategies, I compare the results of the door-to-door campaign to a randomized, country-wide Facebook campaign that was also implemented by the opposition. It is claimed that advertisements shown through Facebook should only be exposed to a user if it is compatible with their user preferences. Relative to the door-to-door campaign, a user has full discretion to choose to click on a link or video.

The experimental design of the Facebook campaign was similar to that of the door-to-door campaign, but the sampled areas were more representative of the entire country. The finest level at which voters can be targeted through Facebook in Turkey is by zip code. The individuals from the opposition party faced a budget constraint and so wanted to focus on "moderate" areas defined by vote share differential. As in the case of the door-to-door campaign, administrative voter choice and turnout data is observed at the neighborhood leve. There are multiple neighborhoods within a zip code. Zip codes where any party had more than 60% of the vote share in the general elections in 2015 were dropped. Zip codes were randomly selected to be exposed to a set of videos on Facebook urging voters to vote "No."[40] Randomization was stratified by octiles of past vote share for the incumbent party at the zip code level. In this campaign, the content of the videos varied. Some of the videos showed experts discussing information on issues like the economy and terrorist activity and others showed regular citizens using various arguments to urge others to vote "No." The online campaign started two weeks before the referendum.

The equations below show the specification that were run at the zip code and neighborhood level. $Y_z$ is neighborhood level "No" vote shares or turnout data aggregated up to the zip code and $Y_{nz}$ is at the neighborhood level. $T_z$ is an indicator for whether the zip code was in the treatment group and $\delta_o$ are octile fixed effects. $X_z$ includes average vote shares for three out of four parties (so that rank condition is not violated) from the past two general elections that were both held in 2015.

$$Y_{zo} = \alpha + \beta_1 T_z + \delta_o + \gamma_1 X_z + \epsilon_{zo} \tag{6}$$

$$Y_{nzo} = \alpha + \beta_2 T_z + \delta_o + \gamma_2 X_{nz} + \epsilon_{nzo} \tag{7}$$

Equation (1) shows estimation at the zip code and equation (2) shows estimation at the neighborhood level; in the latter, standard errors were clustered at the zip code level. The estimates of both regressions are the same when the neighborhood level regression is weighted by the number of registered voters per neighborhood as shown in Table 18 and Table 19. However, an unweighted version of the latter estimates a negative effect of the campaign, indicating that small neighborhoods were negatively affected by the campaign. This result is shown in Table 20 and is shown by quartile of past vote share (the mean of the outcome shows that the quartiles are decreasing in the "No" vote share). This result is consistent with the fact that had less information beforehand were more responsive. The effects are in "moderate" areas, similar to the door-to-door campaign as shown in Figure 18. If anything, the Facebook campaign caused a small decrease in the "No" vote share. We conclude that the opposition party was again unsuccessful in changing vote share. In comparison to the door-to-door campaign, it is more difficult to interpret the Facebook results because the content in the videos varied and it is not possible to measure the effects by video. Moreover, I cannot provide a framework to explain why the campaign only decreased the "No" vote share. The main conclusion is that the targeted door-to-door campaigning is found to be the most effective strategy.

[40] On Facebook, the advertiser enters a daily budget for its ads/campaigns.

Table 18: Vote Share "No" at Zip Code Level

| | (1) All | (2) All With Controls |
|---|---|---|
| Treatment | 0.001 | 0.002 |
| | (0.004) | (0.002) |
| 2015 MHP Vote Share | | -0.277*** |
| | | (0.020) |
| 2015 HDP Vote Share | | -0.219*** |
| | | (0.016) |
| 2015 AKP Vote Share | | -1.086*** |
| | | (0.025) |
| 2015 Turnout | | 0.165*** |
| | | (0.029) |
| Mean of Outcome | 0.517 | 0.517 |
| Number of Observations | 1119 | 1119 |
| R squared | .779 | .943 |

The dependent variable is percent vote No. Column 1 shows the result across the distribution (octiles) without controls and column 2 shows the result with controls. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels. Includes octile strata fixed effects. The mean outcome shows that quartile is decreasing in the "No" vote share.

Table 19: Vote Share "No" at the Neighborhood Level With Neighborhood Weights

| | (1) All | (2) All With Controls |
|---|---|---|
| Treatment | 0.001 | -0.001 |
| | (0.004) | (0.002) |
| 2015 AKP Vote Share | | -1.108*** |
| | | (0.008) |
| 2015 MHP Vote Share | | -0.296*** |
| | | (0.017) |
| 2015 HDP Vote Share | | -0.257*** |
| | | (0.012) |
| 2015 Turnout | | 0.112*** |
| | | (0.029) |
| Mean of Outcome | 0.521 | 0.521 |
| Number of Observations | 16297 | 16297 |
| R squared | .518 | .95 |

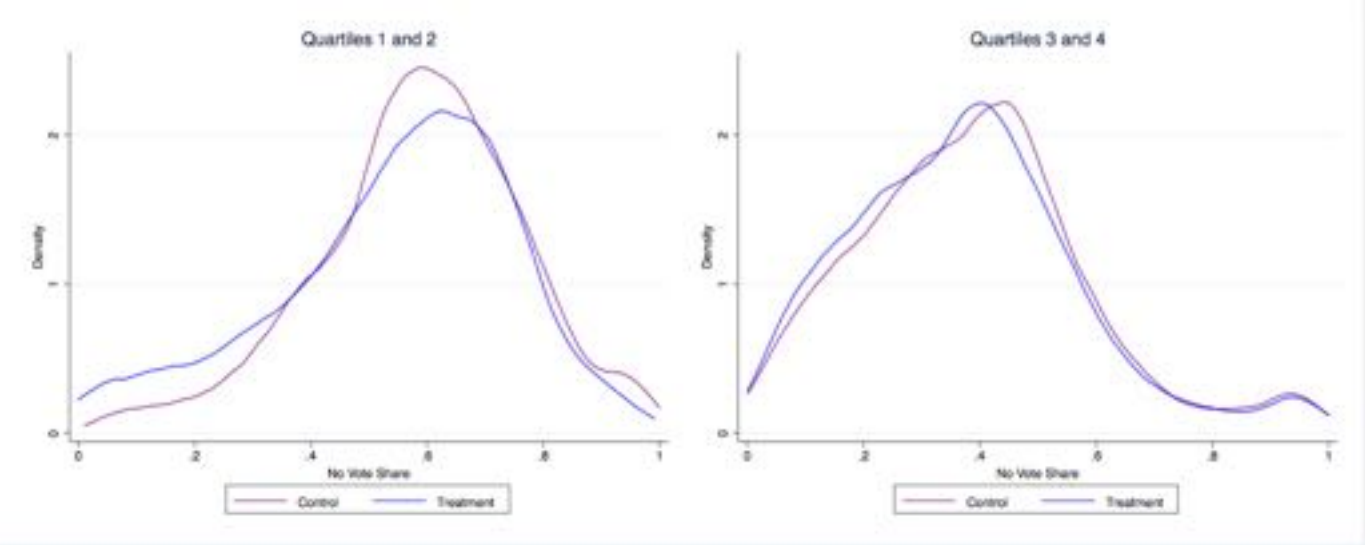
The dependent variable is percent vote No. Column 1 shows the result across the distribution (octiles) without controls and column 2 shows the result with controls. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels. Includes octile strata fixed effects. The mean outcome shows that quartile is decreasing in the "No" vote share.

Table 20: No Pct Neighborhood Level By Quartile No Weights

| | (1) Q1 | (2) Q1 Controls | (3) Q2 | (4) Q2 Controls | (5) Q3 | (6) Q3 Controls | (7) Q4 | (8) Q4 Controls |
|---|---|---|---|---|---|---|---|---|
| Treatment | -0.029* | -0.001 | -0.046*** | -0.019*** | 0.006 | 0.001 | -0.010 | -0.004 |
| | (0.017) | (0.005) | (0.017) | (0.007) | (0.019) | (0.011) | (0.010) | (0.007) |
| 2015 AKP Vote Share | | -1.096*** | | -1.101*** | | -1.070*** | | -1.069*** |
| | | (0.015) | | (0.014) | | (0.024) | | (0.015) |
| 2015 MHP Vote Share | | -0.235*** | | -0.281*** | | -0.202*** | | -0.324*** |
| | | (0.022) | | (0.030) | | (0.036) | | (0.028) |
| 2015 HDP Vote Share | | -0.254*** | | -0.357*** | | -0.290*** | | -0.305*** |
| | | (0.046) | | (0.030) | | (0.031) | | (0.078) |
| 2015 Turnout | | -0.005 | | 0.012 | | -0.031 | | -0.017 |
| | | (0.033) | | (0.063) | | (0.054) | | (0.031) |
| Octile F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Mean of Outcome | 0.625 | 0.625 | 0.512 | 0.512 | 0.424 | 0.424 | 0.347 | 0.347 |
| Number of Observations | 3228 | 3228 | 3778 | 3778 | 4257 | 4257 | 5034 | 5034 |
| R squared | .0529 | .882 | .0267 | .841 | .00327 | .792 | .0229 | .838 |

The dependent variable is percent vote No. Columns 2, 4, 6, and 8 show the results for each quartile with controls. Asterisks indicate that coefficient is statistically significant at the 1% ***, 5% **, and 10% * levels. Includes octile strata fixed effects. The mean outcome shows that quartile is decreasing in the "No" vote share.

Figure 18: Neighborhood Level Vote Share "No"




The dependent variable is the "No" vote share at the neighborhood level and each panel is split by the bottom and upper quartiles. Quartiles 1 and 2 correspond to zip codes where the "No" vote share was relatively higher.