Information, Get-out-the-vote Messages, and Peer Influence: Causal Effects on Political Behavior in Mozambique[*]

Matilde Grácio[§] and Pedro C. Vicente[†‡]

Abstract:

Political accountability requires informed voters and electoral participation. Both have been lagging in many developing countries like Mozambique. We designed and implemented a field experiment during the 2013 municipal elections in that country. We study the impact on political behavior of location-level distribution of a free newspaper and get-out-the-vote text messages aimed at mobilizing voters. As part of our design, we randomly assigned peers to experimental subjects in order to test for peer influence via text messages. Measurement of political outcomes comes from official electoral results at the level of the polling station, and from a range of behavioral and survey-based measures. We find that the distribution of the newspaper increased turnout and voting for the ruling party. The text messages led to higher political participation. When turning to influencing peers, we observe a clear role of male and older individuals, as well as complementarity with the distribution of newspapers.

JEL Codes: D72, O55.
Keywords: Political Behavior, Information, Peer Influence, Political Economy, Field Experiment, Africa.

---

1 Introduction

Political accountability around elections is a cornerstone of democratic systems (see Bentham, [1816] 1999). The ideal of accountability can however be impeded by limited information about political options in the hands of voters and by low levels of citizen mobilization. Citizen information and mobilization may be particularly difficult in Sub-Saharan African countries. In this region, democratic elections are often tainted with phenomena that embody lack of policy accountability, like clientelism (Wantchekon, 2003) or vote-buying (Vicente, 2014), and are frequently taken as the focal point for intimidation or violence (Collier and Vicente, 2014), which are likely to de-mobilize voters for political participation.

Information and get-out-the-vote (GOTV) campaigns around elections have the potential to pave the way for the ideal of democratic accountability. The recent experimental literature in Sub-Saharan countries, although diverse, has often shown changes in that direction (Wantchekon, 2003; Humphreys and Weinstein, 2012; Fujiwara and Wantchekon, 2013; Vicente, 2014; Collier and Vicente, 2014; Aker et al., 2017; Marx et al., 2017; Grossman and Michelitch, 2018).[1] Newspapers and text messages are prominent means of political communication that have been tested experimentally in a range of settings (see Gerber et al., 2009, and Dale and Strauss, 2009, for U.S. elections). We need to consolidate our knowledge about how they can be adapted for information and GOTV campaigns in developing countries. Still, our understanding of how individuals' political behavior can be changed by their peers and how this influence can interact with broader information has the potential to be as important. It is likely that specific demographic traits of influencers help, and we know little about the potential for free-riding once citizens know that others are acting on the common information they receive. The study of these questions is typically constrained by the difficulties posed by the endogeneity of one's peers and their messages.

In this paper, we report on the results of a field experiment conducted during the municipal elections of 2013 in Mozambique. We analyze the impact of an information campaign through the distribution of a free newspaper and of GOTV through text messaging on political behavior. Both types of interventions were new to the setting and happened in the run up to the elections. We

---

[1] Note however that we do not claim in this paper the full relation of information and GOTV with the end goal of political accountability. In fact, having informed and mobilized voters is not likely to be a sufficient condition for accountability: in a recent meta-analysis of coordinated experiments in a range of developing countries, Dunning et al. (2019) did find some effects but not a systematic link between information campaigns and increased political accountability.

collaborated with a high-circulation and independent newspaper, which operates a hotline. The distribution of the newspaper was set at the level of the polling location. We also had a control group of locations, with no distribution of newspapers. The GOTV treatments were set at the level of the individual and included three types of messages: simple reminders about the election, reminders about the election coming from peers, and encouragements to vote coming from peers. We also had a control group that received no messages.

To guarantee exogeneity of peer influence through the SMS reminders and encouragements, our experimental subjects were randomly assigned peers from the same pool of experimental subjects. These links were not pre-existing. Specifically, we assigned each experimental subject a group of similar and a group of dissimilar peers, in terms of gender and age. These characteristics were primed in the messages that were sent. In this way, we can study the causal impact of messages coming from peers and isolate the effect of specific peer characteristics. We are also able to test the impact of peer influence in a context where a location-wide information campaign is going on and is common knowledge.

This project happened nationwide in Mozambique. Subject recruitment followed a random process. First, we randomly selected 20 municipalities – Mozambique has 53 municipalities. We drew 191 polling locations from the municipalities in our study. Experimental subjects were selected from these polling locations using standard techniques at the time of our baseline survey. We employ a range of measurements of political behavior. First, we analyze the official electoral results of the 2013 local elections at the level of the polling location. These include voter turnout and voting for the candidates. Second, we use behavioral measures relating to the sending of SMSs at the individual level. Experimental subjects were invited to send messages reporting electoral problems for a hotline before and during the election day. They were also invited to send text messages with their policy priorities (an open letter) to the newly elected mayors after the elections. The newspaper also invited its readers to send information and convey opinions during the electoral period. Third, we devote attention to voter turnout. We compose several measures of voter turnout based on information gathered during our post-election survey: self-reports, the interviewer assessment about whether the respondent voted (after he/she submitted a module of survey questions on the election day and ballot station facts), and whether the respondent voted in a replication of the voting procedure using survey ballot boxes. Finally, we measured voting for the candidates/parties using the replication of the voting procedure during the post-election survey.

The results of this experiment follow closely a pre-analysis plan that we published before submitting the full treatments. We find a clear positive effect of newspaper distribution on voter turnout while employing official electoral data at the level of the polling location: participation at the polls increased by 3-6 percentage points. We also observe that the text messages increased, on average, the sending of SMS relating to the elections by experimental subjects and the turnout of voters as given by our measures. Specifically, the turnout effect is between 7 and 8 percentage points. Turning to peer influence, we identify a causal increase on political participation when analyzing the influence of male subjects on their peers. In addition, older peers influence experimental subjects to vote for the ruling party. Finally, we find evidence in favor of stronger effects of the peer messages on the political participation of subjects that had the newspaper distributed in their locations, which is not consistent with subjects free-riding on others.

An important body of research relating to elections in the U.S. has suggested that engaging in politics is sensitive to information and contact. Gerber et al. (2009) show that access to newspapers, in the run up to an election in the U.S., can alter voting behavior. Gerber and Green (2000) show the importance of face-to-face political mobilization for voter turnout in the context of GOTV campaigns.[2] Gerber et al. (2008) test different types of incentives to vote and find that social pressure produces large effects. In line with these results, Nickerson (2008) find substantial contagion of GOTV campaigning between household members. Dale and Strauss (2009) are the first to report turnout effects from text messaging.

The literature on information and GOTV campaigns in the context of elections in developing countries can be divided in two streams. First, the literature related to the communication of politicians' proposals and performance, using experiments (Wantchekon, 2003; Banerjee et al., 2011; Humphreys and Weinstein, 2012; Fujiwara and Wantchekon, 2013; Chong et al., 2015; Cruz et al., 2020; Grossman and Michelitch, 2018; Dunning et al., 2019) or other natural settings (Ferraz and Finan, 2008; Casey, 2015). Note that this literature is not always positive regarding the link between information and political accountability. Second, the literature on conveying civic information related to electoral practices and on improving electoral procedures, not directly related to policy-accountability (Vicente, 2014; Collier and Vicente, 2014; Fujiwara, 2015; Aker et al., 2017; León, 2017; Marx et al., 2017). Note that we are particularly interested in the use of text messages as means of communication to mobilize voters like in Aker et al. (2017) and Marx et al.

---

[2] Pons (2018) reports on substantial and long-lasting electoral impacts of door-to-door canvassing during presidential elections in France.

(2017). In terms of relevant outcomes of analysis, we relate most closely to contributions employing behavioral measures of political participation like the costly sending of postcards (Batista and Vicente, 2011; Collier and Vicente, 2014) and the costly sending of SMS (Aker et al., 2017; Grossman et al., 2014).

Other studies explore network effects of randomized voter education in developing countries.[3] Fafchamps and Vicente (2013) observe social network effects on voter perceptions in the context of campaigning against political violence in Nigeria. Gine and Mansuri (2018) find large turnout externalities of a voter awareness campaign directed at women in Pakistan, by exploring different intensities of treatment per geographical unit.[4] Our study builds specifically on the analysis of network effects in a previous experiment run during the 2009 elections in Mozambique (Fafchamps et al., 2020). While voter education channeling information about the election increased voter turnout in the referred study, effects are weaker for more central groups in the local social networks. It is possible that more central individuals free-ride on others' electoral participation using their better knowledge of the interventions and corresponding (direct) impact on voting. However, the causality of the (endogenous) network variables employed in Fafchamps et al. (2020) is difficult to establish. Our paper attempts to advance on this issue by identifying the causal impact of peer influence (not centrality) in face of location-level efforts towards voter mobilization. Centola (2011) employs a similar structure while studying homophily,[5] in the context of the adoption of healthy behaviors.[6]

The paper is organized as follows. In section 2 we present the context of our field experiment. In section 3 we fully develop the experimental design, with treatments, sampling and assignment to treatment, model and hypotheses, measurement, as well as estimation strategy. The following

---

[3] Differently, Finkel and Smith (2011) employ panel regressions to assess the impact of nationwide voter education in Kenya. They find peer effects on democratic knowledge and values.

[4] Although the causal effect of different intensities of GOTV campaigning can be interpreted as related to the causal effect of explicit peer-to-peer communication and mobilization to vote (which is what we analyze in this paper), it is difficult to be sure that there are no other possible interpretations for the former. For instance, the effect of different intensities of campaigning in terms of content reach is difficult to distinguish from the effect of simple perceptions about campaigner presence in a geographical unit.

[5] Homophily is defined by individuals being particularly responsive to pressures from similar peers. See McPherson et al. (2001) for a broad introduction to the concept.

[6] Recent contributions to the literature on social networks and electoral politics include the work of Labonne and Fafchamps (2018), who report that central households are more likely to receive public services in the Philippines, in line with the idea that these households are best for exerting social pressure and securing electoral support. Arias et al. (2019) analyze a field experiment disseminating information in Mexico and combine it with detailed family network data: they suggest that networks can help voters coordinate around information to help remove poorly performing politicians.

section provides the econometric results, including treatment effects of the newspaper treatment, the SMS treatments, in addition to the analysis of peer influence and its interaction with the location-level distribution of the newspaper. We conclude in section 5.

2 Context

Mozambique became independent in 1975, after which FRELIMO (Frente de Libertação de Moçambique), the independence movement, led a single-party, socialist regime. Beginning in 1977, Mozambique suffered a devastating civil war, fought between FRELIMO and RENAMO (Resistência Nacional Moçambicana). The civil war ended in 1992 with an agreement to hold multi-party elections. FRELIMO and its sponsored presidential candidates won all national elections since 1994, with RENAMO as the main contender. More importantly, FRELIMO consistently increased its vote share, while voter turnout has decreased considerably. The lowest turnout rate was recorded in 2004, with just 36 percent. In 2009, MDM (Movimento Democrático Moçambicano) was launched by the then mayor of Beira, Daviz Simango and became the clear third party, popular among the urban electorate.

At the local level, municipal elections were held in 1998, 2003, 2008, and 2013. These elections comprise an election for the president of the municipality and one election for the municipal assembly. Mozambican municipalities correspond to the largest cities of the country, as well as to selected smaller towns. The municipal elections of November 20, 2013, constitute the focal point of this study. The 2013 elections happened in a particularly sensitive period for the politics of the country. They happened just before the FRELIMO candidate to the 2014 presidential elections was selected (as Armando Guebuza, the then president, was unable to run for reelection due to a term limit). Given the overwhelming degree of control of the ruling party over the country, there was little doubt that FRELIMO's candidate would win the following presidential elections. There was a clear understanding that the results of the municipal election would define relative power within FRELIMO. Hence, electoral participation in these elections was particularly important.

At the same time, RENAMO and its leader Afonso Dhlakama had become discredited with voters, reaching an all-time low score of 16 percent in the 2009 presidential election. Dhlakama was widely seen as outdated, often referring to the possibility of taking up arms. In the run up to the 2013 municipal elections, Dhlakama increased the tone in favor of a reform of the electoral law and announced RENAMO's boycott to the municipal elections. Contemporaneously, armed supporters

of RENAMO initiated violent episodes. This conflict reached a peak in October of 2013, just a few weeks before the municipal elections, when RENAMO announced the end of the 1992 peace accord and attacks to civilians were undertaken in Sofala province, resulting in dozens of deaths. Negotiations between the government and RENAMO were held but had no visible implications before the elections. Despite the conflict situation in central Mozambique, the municipal elections were held in all municipalities.[7] Overall turnout rate was 46 percent. The fact that MDM had clear urban support, and that RENAMO did not run in these elections, was an opportunity for MDM, which won in four municipalities and had sizable vote shares in many others.

On the state of politics in Mozambique, Freedom House has been considering the country to be 'partly-free', and the World Bank Governance Indicators have set the country on a decreasing trend in terms of voice and accountability as well as government effectiveness. Pereira et al. (2002, 2003), based on Afrobarometer data, find relatively low levels of support for democracy and characterize Mozambique as a 'democracy with problems.' In the same sequence of work, Mattes and Shenga (2007) hypothesize that the very low levels of political accountability observed in Mozambique may be the result of deficient channels of information dissemination, exacerbated by poverty and low education. Indeed, looking at Afrobarometer data from 2002 to 2012, we observe that the proportion of respondents with no interest in public affairs increased steadily over time, accompanied by a decreasing trend on accessing news information through the most important media (radio). We also note that more than 70 percent of respondents never had access to news through newspapers in 2012. The levels of electoral participation in Mozambique are correlated with this picture. De Brito (2007) underscores the marked decreasing trend of voter turnout, distinctive by regional standards.

3 Experimental design

3.1 Treatments

---

[7] Note that the 2013 municipal elections were generally evaluated as free and fair. This is despite several instances of irregularities and the fact that the elections in two municipalities (Gurué and Nampula) had to be repeated shortly after November 20. We should also mention the occurrence of some violence related to electoral campaigning in the two weeks before the election.

We collaborated with newspaper @Verdade (http://www.verdade.co.mz/).[8] This is a free newspaper created in 2008. It is a general-interest, privately owned newspaper run by social entrepreneurs, with a clear civic education mandate. Its distribution has mainly been in the Maputo city area. The interventions we study in this paper were designed and conducted with the active collaboration of newspaper @Verdade: it sees the dissemination of information and the encouragement of voter participation as central to its mission. We now turn to the description of each specific intervention, divided into distribution of the newspaper and SMS interventions.

The first set of interventions we study regards the distribution of weekly newspaper @Verdade in municipalities that had never had systematic distribution of that newspaper, which we label @Verdade municipalities. This distribution happened during the two/three weeks before the electoral campaign of the municipal elections of November 2013. The distribution was set at the level of the polling location, i.e., door-to-door around polling locations (it approximated a random procedure as fieldworkers followed a pre-set interval between houses). The first round of distribution was performed either by enumerators in the context of our baseline survey, or by a group of fieldworkers associated with @Verdade. In each of these locations, around 100 newspapers were distributed in each week until the elections. We also had a control set of polling locations.[9]

The second set of interventions we study concerns text messages received on mobile phones. The pool of experimental subjects that received SMSs agreed to receiving SMSs relating to the elections during our baseline survey.[10] These SMSs reminded voters about the municipal elections of November 2013. Some of them also encouraged voters to participate in the election. The receiving of text messages happened during the week before the elections and varied across two dimensions.

Our first dimension of interest was the strength of the message. We varied the contents of the messages, going from simple and neutral reminders about the election to personal encouragements

---

[8] Observatório Eleitoral, an organization blending the specific efforts of eight member Mozambican NGOs in the area of good electoral conduct and electoral observation, IREX, an international NGO devoted to media strengthening, and Parlamento Juvenil, a Mozambican movement focusing on youth rights, also supported this research project.

[9] Note that, given the conflict situation in central Mozambique in the weeks leading to the November elections, the newspaper shared the covering of the municipal elections with other important topics, namely those related to the conflict with RENAMO. See the following video, for some images of newspaper distribution in this project: http://vimeo.com/85717778.

[10] Only 6 percent opted out of receiving SMSs during the baseline survey.

to vote.[11] Specifically, we had a simple reminder message about the election ('REMEMBER: Municipal elections are on November 20.'), which we label placebo message, and we had messages labeled as coming from specific individuals. Each experimental subject was allocated other experimental subjects. The subjects in these groups agreed to share their information about electoral participation through SMSs. We sent messages on their behalf as reminders ('My name is XXX [first name, gender implied], I am a participant [gender] in the study on Mozambican politics, I am on my XXXs [age group], and I would like to remind you that the municipal elections are on November 20.') or encouragements ('My name is XXX [first name, gender implied], I am a participant [gender] in the study on Mozambican politics, I am on my XXXs [age group], AND I WILL VOTE ON THE NEXT MUNICIPAL ELECTIONS ON NOVEMBER 20. I WOULD LIKE YOU TO VOTE AS WELL!'). We label the peer reminders as neutral messages and the peer encouragements as positive messages. Note that these messages included clear gender (stemming from the name of the subject and the Portuguese language gender reference in the word 'participant') and age anchors.[12] In addition to these three groups, we also had a control group of experimental subjects that had no messages sent to them.

Our second dimension of interest was peer similarity. We varied the type of individuals assigned to each experimental subject. Specifically, we had each experimental subject assigned both a similar group of peers and a dissimilar one. The similar group of peers was composed by two other experimental subjects, with the same gender and the same age group, e.g., subjects in the bottom half of the age distribution were paired with subjects in the bottom half. The dissimilar group of peers was composed by two other experimental subjects, with the opposite gender and the opposite age group. Within each group of peers, we divided messages across the four types of contents that we described above: control, placebo, neutral, and positive. The treatment assignment is summarized in Table A1 in the Appendix to this paper, as a 3x3+1 design. Note that to maximize statistical power, we opted not to have the interaction of control messages corresponding to similar

---

[11] We note that there is a clear positive correlation in the Afrobarometer data for Mozambique, as well as in our own dataset, between turning out to vote and measures of social capital at the individual level. We take this evidence as consistent with the importance of personal interaction for voting.

[12] The original Portuguese versions of the three types of messages are the following. Reminder: 'LEMBRE-SE: As eleicoes municipais sao no dia 20 de Novembro.'. Peer reminder: 'O meu nome e XXX, sou XXX [um(a)] participante no estudo sobre politica Mocambicana, tenho idade nos XXXs, e gostaria de lembrar que as eleicoes municipais sao no dia 20 de Novembro.' Peer encouragement: 'O meu nome e XXX, sou XXX [um(a)] participante no estudo sobre politica Mocambicana, tenho idade nos XXXs, E VOU VOTAR NAS PROXIMAS ELEICOES MUNICIPAIS NO DIA 20 DE NOVEMBRO. GOSTAVA QUE VOTASSE TAMBEM!'.

(dissimilar) groups of peers and other types of contents corresponding to dissimilar (similar) groups of peers.

During each of the six days before the elections and the election day (starting on November 14 and ending on November 20), each SMS treatment group was sent four messages, two from the similar group of peers and two from the dissimilar group of peers. For both the peer reminders and the encouragements, the messages were labeled as originating from specific peers (one message per peer). On November 13, each SMS treatment group also received a set of three introductory messages.[13] These SMS treatments were submitted through an online platform, allowing the sending of bulk messages, designed on purpose for this experiment. It was linked to a shortcode that the newspaper @Verdade uses for receiving SMSs from readers. In that sense, experimental subjects could have associated the messages to @Verdade.

3.2 Sampling and assignment to treatment

The sampling frame of our experiment was constructed from the voter registration map of the 2013 municipal elections, made available by the electoral administration arm of the National Electoral Commission (STAE). Mobile phone coverage is available in all municipalities of the country, so that was not a restriction when selecting our experimental locations.[14]

We first asked the newspaper to select out the municipalities where distribution was not possible (some of the municipalities were too remote for the distribution channels of the newspaper). That procedure led us to 44 municipalities, from the total 53. Twenty-two municipalities were selected from within the 44 municipalities through a block randomization procedure by which pairs of

---

[13] Reminder subjects received a contextual message three times ('You were interviewed for a study on Mozambican politics in the last 3 weeks. As mentioned then, we would like to send you messages relating to the elections of November 20.'). Subjects receiving neutral (peer reminder) or positive (peer encouragement) messages also received the message just described. However, they received it just once, and received two other messages containing background information to the peer treatments, divided into procedure ('You were grouped with XXX [2 or 4] other people that we interviewed for our study. XXX ['These people are similar to you.' Or nothing] These individuals will share with you XXX ['information about' or 'whether they intend to vote in'] the municipal elections of November 20.') and purpose ('The objective of the messages sent by your group is to give you information about whether those people will vote, which may influence whether you vote on November 20.'). The full set of messages (English translation) that were sent is presented in the Appendix to the paper (Tables A2).

[14] A contextual note is due on mobile phone coverage in Mozambique. Access to the detailed location of all the mobile communication antennas in the country in 2009 points to 87 percent of the population covered, if one takes the polling locations that were active in both 2004 and 2009. Our specific sample is mostly urban; hence, the 100 percent coverage.

municipalities were formed (based on geographical proximity and the results of the 2009 national elections) and randomization was performed within pairs.[15] The following step was selecting polling locations and assigning the newspaper treatment. In each of the 22 municipalities, we randomly drew a group of polling locations with equal probability given to all polling locations. We then selected randomly treatment and control groups of polling locations, through block randomization by which blocks were formed primarily within municipality.[16] This procedure led us to 198 polling locations. Due to the conflict situation with RENAMO, fieldworkers faced clear difficulties in Sofala province, where they were impeded to operate at this point. This is the reason we had to drop the municipalities of Beira and Dondo from our study. The corresponding polling locations (21) had to be substituted by (randomly drawn) additional polling locations in other municipalities covered in our experiment. The final number of polling locations in our experiment is 191, of a total of 331 possible polling locations in the municipalities covered by the experiment. The 191 polling locations were divided between 123 for newspaper distribution and 68 control. Figure 1 shows the 20 municipalities that were covered in our experiment.

<Figure 1 near here>

In the enumeration areas defined as catchment areas of the polling locations, we conducted two face-to-face surveys, one before the elections, and one after. Sampling within each enumeration area followed random walks during the baseline survey.[17] However, selection of the household was conditional on the corresponding household having a mobile phone available for receiving or sending SMSs. In each of these households, enumerators selected a random adult member of the household, stratifying by gender. The baseline survey included 1,530 respondents, on average eight per enumeration area. It took place from mid-October to the first week of the electoral campaign in November. The post-election survey started in early December, after the results were announced. It sought the same respondents, reaching 1,251 of them.

SMS treatments were randomized individually across baseline survey respondents. This randomization procedure was performed between the end of the baseline survey and the beginning

---

[15] This selection procedure was implemented in view of securing municipal-level variation for a study at that level, which is outside the scope of this paper.

[16] Note that these blocks were triplets of locations, as we randomized between (i) initial distribution of the newspaper by enumerators in the context of our baseline survey, (ii) initial distribution by a group of fieldworkers associated with @Verdade, (iii) no distribution of the newspaper or control.

[17] Namely, enumerators starting from the center of the enumeration area, typically the polling location, sought the nth houses along main routes.

of the SMS interventions in the last week of the electoral campaign to the November municipal elections. This was the timing of the publication of our pre-analysis plan. All SMS treatment groups of Table A1 had the same weight in our randomization procedure. Note that the assignment of peer groups was also randomized within the pool of experimental subjects that had the required characteristics for each individual.[18]

3.3. Theoretical approach and hypotheses

For the purpose of interpreting our experimental results, we introduce a simple model of political participation, building on the body of literature summarized by Dhillon and Peralta (2002) and Feddersen (2004). Let us assume that an individual i decides on a political behavior vector x_i, which we take as continuous for technical convenience. This includes measures of sending text messages with political content, turning out to vote, and voting for the ruling party. Each citizen maximizes a payoff function:

$$\max_{x_i} E_{\Omega_i} U(G(x_i, x_{-i}), x_i) - C(x_i)$$

where $G(x_i, x_{-i})$ is the outcome of the electoral process, x_{-i} is the combined action of individuals other than i, Ω_i denotes i's information set, and $C(x_i)$ is the total material cost of the action for individual i (e.g., cost of text messaging, transport cost to the polling station, opportunity cost of time). To capture non-instrumental motivations, we allow x_i to enter the function U independently from the outcome of the voting process G. We assume positive relations between x_i and U, both directly and via G, as well as between x_i and C.

Assuming well-behaved functions,[19] the first order condition is

$$E_{\Omega_i} \left(\frac{\partial U}{\partial G} \frac{\partial G}{\partial x_i} + \frac{\partial U}{\partial x_i} \right) = \frac{\partial C}{\partial x_i}$$

which implicitly defines the solution of the citizen's problem.

---

[18] Namely, intending to vote and similar or dissimilar (to receivers), in terms of gender and age. Note that assigned peers agreed during the baseline survey to share their voting intentions via SMS with other experimental subjects.

[19] We imply continuity of all functions, strict concavity of U and strict convexity of C, with respect to x_i.

All treatments in our experiment are meant to change citizens' information set Ω_i, as a mediator for political participation and voting for the electoral candidates. We claim that additional information about Mozambican politics and the specific election at stake, in the form of newspaper distribution and the sending of text messages, can increase the visibility of the election for citizens, and in that way show the importance of individual political participation to affect the electoral outcome, $\partial E_{\Omega_i}\left(\frac{\partial U}{\partial G}\frac{\partial G}{\partial x_i}\right)/\partial \Omega_i > 0$.[20] Moreover, it can also increase the non-instrumental motivation of political participation $\partial E_{\Omega_i}\left(\frac{\partial U}{\partial x_i}\right)/\partial \Omega_i > 0$. Under our standard assumptions, both these types of effects increase voter participation.

In a context like the Mozambican one where there is overwhelming political dominance by the ruling party FRELIMO, leading to pervasive clientelism at the local level (e.g., Forquilha, 2009), it is likely that the electoral race turns into a contest across locations for the mobilization of FRELIMO supporters to vote. This mobilization, visible to all through voter turnout and the electoral results publicly available at the polling station level, may then be taken as the counterpart for local public good provision by the state after the election. If this is the main mechanism at work, the additional information embedded in the newspaper distribution and the sending of text messages is likely to have the same effects on voting for FRELIMO that we described above for political participation.[21]

This model also shows that more information can reduce political participation if it lowers the probability of changing the electoral outcome,[22] i.e., if it lowers $E_{\Omega_i}\left(\frac{\partial U}{\partial G}\frac{\partial G}{\partial x_i}\right)$. For instance, a citizen may decide not to vote if he/she learns that his/her preferred politician is guaranteed to be elected. This is particularly likely in the case of locations that get the newspaper, where citizens could think others are likely to vote more often (and for the ruling party). Then, text messages from peers

---

[20] The effect of individual political behavior on the political outcome can be small in large elections. This is related to the paradox of voting, which dates back at least to Downs (1957). However, different theoretical contributions have challenged this paradox (e.g., Palfrey and Rosenthal, 1983; Myatt, 2015). Moreover, we take a broad understanding of political behavior, including for instance political participation through the sending of SMSs, which goes well beyond the typical pivotal winning vote underlying the paradox of voting.

[21] An alternative explanation for a positive effect on voting for the ruling party FRELIMO is the direct association of the voter education (implied in the distribution of the newspaper and the text messages) with the government. Indeed, the electoral commission in Mozambique is often seen as controlled by FRELIMO.

[22] We consider as relevant electoral outcomes winning an electoral majority, but also, for instance, getting the ruling party turnout to a level that leads to more local public good provision after the election.

nudging recipients to vote could remind these individuals that others are voting in large numbers, and in this way lead them to free-ride and stay at home. Alternatively, it could be that these SMSs from peers reinforce recipients' will to participate politically.

3.3.1 Hypotheses

We published a pre-analysis plan just before we submitted the SMS treatments in the week before the 2013 municipal elections. This is available at the research registration website of Evidence in Governance and Politics (EGAP).[23] All hypotheses analyzed in this paper were included in the pre-analysis plan.[24] We now turn to the description of our main hypotheses.

We start by the hypotheses relating to the distribution of the newspaper. In line with our theoretical framework, we hypothesize that the distribution of the newspaper at the level of the polling location increases political participation and voting for the ruling party (Aker et al., 2017).

We then turn to the hypotheses relating to the SMS treatments. Specifically, we state that SMS treatments are expected to increase political participation and voting for FRELIMO, but that peer reminders and encouragements are expected to be more powerful than simple reminders.[25] Consistently with the literature on get-out-the-vote campaigns (e.g., Gerber and Green, 2000), the rationale for these hypotheses is that reminders matter for political participation, and that the more personal they are the more influential they become.

We also propose hypotheses relating to the composition of the peer groups. We expect that men and older peers are most influential in terms of driving political behavior. Specifically, Mozambique is a country where traditional authorities, who have substantial influence (Buur and Kyed, 2005), are predominantly men and older than average household heads (e.g., Armand et al.,

---

[23] https://osf.io/ptv97.

[24] Note, however, that, while we stated clear predictions for outcomes representing political participation like voter turnout, we were agnostic about predictions on specific voting patterns for the different candidates. Still, we mentioned we would be testing treatment effects on voting for candidates. In addition, although we stated we would be employing behavioral measures of political participation, we did not refer explicitly all our behavioral measures. In the Appendix to the paper, we refer additional hypotheses that were in the pre-analysis but not in the analysis of this paper.

[25] Another hypothesis underlying our design and included in the pre-analysis plan is that peer encouragements are expected to be more powerful than peer reminders.

2020).[26] Moreover, similar groups of peers are likely to influence experimental subjects more than dissimilar ones.[27]

Finally, we hypothesize that peer influence through text messages is less powerful in increasing political participation and voting for the ruling party in the presence of location-level political mobilization, as given by the distribution of newspapers. This is consistent with Fafchamps et al. (2020), who provide evidence suggesting free-riding of network-central individuals in face of location-level mobilization. In their paper, these central individuals are subject to more network influence towards participation. Note, however, that in our paper we can distinguish centrality from peer influence, by isolating the causal effect of the latter.

3.5. Measurement

Our measurement of voting behavior at the polling location level comes from official data from STAE, including voter turnout (share of registered voters), blank votes (share of votes), and voting for the different candidates (share of votes). Note that we distinguish voting for the president of the municipality and for the municipal assembly, which had different ballot papers.

The individual measurement in our experiment comes from behavioral measures of political participation, specifically through the observed sending of SMSs by experimental subjects, from measures of voter turnout based on survey data and ballot box replication, and from measures of voting preferences from ballot box replication. We now describe the details of these measurements.

We begin by describing our (individual) behavioral measures of political participation. We asked experimental subjects to send SMSs concerning the municipal elections to the newspaper shortcode. We can identify the messages that were sent by each individual in our experiment by having access to the messages received in the shortcode and by matching mobile phone numbers. The sending of SMSs was costly in monetary terms: each SMS to the shortcode was priced at 3MT, i.e., close to 0.1USD. It was also costly in non-monetary terms, as senders had to spend some

---

[26] Men and older respondents to the Afrobarometer survey data for Mozambique are also more likely to vote. Note that Centola (2011), in his experiment on the adoption of healthy behaviors, puts forward a hypothesis analogous to ours, related to influence by higher status peers, which has a prominent position in the wider literature on social networks.
[27] This is a homophily hypothesis, as humans are more likely to identify with similar people (e.g., Centola, 2011).

time/effort thinking about what to write and writing the message on their mobile phones. Sending a text message therefore represents a clear costly action. It is arguably a better measure of political participation than corresponding survey questions, which are typically susceptible to social desirability bias.

Our first behavioral measure of political participation was created through establishing a hotline system. Our hotline was based on the dissemination of the newspaper shortcode and the invitation to send text messages reporting local electoral problems, which would be channeled to @Verdade. Information about the hotline system was given individually to all experimental subjects during the baseline survey. As part of these dissemination efforts, we distributed leaflets providing the basic information about the hotline system: shortcode, examples of problems, format of reports to be sent - specifically, label, polling location name first, description of the problem second -, and the sponsors of the initiative. The hotline leaflet is depicted in Figure A1 in Appendix. Each leaflet was printed on both sides of one page, with each side providing different SMS examples, one for the electoral campaign, and the other for the election day. Experimental subjects were also sent SMS reminders about the existence of the hotline system. We will employ in our analysis below a measure of whether our experimental subjects sent a hotline SMS.

Our second behavioral measure of political participation was gathered through an open letter system. During the post-election survey, all respondents were invited to send SMSs proposing policy priorities to the newly elected mayors. Experimental subjects were promised that the contents of these messages would reach the corresponding mayors in person, namely through @Verdade. As with the hotline, dissemination of the open letter was based on the distribution of a leaflet, which included two sides with two different examples of possible messages, shortcode, format of the message (including label), and sponsors. The leaflet is depicted in Figure A2 in Appendix. Experimental subjects were also sent SMS reminders about the existence of the open letter system. We will employ in our analysis below a measure of whether our experimental subjects sent an open letter SMS, a proxy of the demand for political accountability from citizens.

We also measure individual political participation from the sending of text messages related to the elections, as invited directly by the newspaper. The newspaper disseminated the shortcode on its own for general comments of their readers about the elections. For several years, every week, the newspaper has been publishing in its printed edition some of the comments received on its shortcode. Note that information about the sending of messages of this type is included in our

aggregate behavioral analysis: both in our measure of whether our experimental subjects sent an SMS of any type (hotline, open letter, or by newspaper invitation), and in our measure of how many SMSs of any type they sent.

We now devote our attention to the individual measures of voter turnout we employ in this paper. These are based on information gathered during the post-election survey.[28] We dedicated a module of the questionnaire to asking questions about all details of the election-day experience of the respondent. We construct three alternative measures of individual turnout.

The first measure is direct self-reported turnout. The second is an interviewer assessment on whether the respondent voted or not, after all questions about the election day were asked – enumerators were trained to watch body language as well. This measure takes into consideration survey questions that tested the respondents' knowledge about ballot station facts: these included how many ballot papers there were, whether there were photos on the ballot papers, how many ballot boxes there were, whether a finger was to be inked at the end of the voting, and which finger was to be inked at the end of the voting.[29] It also takes into account other reported details on the election-day experience of the respondent.[30] Finally, we asked our experimental subjects, during the submission of the post-election questionnaire, to replicate their voting at the municipal elections, by soliciting them to fill a copy of the ballot paper and by making available a transparent ballot box for vote insertion. Note that these transparent ballot boxes always had other ballot papers inside, even though experimental subjects were not told their replicated vote would be anonymous. Indeed, these ballot papers were marked, so that enumerators could identify each individual vote

by experimental subjects. Those individuals that decided not vote in the replica ballot box were counted as not voting in our box measure of turnout.

Turning to our individual measurement of voting for the different candidates/parties, as described above, we asked all respondents in our post-election survey to replicate their voting in the municipal elections, by using a copy of the ballot paper and a transparent ballot box. The enhanced sense of anonymity that this measurement is likely to entail may help producing accurate measures of voting. We employ below measures of voting for FRELIMO using the votes recorded in these ballot boxes.

3.6 Estimation strategy

Our empirical approach estimates treatment effects on the variety of outcome variables that we have available relating to voter turnout, voting for the different candidates/parties, and behavioral political participation. We now describe the main econometric specifications we employed for the estimation of these parameters. We focus on individual level regressions as the location-level ones we employ follow the same structure but at a higher level of aggregation.

Our design allows us to estimate average treatment effects. The effect of interest (β) can be estimated through the specification:

$$Y_{l,i,post} = \alpha + \theta X_{l,i} + \beta T_{l,i} + \varepsilon_{l,i,post}, \quad (1)$$

where Y is an outcome of interest, $l, i, post$ are identifiers for locations, individuals, and time - specifically, $post$ represents the post-election measurement -,[31] $X_{l,i}$ is a vector of location and individual (demographic) controls. $T_{l,i}$ is a vector of dummy variables representing the treatments with value 1 for treated units.

In some regressions, we are interested in interaction effects between different treatments, or between treatments and fundamental demographic characteristics like gender and age. In those

---

[31] Note that, in the regressions shown in the paper, we focus on simple-difference regressions (instead of difference-in-differences or ANCOVA). We do not have available baseline data for the behavioral political participation measures and for some of the measures on electoral behavior. Using data on the previous municipal elections would be problematic, as comparability cannot be guaranteed given different pools of candidates/parties in the two elections.

occasions, we estimate a specification of the type that follows. Here, we exemplify by aiming for the estimation of the interaction between two treatments. The coefficient of interest would be δ.

$$Y_{l,i,post} = \alpha + \theta X_{l,i} + \beta T_l^{NEWS} + \gamma T_{l,i}^{SMS} + \delta T_l^{NEWS}.T_{l,i}^{SMS} + \varepsilon_{l,i,post}, \quad (2)$$

where T_l^{NEWS} and $T_{l,i}^{SMS}$ are newspaper distribution and SMS treatments, respectively.

For ease of interpretation and transparency, we employ OLS estimations throughout the paper. We cluster standard errors at the level of the enumeration area in all regressions at the individual level.

On top of the pre-registration of our design, we take seriously the possibility of inference problems related to multiple hypothesis testing by employing the algorithm described in Romano and Wolf (2016). Specifically, we compute, for each null hypothesis under study, a corresponding p-value adjusted for the stepwise multiple hypothesis testing method proposed in Romano and Wolf (2005a,b). This method is stepdown like other improvements over Bonferroni (e.g., Holm, 1979), and resampling-based, which allows accounting for dependence between hypotheses. Hence, the underlying procedure allows increasing the power of the testing over other previous methods.

4 Econometric results

4.1 Balance and descriptive statistics

Tables A3 in the Appendix to this paper display mean demographic and political characteristics in the SMS and newspaper control groups, as well as differences between control and treatment groups. Specifically, we consider treatment groups defined by the location-level distribution of newspaper @Verdade, and by the type of SMS received (placebo, neutral, or positive) for each type of peer group (similar and dissimilar). We assess comparability across the different groups through testing the statistical significance of the differences to the corresponding control group. A joint F-Test is also displayed for each trait, resulting from a regression on dummy variables for each of the treatment groups included in the table. We employ a wide range of observable individual characteristics, based on data gathered during our baseline survey. These include basic demographics (gender, age, household size, marital status, and education), religion, ethnicity,

occupation, assets owned by the household, and reported voting behavior in the 2009 general elections.

Overall, we observe few differences (at standard significance levels) between treatment and control groups. In terms of basic demographics, religion, and ethnicity, we see just one significant difference (and one significant joint F-test), for frequency of primary school, when contrasting distribution of the newspaper to its control group. There are no statistically significant differences (or significant joint F-tests) across the different SMS comparison groups. In terms of occupation and asset ownership, when considering the newspaper, we report one significant difference for being an artisan; when considering SMS treatments, we observe two significant differences for being a farmer and for owning a bike, and one significant difference for owning a mobile phone. We do not find any statistically significant differences when taking reported behavior in the 2009 elections. No joint F-tests are significant for occupation, asset ownership, and political behavior. We note that, for each treatment group considered, we have at most two statistically significant differences to the control in 32 characteristics. Overall, just seven differences to control are significant in 224 differences tested, and just one joint F-test is significant in 32 tests performed. The number of significant tests is well below the 10 percent threshold in any dimension considered. This is evidence that the randomization procedures were effective at isolating similar groups of respondents.

Tables A3 in Appendix also provide a comprehensive description of our experimental sample. It is worth noting that the average respondent in the SMS control group was 32 years old. 95 percent of these individuals reported having some education. The main ethnicities represented were Macua (the dominant group in the North) and Changana (the dominant group in the South). 96 percent of the experimental households owned a mobile phone.[32] 90 percent of registered voters reported to have voted in the 2009 general elections.

4.2 Newspaper treatment

We now turn to analyzing treatment effects and start by the impact of the newspaper treatment, as given by the location-level distribution of @Verdade. We assess treatment effects on the official electoral results at the polling location level in Table 1. These results include voter turnout, blank

---

[32] In addition, we note that more than 80 percent of our survey respondents report using mobile phones every day.

votes, and voting for FRELIMO and MDM, while distinguishing between elections for the President of the Municipality (PM) and for the Municipal Assembly (MA). This analysis serves the purpose of testing our first main hypothesis, i.e., that the newspaper distribution at the level of the polling location increases political participation. We also see if, consequently, voting for FRELIMO increases. We consider both the full sample of all polling stations in the municipalities where the study was conducted, and the sample where surveying was conducted. Since polling locations within these municipalities were randomly drawn, both samples are valid for experimental inference. We employ specifications with demographic controls aggregating traits at the level of the enumeration area in the case of the sample where surveys were conducted.

<Table 1 near here>

We find clear positive effects of the newspaper treatment on voter turnout. This is a 6 percentage-point effect, across both types of elections, when considering the full sample. This effect is significant at the 1 percent level (also when performing multiple hypothesis testing). When considering the surveyed sample, we observe a 3-4 percentage-point effect in the specification with controls, which is marginally significant. When considering effects on blank votes, we find that all point estimates are negative in line with the idea that treated voters had more information about how to vote meaningfully. Some of the effects for blank votes are statistically significant: point estimates are 0.5 percentage points when employing the surveyed sample, with significance at the 10 percent level (however, statistical significance does not survive multiple hypothesis testing).[33] We also find positive effects on voting for FRELIMO: the magnitude is 5 or 9 percentage points (depending on the election), significant at the 1 percent level, while passing multiple hypothesis testing, when employing the full sample. When significant, effects on voting for MDM are correspondingly negative.

Generally, we can conclude in favor of our hypotheses regarding the electoral results, i.e., that the newspaper distribution led to higher voter turnout, and more voting for FRELIMO, in line with our theoretical framework. Both findings are in line with previous literature.

4.3 SMS treatments

---

[33] We also have access to the share of null votes in the official results. All treatment effects are negative in line with our interpretation for blank votes. However, none is statistically significant.

We now dedicate to analyzing the impact of the SMS treatments on our behavioral measures of political participation, on our measures of voter turnout, and on voting decisions as given by the pattern of voting in our replicated ballot box. In Table 2, we test whether the text messages increased political participation. By political participation, we mean whether individuals sent a hotline SMS, an open letter SMS, or any text message to the newspaper shortcode. We also consider the total number of text messages sent by individuals. Voter turnout is the most obvious measure of political participation we employ: we include as specific outcome measures of voter turnout the self-reported survey measure, the interviewer final assessment of whether the respondent voted (informed by all the survey questions on the election day), and whether individuals voted in our replicated ballot box. We also check whether the text messages changed voting for FRELIMO candidates in the replicated ballot box. All outcome variables we consider are binary except the number of SMS that was sent by our experimental subjects. Our treatment effect contrasts the group that includes all individuals assigned an SMS treatment in our experiment to the SMS control group. We show regressions with individual demographic controls, following specification (1).

<Table 2 near here>

First, we should note that 3 percent of the SMS control group sent a hotline message, 3 percent sent an open letter message, and 15 percent sent any message. We also see that the average number of messages sent by experimental subjects in the control group was 0.22. Self-reported turnout in the SMS control group was 83 percent, which compares to 67 percent in the interviewer assessment, and 82 percent in the box measure. Actual turnout in the polling locations without newspaper distribution in our experiment was 46 percent. Although our sampling is not representative of the voting population, it is then very likely that our survey self-reported measure embeds a considerable over-estimation of turnout. We can also observe that 91 percent of the SMS control voters in our replicated procedure voted for FRELIMO. It is also very likely that voting for FRELIMO is over reported as actual figures from the polling locations without newspaper distribution in our experiment were 65 percent voting for FRELIMO.

We find solid effects of the SMS treatments on increasing the probability of sending a text message of any type and the number of text messages of any type. The treatment effects are an increase of 7.6 percentage points in the probability of sending an SMS, statistically significant at the 5 percent level, and an increase in 0.31 in the number of messages sent, significant at the 1 percent level. Note that the second of these treatment effects also passes the Romano-Wolf procedure for multiple

hypothesis testing, which we apply to the two groups of outcome variables in the table. We also see effects on all our voter turnout measures. These effects are positive and range between 7.1 (self-reported), 8.3 (interviewer assessment), and 7.6 percentage points (box). They also pass multiple hypothesis testing. We observe no statistically significant differences in voting for FRELIMO in the replicated voting procedure we adopted. We can safely conclude that, overall, SMSs lead to higher levels of political participation.[34]

In Table A4 in the Appendix, we distinguish the differences between control and each of the nine SMS treatments we have in our experiment. We see that significant differences are not clearly clustered on any type of treatment, except perhaps for non-placebo groups. Significant treatment effects are only for behavioral SMS and turnout outcomes. We now devote finer attention to different types of SMS treatments. In Figure A4 in the Appendix to this paper, we analyze whether neutral and positive SMSs (reminders and encouragements) from peers have a stronger impact on participation than placebo SMSs (simple reminders), whether neutral SMSs (reminders) from peers have an effect over placebo SMSs (simple reminders), and whether positive SMSs (encouragements) from peers have a stronger impact on participation than neutral SMSs (reminders) from peers.[35] Overall, we have suggestive evidence that SMSs labelled as coming from peers have a positive effect on political participation.[36] This weak effect, if anything, seems to be associated to peer reminders (neutral messages). The effect of peer encouragements (positive messages) over peer reminders is clearly not positive and so different from our hypothesis.

Overall, we conclude that some SMS interventions we study in this paper modified aspects of the voter participation in the municipal elections of November 2013. Specifically, on average, the SMS

---

[34] This overall conclusion is confirmed when aggregating our outcome variables employing the method in Kling et al. (2007). We show results in Figure A3 in the Appendix to this paper, which employs the same aggregation we adopt when implementing the Romano-Wolf multiple hypothesis testing, while distinguishing turnout and voting for FRELIMO. We reach the conclusion that SMS treatments increase both the behavioral political participation measured through the SMSs, and individual turnout.

[35] We analyze the same outcome variables as before, and just show, for simplicity, treatment effects with corresponding confidence intervals at the 95 percent level. Note that the regressions we employ here do not include the SMS control group. They also do not include groups with positive messages in panel B and groups with placebo messages in panel C. All regressions considered include controls as in specification (1).

[36] Specifically, we observe a statistically significant positive effect on the number of behavioral SMSs sent: the magnitude is 0.21 more messages sent, significant at the 10 percent level. However, the Romano-Wolf p-value is above 10 percent. We also find positive impacts on other behavioral SMS outcomes and in most turnout measures: however, these are not statistically significant. Close to statistical significance is also a positive effect on voting for FRELIMO, but, again, this is only suggestive.

treatments led to an increase in the sending of SMS relating to the elections and the turnout of voters.

4.4 Peer influence

In this section, we turn to peer influence, while exploring in further detail the SMSs originating from peers. We divide our attention between the effects of the peer characteristics conveyed in the messages, and the effects of the peer messages in the presence of location-wide mobilization of voters through the distribution of newspapers.

Table 3 is devoted to the impact of peer characteristics. We test whether neutral and positive SMSs (reminders and encouragements) from men and older subjects have stronger effects than neutral and positive SMSs from women and younger subjects. Specifically, we interact two dummy variables for neutral or positive messages coming from similar groups of peers, and neutral or positive messages coming from dissimilar groups of peers[37] with gender and age dummies, while controlling for all mentioned variables in isolation. Following our hypothesis, we expect that both the interaction of similar and male/old and the interaction of dissimilar and female/young are positive for political participation and voting for FRELIMO. We are also able to test for homophily, i.e., that neutral and positive SMSs from similar peers have stronger effects than neutral and positive SMSs from dissimilar ones. All regressions include demographic controls following a specification analogous to (2) above.

<Table 3 near here>

We observe that male subjects seem to be influencing peers to send more messages: both interaction coefficients are positive (magnitude is 0.33-0.35 more messages) and statistically significant at the 5 or 10 percent levels. Note however that the Romano-Wolf p-values are above standard levels. Moreover, the test of the null that the sum of the two coefficients is zero shows that male subjects also influence their peers in terms of increasing the probability of sending an SMS of any type. We similarly find a positive and significant effect on voter turnout of neutral or positive messages originating from males on males. However, we find a negative and significant effect of males on female turnout. Both effects are for the measure of turnout based on interviewer assessments and

---

[37] The value 0 on both dummies is assigned to receiving placebo messages, as the SMS control group is excluded from analysis.

are close to significance when considering the p-values of multiple hypothesis testing. On the patterns relating to age, we can document that old subjects seem to influence old peers, through neutral and positive messages, to vote more for FRELIMO. The magnitude is 10 percentage points, significant at the 5 percent level, while passing multiple hypothesis testing. The overall effect of old peers (counting with both effects on young and old recipients of messages) is also positive and statistically significant. Relating to the impact of peer similarity, assessed through the tests at the bottom of Table 3, we do not find a clear pattern of effects: although similar peers influence voters to vote for FRELIMO, dissimilar peers lead SMS recipients to sending more open letter messages.

We now focus on the interaction of the peer SMS treatments with the newspaper distribution. In Table 4, we check impact on the variables relating to individual political behavior as we employed before. We test the hypothesis that neutral and positive SMSs by peers (reminders and encouragements), relative to placebo SMSs (simple reminders), have a weaker effect for subjects targeted by newspaper distribution at the location-level. Our analysis includes regressions with control variables following specification (2) above.

<Table 4 near here>

Overall, we can observe positive interaction effects. These effects are significant for two measures of turnout, self-reported and box, with magnitudes between 12 and 18 percentage points, at the 1 or 5 percent levels. Note that both measures of turnout pass multiple hypothesis testing. We also find significant interactions (although not surviving the Romano-Wolf procedure) for the likelihood of sending the open letter, with magnitude 5 percentage points. Finally, we find positive point estimates on voting for FRELIMO, which approach but do not reach statistical significance at standard levels. We therefore cannot find evidence in favor of a free-riding hypothesis (Fafchamps et al, 2020): in fact, we find evidence for a more positive impact of peer influence, in face of location-level mobilization of voters as given by newspaper distribution.

Our design enables the identification of causal effects of peer characteristics and messages, which is unusual in the literature. We conclude from our analysis of messages coming from peers that males positively influence the political participation of others, and that older subjects drive their peers to vote for FRELIMO. We also observe complementarity of peer messages with location-wide information and mobilization given by the newspapers. Although the latter is different from what Fafchamps et al. (2020) found, it may be seen as unsurprising. These authors found that

individuals with stronger networks voted less often when faced with location-wide information/mobilization and interpreted this negative interaction effect as free-riding. This is because more central individuals anticipate that voter turnout is likely to increase. However, centrality may have different meanings. Centrality may mean our subjects receive more peer influence (as in our SMS treatments). However, it may also mean that they are more aware of location-level mobilization efforts. Indeed, if they are more aware of these efforts, they may well free ride on others' increased voter turnout. That does not mean peer influence cannot have a positive impact on top of location-level mobilization of voters, as we find cleanly in this paper.

5 Concluding remarks

In this paper, we tested the role of information, GOTV messages, and peer influence on political behavior. This testing was achieved in the context of a field experiment conducted in Mozambique during the municipal elections of 2013. We followed the distribution of free newspaper @Verdade. We also assigned random peers to experimental subjects and tested the impact of several types of text messages focusing on voter turnout, some of them explicitly from peers. We find positive effects of newspaper distribution on voter turnout and voting for FRELIMO at the polling location level, while employing official results. We also observe clear effects of GOTV text messaging on political participation including voter turnout. Regarding peer influence, we establish causal effects of male peers on increasing the level of participation of others, and of older peers on driving voters to vote for FRELIMO. Finally, we find that peer GOTV produces stronger political participation when experimental subjects are mobilized at the level of the location.

Looking at the results of this paper, we infer that the distribution of free newspapers, as well as SMSs providing information about the elections and mobilizing voters to vote, are effective at producing political participation. We detect effects on voter turnout of newspaper distribution between 3 and 6 percentage points (location data), and of our average SMS between 7 and 8 percentage points (individual data). Both are comparable to the effects found during the 2009 elections (Aker et al., 2017). For policy makers interested in increasing the levels of political participation in Mozambique and similar contexts, we can then provide reassurance that these forms of voter mobilization and education are effective. However, we add two specific implications armed with the strength of causal identification: (i) peer influence from older and male individuals is particularly effective, namely in driving political participation and votes for the ruling party; (ii) peer influence may be complementary to location-level political mobilization efforts. The first

implication is of particular importance when targeting information campaigns. The second implication should provide encouragement that providing platforms for peer influence, even side-by-side with the general provision of information, is likely to magnify political participation.

References

Aker, Jenny, Paul Collier, and Pedro C. Vicente (2017), *Is Information Power? Using Cell Phones and Free Newspapers in an Election in Mozambique*, Review of Economics and Statistics, 99(2), pp. 185-200;

Arias, Eric, Pablo Balan, Horacio Larreguy, John Marshall, and Pablo Querubin (2019), *Information Provision, Voter Coordination, and Electoral Accountability: Evidence from Mexican Social Networks*, American Political Science Review, 113(2), pp. 475-498;

Armand, Alex, Alexander Coutts, Pedro C. Vicente, and Inês Vilela (2020), *Does Information Break the Political Resource Curse: Experimental Evidence from Mozambique*, American Economic Review, 110(11), pp. 3431-3453;

Banerjee, Abhijit. V., Selvan Kumar, Rohini Pande, and Felix Su (2011), *Do Informed Voters Make Better Choices? Experimental Evidence from Urban India*, Harvard University, Working Paper;

Batista, Cátia, and Pedro C. Vicente (2011), *Do Migrants Improve Governance at Home? Evidence from a Voting Experiment*, World Bank Economic Review, 25(1), pp. 77-104;

Bentham, Jeremy (1999), *Political Tactics*, in *The Collected Works of Jeremy Bentham*, Michael James, Cyprian Blamires, and Catherine Pease-Watkin (eds.), Oxford University Press;

Buur, Lars, and Helene M. Kyed (2005), *State Recognition of Traditional Authority in Mozambique: the Nexus of Community Representation and State Assistance*, Discussion Paper 28, Nordic Africa Institute;

Casey, Katherine (2015), *Crossing Party Lines: The Effects of Information on Redistributive Politics*, American Economic Review, 105(8), pp. 2410-2448;

Centola, Damon (2011), *An Experimental Study of Homophily in the Adoption of Health Behavior*, Science, 334, pp. 1269-1272;

Chong, Alberto, Ana De La O, Dean Karlan, and Leonard Wantchekon (2015), *Does Corruption Information Inspire the Fight or Quash the Hope? A Field Experiment in Mexico on Voter Turnout, Choice and Party Identification*, Journal of Politics, 77(1), pp. 55-71;

Collier, Paul, and Pedro C. Vicente (2014), *Votes and Violence: Evidence from a Field Experiment in Nigeria*, joint with Paul Collier, Economic Journal, 124(574), pp. F327-355;

Cruz, Cesi, Philip Keefer, Julien Labonne (2020), *Buying Informed Voters: New Effects of Information on Voters and Candidates*, University of Oxford, Working Paper;

Dale, Allison., and Aaron Strauss (2009), *Don't Forget to Vote: Text Message Reminders as a Mobilization Tool*, American Journal of Political Science, 53(4), pp. 787‑804;

De Brito, Luis (2007), *A Democracia à Prova da Urnas: Elementos para um Programa de Pesquisa Sobre a Abstenção Eleitoral em Moçambique*, IESE, Conference Paper 3;

Dhillon, Amrita, and Susana Peralta (2002), *Economic Theories of Voter Turnout*, Economic Journal, 112, pp. F332-F352;

Downs, Anthony (1957), *An Economic Theory of Democracy*, New York: Harper and Row;

Dunning, Thad, Guy Grossman, Macartan Humphreys, Susan D. Hyde, Craig McIntosh, Gareth Nellis, Claire L. Adida, Eric Arias, Clara Bicalho, Taylor C. Boas, Mark T. Buntaine, Simon Chauchard, Anirvan Chowdhury, Jessica Gottlieb, F. Daniel Hidalgo, Marcus Holmlund, Ryan

Jablonski, Eric Kramon, Horacio Larreguy, Malte Lierl, John Marshall, Gwyneth McClendon, Marcus A. Melo, Daniel L. Nielson, Paula M. Pickering, Melina R. Platas, Pablo Querubín, Pia Raffler, and Neelanjan Sircar (2019), *Voter Information Campaigns and Political Accountability: Cumulative Findings from a Preregistered Meta-analysis of Coordinated Trials*, Science Advances, 5(7), eaaw2612;

Fafchamps, Marcel, and Julien Labonne (2018), *Family Networks and Distributive Politics*, Journal of the European Economic Association, forthcoming;

Fafchamps, Marcel, and Pedro C. Vicente (2013), *Political Violence and Social Networks: Experimental Evidence from a Nigerian Election*, Journal of Development Economics, 101, pp. 27-48;

Fafchamps, Marcel, Ana Vaz, and Pedro C. Vicente (2020), *Voting and Peer Effects: Experimental Evidence from Mozambique*, Economic Development and Cultural Change, 68(2), pp. 567-605;

Feddersen, Timothy (2004), *Rational Choice Theory and the Paradox of Not Voting*, Journal of Economic Perspectives, 18(1), pp. 99-112;

Ferraz, Claudio, and Frederico Finan, (2008), *Exposing Corrupt Politicians: the Effects of Brazil's Publicly Released Audits on Electoral Outcomes*, Quarterly Journal of Economics, 123(2), pp. 703-745;

Finkel, Steven E., and Amy Erica Smith (2011), *Civic Education, Political Discussion, and the Social Transmission of Democratic Knowledge and Values in a New Democracy: Kenya 2002*, American Journal of Political Science, 55(2), pp. 417-435;

Forquilha, Salvador (2009), *The Paradox of Articulation of Local State Organs: From the Discourse on Decentralization to the Conquest of Local Political Spaces*, Cadernos de Estudos Africanos, 16/17;

Fujiwara, Thomas (2015), *Voting Technology, Political Responsiveness, and Infant Health: Evidence from Brazil*, Econometrica, 83(2), pp. 423-464;

Fujiwara, Thomas, and Leonard Wantchekon (2013), *Can Informed Public Deliberation Overcome Clientelism? Experimental Evidence from Benin*, American Economic Journal: Applied Economics, 5(4), pp. 241-255;

Gerber, Alan S. and Donald P. Green (2000), *The Effects of Canvassing, Telephone Calls, and Direct Mail on Voter Turnout: A Field Experiment*, American Political Science Review, 94(3), pp. 653-663.

Gerber, Alan S., Donald P. Green, and Christopher W. Larimer (2008), *Social Pressure and Vote Turnout: Evidence from a Large-Scale Field Experiment*, American Political Science Review, 102(1), pp. 33-48;

Gerber, Alan S., Dean Karlan, and Daniel Bergan (2009), *Does the Media Matter? A Field Experiment Measuring the Effect of Newspapers on Voting Behavior and Political Opinions*, American Economic Journal: Applied Economics, 1(2), pp. 35-52;

Gine, Xavier, and Ghazala Mansuri (2018), *Together We Will: Experimental Evidence on Female Voting Behavior in Pakistan*, American Economic Journal: Applied Economics, 10(1), pp. 207-35;

Grossman, Guy, and Kristin Michelitch (2018), *Information Dissemination, Competitive Pressure, and Politician Performance between Elections: A Field Experiment in Uganda*, American Political Science Review, 112(2), pp. 280-301;

Grossman, Guy, Macartan Humphreys, and Gabriella Sacramone-Lutz (2014), "I wld like u WMP to extend electricity 2 our village": On Information Technology and Interest Articulation, American Political Science Review, 108(3), 688-705;

Holm, Sture (1979), *A Simple Sequentially Rejective Multiple Test Procedure*, Scandinavian Journal of Statistics, 6, pp. 65-70;

Humphreys, Macartan, and Jeremy Weinstein (2012), *Policing Politicians: Citizen Empowerment and Political Accountability in Uganda*, Working Paper;

Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz (2007), *Experimental Analysis of Neighborhood Effects*, Econometrica, 75(1), pp. 83-119;

León, Gianmarco (2017), *Turnout, Political Preferences and Information: Experimental Evidence from Peru*, Journal of Development Economics, 127, pp. 56-71;

Marx, Benjamin, Vincent Pons, and Tavneet Suri (2017), *The Perils of Voter Mobilization*, NBER Working Paper No. 23946;

Mattes, Robert, and Carlos Shenga (2007), *'Uncritical Citizenship' in a 'Low-Information' Society: Mozambicans in Comparative Perspective*, Afrobarometer, Working Paper 91;

McPherson, Miller, Lynn Smith-Lovin, and James M. Cook (2001), *Birds of a Feather: Homophily in Social Networks*, Annual Review of Sociology, 27(1), pp. 415-444;

Myatt, David P. (2015), *A Theory of Voter Turnout*, London Business School, Working Paper;

Nickerson, David W. (2008), *Is Voting Contagious? Evidence from Two Field Experiments*, American Political Science Review, 102(1), pp. 49–57;

Palfrey, Thomas R., and Howard Rosenthal (1983), *A Strategic Calculus of Voting*, Public Choice, 41(1), pp. 7-53;

Pereira, Joao, Yul D. Davids, and Robert Mattes (2002), Mozambicans' Views of Democracy and Political Reform: A Comparative Perspective, Afrobarometer, Working Paper 22;

Pereira, Joao, Ines Raimundo, Annie Chikwanha, Alda Saute, and Robert Mattes (2003), *Eight Years of Multiparty Democracy in Mozambique: The Public's View*, Afrobarometer, Working Paper 30;

Pons, Vincent (2018), *Will a Five-Minute Discussion Change Your Mind? A Countrywide Experiment on Voter Choice in France*, American Economic Review, 108(6), pp. 1322-1363;

Romano, Joseph P., and Michael Wolf (2005a), *Exact and Approximate Stepdown Methods for Multiple Hypothesis Testing*, Journal of the American Statistical Association, 100(469), pp. 94-108;

Romano, Joseph P., and Michael Wolf (2005b), *Stepwise Multiple Testing as Formalized Data Snooping*, Econometrica, 73(4), pp. 1237-1282;

Romano, Joseph P., and Michael Wolf (2016), *Efficient Computation of Adjusted p-values for Resampling-based Stepdown Multiple Testing*, Statistics & Probability Letters, 13, pp 38-40;

Shenga, Carlos, and Amilcar Pereira (2008), *Summary of Results Round 4 Afrobarometer Survey in Mozambique*, Afrobarometer;

Vicente, Pedro C. (2014), *Is Vote-buying Effective? Evidence from a Field Experiment in West Africa*, Economic Journal, 124(574), pp. F356-387;

Wantchekon, Leonard (2003), *Clientelism and Voting Behavior: Evidence from a Field Experiment in Benin*, World Politics, 55, pp. 399-422.

Figure 1: Experimental municipalities

Table 1: Effects of newspaper treatment on political behavior - administrative data

Dependent variable ---->	Turnout share		Blank votes share		Voting share			
	PM	MA	PM	MA	FRELIMO PM	FRELIMO MA	MDM PM	MDM MA
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: full sample								
Treatment effect	**0.057***	**0.058***	**-0.003**	**-0.002**	**0.092***	**0.048***	**0.008**	**-0.038**
	(0.016)	(0.016)	(0.002)	(0.002)	(0.026)	(0.015)	(0.012)	(0.016)
RW p-value	0.005	0.002	0.264	0.308	0.005	0.004	0.494	0.026
Mean dep. variable (control)	0.405	0.404	0.031	0.028	0.494	0.575	0.235	0.328
R-squared adjusted	0.468	0.465	0.262	0.151	0.585	0.570	0.760	0.505
Number of observations	331	331	331	331	331	331	331	331
Controls	no	no	no	no	no	no	no	no
Panel B: surveyed sample								
Treatment effect	**0.033***	**0.035***	**-0.005***	**-0.005***	**0.032**	**0.024**	**0.002**	**-0.012**
	(0.019)	(0.019)	(0.003)	(0.003)	(0.027)	(0.017)	(0.015)	(0.019)
RW p-value	0.283	0.219	0.283	0.219	0.419	0.219	0.895	0.499
Mean dep. variable (control)	0.449	0.449	0.035	0.032	0.614	0.636	0.228	0.263
R-squared adjusted	0.367	0.368	0.276	0.225	0.479	0.590	0.715	0.597
Number of observations	191	191	191	191	191	191	191	191
Controls	yes	yes	yes	yes	yes	yes	yes	yes

Note: OLS regressions. Treatment defined at the location level as having received newspaper @Verdade. PM - President of the Municipality; MA - Municipal Assembly. All dependent variables are shares of registered voters (turnout) or votes (other variables). Specifications without and with controls include province dummies. Controls are: mean gender, mean age, mean household size, mean education, mean employment of the sample of the enumeration area. Robust standard errors reported in parenthesis. We show p-values from applying the Romano-Wolf resampling-based stepdown multiple testing procedure by election type (PM and MA) in this table. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 2: Effects of any SMS treatment on political behavior

Dependent variable ---->	Behavior				Electoral outcomes			
					Turnout			Voting
	Hotline	Open letter	Any SMS	Number of SMS	Self-reported	Interviewer	Box	Box FRELIMO
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment effect	-0.010	-0.005	0.076**	0.307***	0.071*	0.083*	0.076*	0.014
	(0.016)	(0.017)	(0.036)	(0.081)	(0.041)	(0.050)	(0.043)	(0.028)
RW p-value	0.637	0.696	0.118	0.027	0.096	0.096	0.096	0.499
Mean dep. variable (control)	0.032	0.032	0.151	0.222	0.831	0.674	0.821	0.913
R-squared adjusted	0.005	0.011	0.009	0.017	0.017	0.039	0.024	0.166
Number of observations	1,251	1,251	1,251	1,251	925	925	863	770
Controls	yes	yes	yes	yes	yes	yes	yes	yes

Note: OLS regressions. Treatment defined as receiving any SMS treatment. All dependent variables are binary, except number of SMS. All regressions include province dummies and controls. Controls are: gender, age, household size, education, and employment status. Clustered standard errors by enumeration area reported in parenthesis. We show p-values from applying the Romano-Wolf resampling-based stepdown multiple testing procedure with clustered standard errors by enumeration area to the two groups of outcome variables in this table. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 3: Effects of peer SMS treatments on political behavior

Dependent variable ---->		Behavior				Electoral outcomes			Voting
						Turnout			
		Hotline	Open letter	Any SMS	Number of SMS	Self-reported	Interviewer	Box	Box FRELIMO
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Similar*male (a)		**0.015**	**0.020**	**0.090**	**0.334****	**0.068**	**0.126***	**0.018**	**-0.024**
		(0.018)	(0.023)	(0.055)	(0.169)	(0.044)	(0.068)	(0.044)	(0.040)
	RW p-value	0.556	0.556	0.248	0.240	0.335	0.174	0.802	0.802
Dissimilar*female (b)		**0.016**	**0.018**	**0.060**	**0.346***	**-0.024**	**-0.125***	**-0.046**	**0.044**
		(0.018)	(0.018)	(0.049)	(0.192)	(0.043)	(0.066)	(0.047)	(0.034)
	RW p-value	0.591	0.591	0.530	0.713	0.581	0.148	0.581	0.581
Similar*old (c)		**-0.005**	**-0.009**	**-0.034**	**-0.110**	**0.013**	**0.017**	**0.014**	**0.095****
		(0.016)	(0.021)	(0.057)	(0.191)	(0.043)	(0.061)	(0.045)	(0.045)
	RW p-value	0.929	0.929	0.929	0.929	0.978	0.978	0.978	0.074
Dissimilar*young (d)		**-0.019**	**-0.010**	**0.018**	**0.032**	**0.020**	**0.034**	**-0.075**	**0.029**
		(0.020)	(0.017)	(0.054)	(0.178)	(0.043)	(0.059)	(0.047)	(0.041)
	RW p-value	0.674	0.893	0.895	0.895	0.850	0.850	0.340	0.850
Similar (e)		0.007	-0.012	-0.025	0.022	-0.045	-0.066	-0.018	0.010
		(0.011)	(0.018)	(0.048)	(0.120)	(0.042)	(0.051)	(0.041)	(0.037)
Dissimilar (f)		0.001	0.021	-0.009	-0.097	-0.006	0.057	0.082*	-0.012
		(0.018)	(0.013)	(0.045)	(0.179)	(0.031)	(0.046)	(0.042)	(0.030)
Male		0.014	0.007	-0.027	0.030	-0.018	-0.088	-0.003	-0.006
		(0.016)	(0.019)	(0.053)	(0.163)	(0.042)	(0.070)	(0.047)	(0.046)
Old		0.008	-0.001	0.102*	0.311*	0.035	0.061	-0.033	-0.054
		(0.016)	(0.018)	(0.061)	(0.175)	(0.046)	(0.067)	(0.048)	(0.052)
Constant		0.006	0.032	0.194**	0.369	0.906***	0.778***	0.876***	0.959***
		(0.036)	(0.040)	(0.086)	(0.305)	(0.084)	(0.137)	(0.087)	(0.061)
R-squared adjusted		0.003	0.016	0.013	0.021	0.006	0.043	0.014	0.174
Number of observations		1,125	1,125	1,125	1,125	836	836	779	701
H0: (a)+(b)=0 F-stat p-value		0.254	0.204	0.042	0.009	0.492	0.994	0.669	0.688
H0: (c)+(d)=0 F-stat p-value		0.333	0.522	0.832	0.764	0.583	0.568	0.343	0.055
H0: (a)+(c)+(e)=0 F-stat p-value		0.328	0.990	0.487	0.106	0.334	0.146	0.723	0.021
H0: (b)+(d)+(f)=0 F-stat p-value		0.879	0.024	0.072	0.017	0.799	0.559	0.316	0.059

Note: OLS regressions. Similar and dissimilar treatments defined, respectively, as receiving SMSs (neutral or positive) from the similar peer group, and as receiving SMSs (neutral or positive) for the dissimilar peer group. Values 0 are defined for placebo SMSs. All dependent variables are binary, except number of SMS. All regressions include province dummies and controls. Controls are: gender, age, household size, education, and employment status. Clustered standard errors by enumeration area reported in parenthesis. We show p-values from applying the Romano-Wolf resampling-based stepdown multiple testing procedure with clustered standard errors by enumeration area to the two groups of outcome variables in this table. * significant at 10%; ** significant at 5%;

Table 4: Interaction effects between peer SMSs and newspaper distribution on political behavior

	Behavior				Electoral outcomes			
					Turnout			Voting
Dependent variable ---->	Hotline	Open letter	Any SMS	Number of SMS	Self-reported	Interviewer	Box	Box FRELIMO
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Newspaper*SMS	0.011	0.053*	0.038	0.297	0.117**	0.089	0.184***	0.074
	(0.026)	(0.029)	(0.081)	(0.252)	(0.051)	(0.094)	(0.057)	(0.063)
RW p-value	0.777	0.185	0.777	0.358	0.026	0.230	0.006	0.230
Newspaper	-0.020	-0.044	-0.060	-0.242	-0.132***	-0.099	-0.188***	-0.067
	(0.023)	(0.027)	(0.079)	(0.242)	(0.047)	(0.095)	(0.052)	(0.064)
SMS	0.009	-0.020	0.001	0.027	-0.084***	-0.018	-0.098***	0.003
	(0.025)	(0.028)	(0.067)	(0.241)	(0.017)	(0.068)	(0.020)	(0.047)
Constant	0.010	0.081*	0.233**	0.419	0.938***	0.691***	0.934***	0.984***
	(0.041)	(0.048)	(0.099)	(0.405)	(0.071)	(0.131)	(0.085)	(0.061)
R-squared adjusted	0.001	0.017	0.007	0.017	0.010	0.037	0.021	0.166
Number of observations	1,125	1,125	1,125	1,125	836	836	779	701

Note: OLS regressions. The SMS treatment is defined as having received a peer SMS treatment (neutral or positive). The pure control SMS condition is excluded from the analysis. The newspaper treatment is defined at the location level as having received newspaper @Verdade. All dependent variables are binary, except number of SMS. All regressions include province dummies and controls. Controls are: gender, age, household size, education, and employment status. Clustered standard errors by enumeration area reported in parenthesis. We show p-values from applying the Romano-Wolf resampling-based stepdown multiple testing procedure with clustered standard errors by enumeration area to the two groups of outcome variables in this table. * significant at 10%; ** significant at 5%; *** significant at 1%.