

# Do Polls Affect Elections? Evidence from Swiss Referenda

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May 2021

## Abstract

In recent years, the outcomes of several high-stakes votes have not been correctly predicted by public opinion polls. We propose that polls themselves may shape election outcomes by affecting voter turnout. We first present evidence that polls have a causal effect on voter turnout, with greater turnout in response to close polls. To identify this effect, we exploit the precise day-level timing of the release of poll results for federal referenda, and a dataset on daily mail-in voting for the canton of Geneva. The release of a closer poll causes turnout to sharply rise immediately after poll release, with cumulative turnout remaining significantly higher through election day. Turnout rates are no different in the days prior to the release of close polls, suggesting that the information contained in the polls was not anticipated, issue types were not perceived as different, and the political “supply side” was not differentially active. We generalize our findings by specifying a model of voter turnout depending on locally available information and on the existence and closeness of polls. We confirm the predictions of the model using municipality-level data from across Switzerland, exploiting the introduction of national polls in 1998. We then provide evidence that this turnout effect can shape election outcomes. We find that the effect of close polls is heterogeneous, with an asymmetric effect leading to a higher vote share for the underdog, and effects varying with newspaper coverage of polls. The effect sizes we estimate are large enough to flip high-stakes election outcomes.

**Keywords:** Polls, media, voter turnout

**JEL Classification:** D72, P16

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# 1 Introduction

In recent years, the outcomes of several high-stakes votes have not been correctly predicted by public opinion polls. Most famously, Hillary Clinton was widely expected to defeat Donald Trump in the 2016 US Presidential election, and ultimately lost. Also in 2016, UK voters were expected to vote to “Remain” in the EU in the Brexit referendum; yet, the “Leave” vote won. In 2014, the Swiss voted on immigration restrictions that would violate their international treaties with the EU; this initiative was predicted to fail, yet it passed. What can explain the divergence between polls and electoral outcomes? We propose that polls themselves may shape election outcomes by affecting voter turnout.<sup>1</sup> Could poll predictions have led supporters of the leading side to anticipate a comfortable victory, stay home, and thus leave the door ajar for an underdog upset?

In this paper, exploiting unique sources of variation in voters’ exposure to polls in Switzerland, we first present evidence that polls have a causal effect on voter *turnout*, with voters turning out more in response to close polls.<sup>2</sup> We then provide evidence that this turnout effect can shape election *outcomes*. We find that the effect of close polls is heterogeneous, with an asymmetric effect leading to a higher vote share for the underdog, and effects varying with newspaper coverage. The effect sizes we estimate are large enough to flip extremely high-stakes referendum outcomes.

To identify the causal effect of close polls on voter turnout, we exploit the precise day-level timing of the release of Swiss national poll results for 52 high-stakes federal referenda, and a novel dataset on *daily* mail-in voting for the canton of Geneva.<sup>3</sup> Using an event study design — thus holding fixed the issue on which voters are deciding — we find that the release of a closer poll causes voter turnout to sharply rise immediately after poll release. A one-standard deviation closer poll increases voter turnout by a statistically significant 0.4 percentage points in each of three days immediately following the poll’s release, with cumulative turnout remaining significantly higher through election day. We find that turnout rates are no different in levels or trends in the days prior to the release of close polls, suggesting that the information contained in the polls was not anticipated, that the issue types were not perceived as different, and that the political “supply side” was not differentially active before the release of close polls.

We next consider whether changed political advertising may have contributed to the turnout effect we observe. We count political ads in newspapers (the primary form of political advertising

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<sup>1</sup>The American Association for Public Opinion Research notes this possibility in their evaluation of the 2016 US Presidential polls, writing, “[P]redictions that Clinton was 90 percent likely to win ... helped crystalize the belief that Clinton was a shoo-in for president, with unknown consequences for turnout” (American Association for Public Opinion Research, 2017).

<sup>2</sup>Such a causal effect might arise for a variety of theoretical reasons, from (perhaps imperfect) instrumental calculations of costs and benefits (Myatt, 2015), to interactions of election closeness with social preferences (e.g., DellaVigna et al., 2016) or with the intrinsic utility from voting (e.g., Riker and Ordeshook, 1968, Brennan and Buchanan, 1984, Schuessler, 2000, Feddersen and Sandroni, 2006, and Ali and Lin, 2013).

<sup>3</sup>The vast majority — 90% — of votes cast in Geneva for the referenda studied are mail-in ballots. Note that we use the term “referenda” throughout to refer to federal referenda and initiatives. We discuss the institutional details of our setting in Section 2.

in Switzerland, as TV ads are prohibited) and find that ads increase only three days after the release of a closer poll (potentially affecting votes counted four days after poll release), well after voter turnout already significantly increased.

To test for a causal effect of close polls on voter turnout beyond the case study of Geneva, we specify a model of voter behavior that generates testable predictions regarding turnout depending on the existence and closeness of polls, as well as on locally available information. We assume that, in the absence of polls, voters gauge an upcoming election's closeness by "locally sampling" among individuals in their municipality. This will yield correct beliefs only if the municipality's closeness is correlated with closeness at the national level (i.e., if the municipality is politically "representative"). Thus, in the absence of polls, voters in unrepresentative municipalities will be unable to condition their turnout on national level closeness. In contrast, once polls are introduced, voters in both representative and unrepresentative municipalities will be able to condition their turnout on poll closeness, producing similar turnout regardless of representativeness.

Switzerland provides a unique context to test this model's predictions of the impact of polls on voter turnout: prior to 1998, there was *no* national poll released in Switzerland; after 1998, national polls were regularly released prior to most referenda. Examining voter turnout in federal referenda before and after the introduction of national polls, we find evidence consistent with the model. Prior to 1998, municipalities unrepresentative of Switzerland exhibit a significantly weaker association between closeness and turnout than representative municipalities. Following the introduction of polls, the closeness-turnout gradient increases differentially in unrepresentative municipalities, is positive and highly significant, and nearly identical in the two sets of municipalities.

In the second part of the paper, we examine whether close polls can affect election outcomes by changing the *composition* of the electorate. We consider two mechanisms potentially producing such a change. First, it may be the case that turnout responses to close polls are asymmetric, with supporters of the trailing side in the poll responding differently compared to supporters of the leading side.<sup>4</sup> To examine this possibility, we proxy for a municipality's support for the trailing side using the local vote share for parties that endorse the trailing side in the poll.<sup>5</sup> We find that closer polls differentially increase the turnout rate in municipalities with more support for the trailing side. In addition, the *ex post* vote share for the trailing side is significantly greater in these municipalities following a closer poll. This suggests that the higher turnout is driven by supporters of the trailing side.

A second possible source of a changed composition of the electorate in response to polls could result from differential coverage of polls by newspapers: this could vary across space, or across ideologically segmented readerships. We study the effect of within-election variation in the cov-

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<sup>4</sup>We use "trailing" and "leading" to describe polls' forecasted outcomes, in contrast to "losing" and "winning", which we use to describe the ultimate election outcomes.

<sup>5</sup>We use vote shares in the *preceding* legislative election to minimize concerns about simultaneity.

erage of the national poll by newspapers read by the citizens of a canton.<sup>6</sup> Using a  $\text{canton} \times \text{vote}$  panel, controlling for canton and vote fixed effects, we find that greater cantonal newspaper coverage of close polls significantly increases voter turnout.<sup>7</sup>

To evaluate the magnitude of these heterogeneous effects of close polls, we simulate election outcomes under several counterfactual polling and newspaper coverage scenarios. Our counterfactuals are motivated by real-world variation in polling outcomes (resulting from sampling and methodological differences), by restrictions to the publication of polls (enforced in some countries), as well as by differences in media coverage of poll results (alongside ideological sorting of voters into newspaper readership).

We first consider counterfactual scenarios in which polls are either set at average closeness, or at one standard deviation closer than the actual poll. Under these scenarios, supporters of the trailing side would turn out differentially less (more), potentially overturning referendum results in which the trailing side in the polls ultimately won (lost) a close vote. We find that under these assumptions several high-stakes referenda conducted in Switzerland over the last years — on topics ranging from immigration to pension reforms and corporate taxation — would have had different outcomes. Alternatively, we consider the effects of counterfactual newspaper coverage, simulating a scenario in which newspapers with readers supporting the losing side increase coverage of the poll to the sample maximum (for example, to stimulate readers' turnout). Such a change in coverage in a *single* canton would have flipped a high-stakes referendum on immigration.

Our findings contribute most directly to a large empirical literature testing whether closer polls affect voter turnout. Up to now, the literature on the effects of polls on voter turnout and elections has been mixed. A large literature shows observational associations between election closeness and turnout.<sup>8</sup> However, causal inference in these studies is undermined by concerns that underlying issue type or the behavior of the political “supply side” (e.g., political advertising) may drive the results. Lab experiments provide evidence that suggests a causal effect of poll closeness on turnout, but their external validity remains to be verified.<sup>9</sup> Recent field experimental work (Enos and Fowler, 2014, and Gerber et al., 2020) randomly assigns voters information about the closeness of an upcoming election and finds that such information does *not* have a causal effect on

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<sup>6</sup>Importantly, newspapers were the primary source of political information among Swiss voters throughout the period we study. In the nationally-representative “VOX survey,” around 80% of respondents indicate that newspapers are their most important source of political information. See Online Appendix Figure A.1.

<sup>7</sup>To address concerns about endogenous local coverage of polls, we exploit a canton’s arguably “incidental” exposure to poll reporting. We define “incidental” reporting on polls in a canton as poll coverage in newspapers that are read in the canton, but whose largest market is *elsewhere*. If newspaper editors target their news coverage (specifically poll coverage) toward their largest cantonal audience, then readers exposed to this reporting in *other* cantons will read it for reasons other than their own canton’s election-specific interest. We find that greater exposure to this “incidental” reporting on close polls is associated with greater turnout as well.

<sup>8</sup>For example, Barzel and Silberberg (1973), Cox and Munger (1989), Matsusaka (1993), Shachar and Nalebuff (1999), and Kirchgässner and Schulz (2005); the literature is summarized in Cancela and Geys (2016).

<sup>9</sup>For example, Levine and Palfrey (2007), Duffy and Tavits (2008), and Agranov et al. (2018).

real world voter turnout.

We contribute to this literature the first credibly causal evidence of a significant effect of close polls on voter turnout in the field, providing a rigorous confirmation of the observational analyses and supporting the external validity of the lab experiments. Our findings present a striking contrast with existing field experimental evidence, which deserves attention. One possible explanation for divergent findings is simply different settings and possibly heterogeneous effects of close polls. Another possibility is that the null results found in field experiments may be due to a limitation they share: the inability of the experimenter to control information voters acquire outside of the experiment. Because there typically exists plentiful information about closeness available to *both* treatment and control subjects in the weeks before an election, treatment and control subjects' beliefs about election closeness may not have differed at all at the moment of the turnout decision.<sup>10</sup> Hence, null results from these field experiments may be a product of the convergence of treatment and control subjects' beliefs about closeness, not because information about election closeness is unimportant for the turnout decision. Our evidence suggests that this information, provided by polls, indeed shapes turnout.

Our evidence of a causal effect of polls contributes to a growing empirical literature studying the determinants of voter turnout. Existing work has identified other drivers of voter turnout: expressive motives (Pons and Tricaud, 2018), personality traits (Ortoleva and Snowberg, 2015), habits (Fujiwara et al., 2016), social considerations (Gerber et al., 2008, Funk, 2010, and DellaVigna et al., 2016), political movements (Madestam et al., 2013), the existence of exit poll results (Morton et al., 2015), and compulsory voting laws (León, 2017 and Hoffman et al., 2017).<sup>11</sup>

Our findings also contribute to an emerging literature on possible asymmetric effects of polls on turnout among supporters of the trailing and leading sides. Theory is ambiguous regarding which side (if any) will turn out more in response to polls: on the one hand, the trailing side may be motivated and the leading side may be overconfident, producing differentially high turnout among the trailing side. On the other hand, a discouragement effect among the trailing side and a desire to participate on the winning side (i.e., a "bandwagon effect") may generate greater turnout among supporters of the leading side. Reflecting this ambiguity, survey-based evidence is mixed: Westwood et al. (2020) argues that the projected high probability of a Clinton victory in the 2016 US presidential election made her supporters overconfident and less likely to turn out; Connors et al. (2020) finds instead that supporters of the leading side in polls tend to turn out more. Implementing a field experiment in South Africa, Orkin (2020) provides evidence of the bandwagon effect, with supporters of the leading side in a close poll turning out more. We provide evidence

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<sup>10</sup>First stage effects on beliefs are elicited, if at all, weeks prior to the election.

<sup>11</sup>Existing work has also structurally estimated rational choice models of voter turnout, emphasizing instrumental motives (e.g., Coate and Conlin, 2004 and Coate et al., 2008), finding mixed results. Additional empirical evidence exists on factors affecting other political behaviors, such as contributing to a political campaign or turning out to a protest. These range from traditional and social media (Enikolopov and Petrova, 2015, Enikolopov et al., 2020, Durante et al., 2019), to the behavior of other citizens (Perez-Truglia and Cruces, 2017, González, 2020, and Cantoni et al., 2019).

from high-stakes votes that, in some cases, close polls will differentially stimulate the turnout of the losing side.

Finally, our analysis contributes to a body of work studying the impact of the media on political outcomes. A large body of work identifies effects on voter turnout and preferences (Strömberg, 2004, Gentzkow, 2006, DellaVigna and Kaplan, 2007, Enikolopov et al., 2011, Gentzkow et al., 2011, Spenkuch and Toniatti, 2018, Durante et al., 2019), including showing the importance of differential coverage. While much existing work is focused on the effects of partisan, or persuasive, media content on voters' choices, we instead study the media's provision of mere information about vote closeness. This sort of coverage has become increasingly salient during campaigns; for example, Nate Silver's *fivethirtyeight.com* (oriented around data-driven election forecasts) was the 13th-ranked media website in October 2016, just one spot behind *washingtonpost.com* and two spots ahead of *usatoday.com*.<sup>12</sup> Understanding the impact of this sort of content on voters is thus important; our results suggest that it causally shapes voter turnout and potentially can affect election outcomes.

In what follows, in Section 2, we discuss the institutional context of Swiss referenda and in Section 3, we describe our data. In Section 4, we present evidence of the causal effect of polls on turnout, first presenting our empirical results from Geneva then from municipality-level data. In Section 5, we document heterogeneity in the effect of polls depending on local support for the trailing/leading side and on local newspaper coverage; we then present counterfactual analyses of Swiss referenda outcomes. Finally, in Section 6, we offer concluding thoughts.

## 2 Institutional Context

### 2.1 Swiss Direct Democracy: Overview and the Issues

Switzerland is a federal republic consisting of 26 cantons and 2,202 municipalities (as of 2020). Along with a distinct federal structure, Switzerland has a long tradition of direct democracy.<sup>13</sup> We focus on the two main instruments of direct democracy at the federal level: popular initiatives and referenda.

Since 1891, Swiss citizens have had the right to call for a popular initiative, with which they can revise the federal constitution, if 100,000 signatures are collected in support of the proposed initiative within 18 months. A popular initiative is accepted if the majority of Swiss citizens vote in favor, and the majority of the cantons do so as well.<sup>14</sup> In response to an initiative, the Federal

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<sup>12</sup>See <https://www.similarweb.com/corp/blog/research/market-research/us-media-publications-ranking-october-2016/>, last accessed May 5, 2021.

<sup>13</sup>See <https://www.ch.ch/en/demokratie/political-rights/>, last accessed May 5, 2021, for basic information on Swiss direct democratic institutions at the federal level. More detailed discussion of direct democracy in Switzerland can be found in Linder (2010).

<sup>14</sup>Technically, there are 20 cantons, each of which receives a vote, and 6 half cantons (Obwalden, Nidwalden, Basel-Stadt, Basel-Landschaft, Appenzell Ausserrhoden and Appenzell Innerrhoden), each of which receives half a vote,

Council and the Federal Assembly may propose a direct counter-proposal; usually, this is a more “moderate” proposal.<sup>15</sup>

In addition to the popular initiative (and the counter-proposal), the Swiss constitution grants two types of referenda rights. First, a referendum can be called on all laws issued by the federal government if supported by 50,000 signatures or eight Swiss cantons. This sort of referendum is then accepted or rejected by a simple majority of the votes cast. Higher-stakes policy choices — any changes to the constitution and some international treaties — are subject to a mandatory referendum requiring a majority of voters and cantons to be passed. Swiss citizens vote on federal ballots two to four times per year, with each “election day” including votes on multiple proposals. Vote topics vary broadly, from social issues, to military policy, to infrastructure, to participation in international organizations, such as the European Union. Between 1981 and 2019, Swiss citizens voted on 331 federal ballots, and these ballots were held on 115 election days.

Given the high stakes involved, it is unsurprising that referenda are politically contentious. Political parties regularly take positions and issue voting recommendations. In the 331 votes between 1981 and 2019, the moderate right-wing party (FDP) provided a recommendation on how to vote in all but one vote; the centrist party (CVP) and the populist right-wing party (SVP) provided recommendations in all but three votes; and the major left-wing party (SP) provided a recommendation in all but 17 votes.<sup>16</sup> The left and the right typically provided voters with contrasting recommendations: there was disagreement among Switzerland’s four major parties in 271 out of 331 of the votes held between 1981 and 2019.

## 2.2 The Voting Process and Voter Information

While the Swiss are asked to vote on many issues, it is important to note that the voting process in Switzerland is quite convenient. No registration to vote is necessary, and every eligible voter (i.e., Swiss citizen of at least 18 years of age) receives the voting documents by regular mail at home. The voter then casts the ballot either at the polling booth on the election day (always a Sunday) or through early voting. Early voting in the last two decades was done primarily via standard mail, but in recent years also online, and could also be done by bringing a ballot personally to the closest electoral office (usually in the municipality where voters live).<sup>17</sup>

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making 23 votes in total. In nearly every case in our data, popular and cantonal majorities go hand in hand. Between 1981 and 2019, there were four votes (out of 331) in which a narrow majority of voters approved (between 50.9 % and 54.3 % of voters voting yes) but the cantons did not, and two votes in which a narrow majority of voters rejected (with 49.2 % and 49.9 % of voters voting yes) while the majority of cantons approved. Note that there is no minimum voter turnout required for the referendum to be binding.

<sup>15</sup>In the case of a counter-proposal, voters are currently able to approve both the initiative and the counter-proposal (before 1987, voters could only approve the initiative or the counter-proposal, but not both). Voters indicate which they prefer to determine which is to be implemented if both initiative and counter-proposal were approved.

<sup>16</sup>See <https://swissvotes.ch/page/dataset>, last accessed May 5, 2021.

<sup>17</sup>In our sample of Genevan voters, virtually all voters make use of early voting: 90.0% of those turning out use postal voting and 4.3% use voting by internet; only 5.7% cast their vote at the polling booth on Sunday morning. See Funk (2010) for additional institutional information and for a discussion of the different turnout effects of the introduction of

Swiss voters are also provided with substantial amounts of information on the substance of the issues on which they will vote. The voting documents sent to eligible voters' homes include the precise questions, arguments for and against each proposition, and often outside opinions from interest groups. In addition, most federal votes are extensively debated in the media (TV, radio and dozens of local newspapers). Political advertising exists, but only in newspapers, with political TV and radio ads prohibited under federal law.<sup>18</sup>

### 2.3 The Collection and Dissemination of National Polls

A pivotal event altering the political media landscape — and voters' information sets — occurred in 1998, when the Swiss public television station decided to sponsor the first widely-disseminated national voting forecasts in Switzerland. The idea was simply to collect politically relevant information to make political discussions on TV more lively, but the poll results ended up being disseminated far more broadly, through other media as well. Pre-election polls were conducted for nearly all votes since June 1998, with a research institute called "*gfs.bern*" (or "*gfs*"), responsible for almost all of these.

Two rounds of polls are typically conducted: results of the first poll are published around 5 weeks before the voting Sunday — before any voting can take place — and results of the last poll typically released 11 days before the voting date, the Wednesday in the week prior to the election date. Because our event study analysis of Geneva voter turnout relies on the *exact* date of the release of the final poll, we note here that of the 52 votes examined in our analysis of Geneva voter turnout, 2 polls were released 16 days before the voting date, 1 poll 13 days before, 2 polls 12 days before, 44 polls 11 days before, and 3 polls 10 days before.

The release of this national-level poll (and its closeness) before each vote provides the key source of variation we will exploit in our event-study analysis of Geneva voters' turnout. In our analysis of the effects of close polls depending on municipality representativeness, we will compare voter turnout before and after 1998, when polling began. And, in our analysis of the role of newspaper dissemination of poll results, we will examine newspaper articles reporting on these national polls.<sup>19</sup>

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voting by mail.

<sup>18</sup>See <https://www.admin.ch/opc/en/classified-compilation/20001794/index.html>, last accessed May 5, 2021

<sup>19</sup>To the extent that exposure to information regarding polls via newspapers is a noisy indicator of exposure to information regarding polls by any means, our estimates of the effects of newspaper coverage of polls might be biased. For example, uniform exposure to TV coverage of polls across space would tend to produce an underestimate of the effect of newspaper coverage, while non-uniform exposure to polls (on TV or radio) correlated with newspaper coverage across space would tend to produce an overestimate.

### 3 Data and Summary Statistics

#### 3.1 Voter Turnout and Vote Outcomes

Data on daily voter turnout in the canton of Geneva are obtained from the office of statistics of the canton of Geneva.<sup>20</sup> To the best of our knowledge, Geneva is the only canton keeping detailed administrative records on the *timing* of voter turnout. Beginning from the 2–3 weeks before election Sunday (this has varied across election days), the cantonal Service of Popular Votes and Elections registers the number of incoming ballots from early voters at a daily level. The Service of Popular Votes and Elections registers incoming postal ballots — around 90% of the votes cast in our sample — on working days (including election Sunday and the preceding Saturday, but excluding all other weekends and public holidays).<sup>21</sup>

It is important to note that we do not observe different turnout for each individual vote (i.e., ballot issue) that is decided on the same election day, as the ballots are placed together in a sealed envelope.<sup>22</sup> There are 52 election days in Geneva for which turnout is observed both before and after the release of pre-election poll results. We thus construct a panel of daily turnout for the voting days preceding these 52 election days. We consider cumulative turnout rate as of each day; the log of the daily count of ballots received; the daily turnout rate as a fraction of the eligible voting population in the canton, and the daily “net” turnout rate, calculated as the turnout rate among the eligible voters who have not yet voted in a particular election.

We additionally consider data on voter turnout and referenda outcomes for all of Switzerland. These data are available for single votes on an election day (i.e., specific ballot issues), disaggregated at the municipal, canton, or federal level, and are provided by the Swiss federal office of statistics.<sup>23</sup> In our analysis, we use data on: eligible voters, votes cast, the number of votes in support of the initiative, and the number of votes against the initiative.<sup>24</sup> We calculate an *ex*

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<sup>20</sup>See <https://www.ge.ch/statistique/>, last accessed on May 5, 2021. Geneva is the 6th largest of Switzerland’s cantons, with a population of around 500,000.

<sup>21</sup>The relatively small number of ballots submitted by internet (around 6%) are recorded automatically every day (including weekends and public holidays) by the e-voting system. We therefore aggregate votes on eligible “voting days,” i.e. days when postal ballots are registered, to which we add any incoming ballots by internet recorded on weekends or public holidays immediately preceding the voting day.

<sup>22</sup>The sealed envelope is then mailed, in a larger envelope, together with the signed voter identification card. Voters nearly always cast their ballots on all issues that are decided upon in one election. To preserve the secrecy of the ballot, authorities are not allowed to open the sealed envelope or to count votes before election Sunday, but only to register the voter identification card.

<sup>23</sup>These data are available for referenda held since 1981. See <https://www.pxweb.bfs.admin.ch/pxweb/de/>, last accessed May 5, 2021. The municipality-level voting data of the federal office of statistics includes 2,202 municipalities that existed at the end of our sample period, where historical municipalities that merged are aggregated to the set of municipalities in existence at the beginning of 2020. For 19 municipalities, the federal office of statistics reports incomplete data because these municipalities were subject to complex mergers not allowing the aggregation of data by adding up historical electoral returns from formerly independent municipalities. For another 7 municipalities, no data are reported because they share a common ballot box with neighboring municipalities to which electoral returns are aggregated. This leaves us with 2,176 municipalities in our data.

<sup>24</sup>Turnout is calculated at the level of the individual vote. In practice, turnout is very similar for all votes held on a

*post* vote closeness measure, which is the share of the votes cast for the losing side in a vote. In our municipality×vote-level analysis, we use *ex post* closeness to construct a measure of a municipality’s “political unrepresentativeness” prior to the release of any polls: the opposite of the correlation between each municipality’s vote share closeness and the national closeness between 1981 and 1998.

### 3.2 Importance of a Vote

While each election day typically features several votes (ballot issues), we find it plausible that a voter’s decision to turn out on the margin will be based on the “most important” vote held on that day. To determine the most important vote on a given election day, we combine data from several sources. In our analysis of daily voter turnout in Geneva, we use responses in post-election surveys: the “VOX surveys” before September 2016, and the “VOTO Surveys” after.<sup>25</sup> We specifically rely on survey respondents’ views of the personal importance of each voting issue (or referendum) on a given election day.<sup>26</sup> We identify the vote with the highest average personal importance score as the one whose poll closeness may affect turnout for that election day.

This survey-based measure of a vote’s importance is direct, and it covers all 52 votes we study in our analysis of voter turnout in Geneva. However, it provides incomplete coverage of votes in our analysis of municipality×vote and canton×vote level turnout. In our analysis of municipality×vote-level turnout, we wish to study voting in the era prior to the release of polls — going back to 1981, before survey data on the importance of each voting issue were collected. We thus supplement the VOX and VOTO survey data with a count of the number of articles mentioning each vote (issue) in Switzerland’s preeminent German newspaper, the *NZZ*, in the three months preceding each election day.<sup>27</sup> In the absence of survey data, the issue with the most *NZZ* articles is identified as the most important vote on a given election day. In our canton×vote-level analysis, we are able to include one more election day by shifting to a slightly different survey question from the VOX survey, which asks about the importance of the vote to the nation, rather than about its personal importance.<sup>28</sup> Table 1 lists a few examples of election days, with the respective issues (votes) on the ballot and their importance scores (Online Appendix Table A.1 lists

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given election day: a regression of turnout on election day fixed effects generates residuals with a standard deviation of 0.128 percentage points.

<sup>25</sup>The VOX surveys, like the pre-election polls, were conducted by *gfs*. The VOTO surveys were conducted by the research institute FORS. The survey data for both VOX and VOTO can be found at <https://forsbase.unil.ch/>, last accessed May 5, 2021.

<sup>26</sup>The question reads: “Let’s talk about the importance this issue had for you personally. Please tell me . . . how important the vote about [issue title] has been for you personally. Tell me a number between 0 and 10. 0 means not important at all, 10 very important.”

<sup>27</sup>We checked six major newspapers in Switzerland (*NZZ*, *Blick*, *Tages Anzeiger*, *Le Matin*, *Journal de Genève*, and *Tribune de Genève*) for an available online archive going back to 1981, but only the *NZZ* had a complete archive throughout this time period.

<sup>28</sup>Our results are nearly identical using the personal importance measure, but we prefer to maximize the sample coverage.

all the election days and the most important vote on each day).

### 3.3 Pre-Election Poll Results

Since 1998, the Swiss Public TV and Radio Corporation (SRG) has sponsored surveys eliciting the voting intentions of Swiss citizens before all federal votes. We collected poll results, as well as the precise timing of the release of poll results (crucial for our analysis of daily voter turnout in Geneva) from the website of the SRG.<sup>29</sup> The poll results are reported as the shares of eligible voters (among those who report an intention to vote), who: (i) are definitely in favor of the proposal; (ii) are somewhat in favor of the proposal; (iii) are somewhat against the proposal; (iv) are definitely opposed to the proposal; (v) do not know; or, (vi) prefer not to answer.<sup>30</sup> Our main variable of interest is the predicted closeness of the final poll prior to a vote. To calculate poll closeness we first construct the “share yes”: the total “yes” support (groups (i) and (ii), who are definitely or somewhat in favor) divided by the total number of respondents indicating support for “yes” or “no” (groups (i), (ii), (iii), and (iv)). We then analogously construct the “share no,” and code poll closeness as the share supporting the trailing side in the poll.

### 3.4 Data on Newspaper Coverage of Polls

The Swiss Agency of Media Research (*WEMF*) has regularly conducted surveys on newspaper readership since the year 2000, with random samples of cantonal inhabitants interviewed and asked which newspapers they read.<sup>31</sup> The Agency generously shared their data on canton-level newspaper readership with us, allowing us to construct a list of newspapers read by at least 10% of a canton’s inhabitants in a given year. Overall, there are 50 newspapers on this list, many of which are read in several cantons (see Online Appendix Table A.2, for a list of the newspapers).

To measure canton-level coverage of pre-election polls, we count the number of times a pre-election poll was mentioned in each of the newspapers read by at least 10% of a canton’s inhabitants, between 2000 and 2014. We used three different strategies in this search: online databases, “Factiva” and “Swissdox”<sup>32</sup>; newspapers’ own online archives; and, manual search in the Swiss National Library in Bern.

In our empirical analysis below, we address concerns regarding the endogenous local newspaper coverage of close polls by exploiting a canton’s voters’ (arguably) “incidental” exposure to polls. We propose that newspaper editors may target their news coverage (specifically, poll coverage) toward their largest cantonal audience; if so, then readers exposed to this reporting in *other*

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<sup>29</sup>See <https://www.srf.ch/>, last accessed May 5, 2021.

<sup>30</sup>Note that the poll does not project whether the referendum is likely to receive support from a majority of cantons (which technically is required to pass many of the referenda we study). As noted above, however, the popular vote has nearly always been the binding factor determining the passage of referendum; thus, information on the closeness of this component of the vote alone will be highly informative to voters.

<sup>31</sup>See <https://wemf.ch/>, last accessed May 5, 2021.

<sup>32</sup>See <https://global.factiva.com> and <https://swissdox.ch/>, both last accessed May 5, 2021.

cantons will read it for reasons other than their own canton’s election-specific interest. We thus can decompose *total* coverage of polls in a canton into two components: first, *endogenous* coverage, which is arguably targeted toward that canton, because it represents a newspaper’s largest cantonal audience; second, *incidental* coverage, to which a canton is exposed despite a newspaper’s largest audience being in a different canton.

### 3.5 The Political “Supply Side”: Political Advertising in Newspapers

For our analysis of voter turnout in the canton of Geneva, we hand-collected all political advertisements related to the 52 referenda studied between 2001 and 2019 for the two most widely-read Genevan newspapers: *Le Temps* and *Tribune de Genève*. We aggregate these data to counts of political ads relating to each of the 52 votes at the *daily* level.

For our canton  $\times$  vote-level analysis, we collected advertising data from a much broader set of newspapers: all of the newspapers read by at least 10% of any canton’s inhabitants. We sum up to the canton  $\times$  vote level our counts of political ads relating to each vote for each newspaper read in each canton.

### 3.6 Summary Statistics

We present summary statistics for the datasets used in our empirical analysis in Table 2. First, we consider our primary dataset of interest: vote  $\times$  day-level data for the canton of Geneva (Panel A). We observe voting, on days both before and after polls are released (around 15 days per vote) for 52 “most important” votes held on election days since 2001 (757 vote  $\times$  day observations in total). Around 3% of eligible voters vote on an average day; cumulative turnout is around 28% on the average day (which of course will be higher by the day of the election itself). The average poll closeness in our sample is 38.30 (that is a 62-38 margin for the winning side). Finally, on the average day in our sample, we count 1.6 newspaper ads related to the upcoming vote in the two major Genevan newspapers.<sup>33</sup>

Second, we provide summary statistics for vote-level variables that are defined for all of Switzerland (Panel B). Statistics are calculated for the “most important” issue for each of the 115 election days for which we have voter turnout data between 1981 and 2019. On average, over 40% of eligible voters turn out; the average vote share for the losing side in the vote (our definition of *ex post* closeness) is around 35%; the average poll support for the trailing side (our definition of poll closeness) is around 39%. Note that the trailing side in a poll may differ from the losing side in the vote.

Third, we present summary statistics from our municipality  $\times$  vote-level dataset, including voting data for the votes described in Panel B, but disaggregated to the level of 2,176 municipalities (Panel C). Our first exercise using these data examines the relationship between *ex post* closeness

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<sup>33</sup>We are missing ads data for 52 voting days — the election Sunday for each of our votes.

and turnout at the municipality level before and after polls are introduced, and as a function of a municipality’s political representativeness. One can see in the table that 60% of the votes in our municipality  $\times$  vote-level analysis were held after polls were introduced. The average municipality has an unrepresentativeness value of -0.59 (meaning that the average correlation between national and municipality closeness is around 0.60), but this ranges from close to -1 (a nearly perfect correlation between municipality and national closeness) to around 0 (implying no correlation between the municipality closeness and national closeness). Our second exercise using these data examines the possibility of asymmetric effects of polls on the turnout of supporters of the trailing or leading side in the (national) poll. To do so, we estimate the share supporting the trailing side for each vote using the municipality-level support for parties that endorse that side in the vote.<sup>34</sup> This share varies widely across municipalities and votes, averaging around 38%. Finally, we report the *municipality*-level vote share for the trailing side in the polls (again, this side may end up winning the vote nationally); this share averages around 43%.

Fourth, we construct a canton  $\times$  vote-level dataset to examine the impact of newspaper coverage of polls on turnout. This dataset includes voting data for 26 cantons and 37 “most important” votes held between 2000 and 2014 (Panel D).<sup>35</sup> One can see that this slightly smaller sample (relative to the Geneva dataset that also examines the poll era) looks very similar in terms of poll closeness: on average, this is around 38 (i.e., a 38% share for the losing side) in both samples. We count around 4 newspaper articles mentioning polls for the average vote, with 2.5–3 articles mentioning polls published in newspapers read in a canton, but having a larger market elsewhere (our measure of “incidental” exposure to information).

## 4 The Effects of Polls on Voter Turnout

### 4.1 Event-Study Evidence from the Canton of Geneva

Our analysis of voter turnout in Geneva exploits the sharp arrival of information about election closeness in newly-released polls. We observe mail-in voter turnout day-by-day, around the day when polls are released, allowing us to test whether the release of *closer* polls differentially increases voter turnout. We account for issue “type” by controlling for issue fixed effects, and we also include fixed effects for the number of days prior to or after the release of the poll itself. To support our claim that the estimated effect of closer polls is causal, we test for differential turnout levels and trends *prior* to the release of closer polls — such an effect might arise if closer polls were anticipated; if issue types that were associated with closer polls were also associated with different turnout trends; or, if the political supply side were differentially active prior to poll release on issues that (eventually) have closer polls.

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<sup>34</sup>We use vote shares in the *preceding* legislative election to minimize concerns about simultaneity.

<sup>35</sup>The panel is limited to votes for which we have a count of newspaper articles mentioning polls and political ads relating to votes in the 50 newspapers read by at least 10% of a canton’s population.

Before estimating the full event-study specification, in Figure 1, we present *prima facie* evidence that close polls increase turnout, showing (raw) cumulative voter turnout (Panel A) and net voter turnout rates day by day (Panel B) around the time when polls are released, splitting polls into above- or below-median closeness (above or below a 40% vote share for the trailing side).<sup>36</sup> One can see that voter turnout follows a *very* similar pattern day by day up to poll release for votes that would eventually have closer or less close polls. But, once polls are released, voter turnout diverges sharply, particularly in the three days immediately following poll release.

We next estimate the following model:

$$turnout_{vd} = \sum_d \beta_d closeness_v + \alpha_v + \gamma_d + \epsilon_{vd}. \quad (1)$$

This is a simple event study, examining voter turnout by vote  $\times$  day, where “day” is the number of days prior to, or following release of a poll. The coefficients of interest are the sequence of  $\beta_d$ , which are estimated as coefficients on the interaction of poll closeness ( $closeness_v$ , which is standardized) with a full set of day-to-poll indicators. These tell us how turnout varies in the days before or after a *closer* poll is released — accounting for vote ( $v$ ) and day-to-poll ( $d$ ) fixed effects. If closer polls cause an increase in voter turnout,  $\beta_d$  will be very close to 0 for  $d < 0$ , and will be significant and positive for some  $d > 0$ .

One can see in Figure 2 coefficient estimates (and 95% confidence intervals, with standard errors clustered at the vote level) on the interaction of poll closeness with each day-to-poll indicator (with the day of poll release the omitted reference day).<sup>37</sup> Prior to the day when polls are released, we see no difference in turnout rates depending on the closeness of the to-be-released poll. In contrast, on the first three days after a closer poll is released, voter turnout rates are *significantly higher* — by around 0.4 percentage points.<sup>38</sup> This is not merely vote shifting across time, as coefficient estimates remain above 0 up through election day (consistent with the higher cumulative turnout for votes with closer polls seen in Figure 1).

We present several robustness exercises in Figure 3 (coefficient estimates and standard errors are provided in Online Appendix Tables A.3 and A.4). First, in Panel A, we pool net voter turnout into two-day bins, which increases the precision of the estimated time-varying effect of closer polls, and confirms our baseline results. In Panel B, we adjust the denominator of the voter turnout rate, using the fixed eligible number of voters, rather than accounting for the individuals who

<sup>36</sup>Net voter turnout rates reflect changes in the eligible voting population on a given day as a result of voting on earlier days.

<sup>37</sup>The coefficient estimates and standard errors are also presented in Online Appendix Table A.3, column 1.

<sup>38</sup>It is worth clarifying how polls released on day  $t$  can produce an increase in votes *counted* on day  $t + 1$ . This can arise through several mechanisms: first, when the poll result is released on the morning of day  $t$ , voters may respond by mailing a ballot in time for the vote to be counted on day  $t + 1$ . Indeed, since 2003, Geneva prepays the ballot envelope for “A Mail,” which arrives the next day when put into a mailbox or brought to the post office before closing hours in the evening (confirmed in personal communication with the cantonal Service of Popular Votes and Elections, April 27, 2021). Second, even when polls are released on the evening of day  $t$ , voters are able to hand-deliver their ballots to the electoral office on day  $t + 1$  or to vote online on day  $t$  or day  $t + 1$ .

already voted on prior days; our results are qualitatively unchanged (though estimated effects on days beyond one day following poll release are smaller, given the turnout effect on that first day). In Panel C, we present estimates from a balanced panel, limiting the window to 2 days prior to poll release through election day, as some votes do not have voting data for earlier days. One can see that our results are not sensitive to this choice of sample window. Finally, in Panel D, we examine the log of the daily turnout level as the outcome, and again our results are unaffected. In Online Appendix Tables A.3 and A.4, we also estimate models including fixed effects for each day-to-election (not perfectly collinear with day-to-poll because the poll release day is not always the same number of voting days prior to the election). Note that these fixed effects account for differences in turnout by day of the week as elections are always on Sundays. These fixed effects have no impact on our results.

We next consider the role of the political supply side in accounting for the response of voter turnout to the release of closer polls. The absence of pre-trends already suggests that the supply side was not differentially active prior to the release of close polls; poll results do not seem to have been anticipated. However, the release of polls may affect the supply side directly (if this information about closeness was not available to campaigns before) or indirectly (e.g., because anticipated greater voter turnout in closer votes increases the returns to persuasion through ads).

We thus directly study the political supply side by estimating the event study model in equation (1), but predicting political ads by  $\text{vote} \times \text{day}$ . If close polls causally shape turnout, one might expect the political supply side to respond to them as well — albeit likely with some lag given the need to develop ads and place them. Crucially, we predict a response of voter turnout *prior* to any political supply side response. The results are reported in Figure 4. As in Figure 2, we find no difference in political behavior (in this case advertisements) depending on the closeness of the to-be-released poll prior to poll release. After the release of closer polls, we continue to see no effect of closer polls on ads until three days after the poll, when we observe significantly more ads in response to a closer poll. This suggests that there is *some* supply side response to closer polls, but that it appears with a lag. It also suggests that endogenous changes in the behavior of the political supply side cannot account for all of the voter turnout effect that we observe in response to closer polls: political ads printed three days after the release of a poll would generally affect votes counted four or more days after poll release. Yet we find the largest effects of close polls on votes counted in the first three days after poll release.

## 4.2 Evidence from the Introduction of Polls Across Switzerland

To test for a causal effect of close polls on voter turnout beyond the case study of Geneva, we specify a model of voter behavior that generates testable predictions regarding turnout depending on the existence and closeness of polls, as well as on locally available information. We assume that, in the absence of information from national, pre-election polls, voters will gauge an upcoming election’s closeness by “locally sampling” among their friends and neighbors. This strategy will

yield beliefs that reflect the actual national-level closeness only if the local sample is politically representative of the country as a whole. In such cases, it may be possible to condition the turnout decision on an informative local signal even in the absence of national polls. In contrast, in politically unrepresentative municipalities, it will not be easy for individuals to condition their turnout decision on national-level vote closeness.<sup>39</sup> Once polls are introduced, however, voters in *both* politically representative and politically unrepresentative municipalities will be able to condition their turnout on an accurate signal of election closeness.

Our framework generates several hypotheses, which we test using the introduction of polls in Switzerland in 1998 as a unique natural experiment.<sup>40</sup> Under the assumption that voters turn out more when they anticipate a closer election, and that they condition their turnout decisions on national-level poll results (rather than local information) when available, we should observe: (i) in the era before polls, the closeness-turnout relationship should be positive in more politically representative municipalities, but there should be no relationship in politically unrepresentative municipalities.<sup>41</sup> In other words, there should be a significant difference in the closeness-turnout gradient between politically representative and politically unrepresentative municipalities in the era without polls. (ii) The introduction of polls should have a significantly larger effect on the closeness-turnout relationship in politically unrepresentative municipalities (the poll has a larger effect on voters' information sets there). (iii) There should be convergence toward the same closeness-turnout relationship in the era with polls: i.e., no difference in the closeness-turnout gradient in the era with polls.

We first present the raw correlation between election closeness and municipality voter turnout, splitting the sample of municipalities above and below the median level of political unrepresentativeness in our sample, and examining separately the set of votes held before polls were conducted and the set of votes with polls. In Figure 5, one can see patterns matching our predictions: in the absence of polls, among relatively unrepresentative municipalities, there is practically no relationship between election closeness and turnout. Among more representative municipalities, there is a stronger positive gradient — the difference in slopes between the representative and unrepresentative municipalities is statistically significant ( $p = 0.01$ ; test based on standard errors clustered at the vote level). In contrast, in the era when polls are conducted, there is no dif-

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<sup>39</sup>Voters in politically unrepresentative municipalities may turn out more in response to local signals of closeness, but because these signals are uncorrelated with national-level closeness, they will not turn out systematically more for (nationally) closer elections. It is also possible that because their local signals are uninformative, they choose not to act on them.

<sup>40</sup>It is important to note that the timing of the introduction of polls is “quasi-experimental,” but the distribution of municipalities' political unrepresentativeness is not. To address concerns regarding correlates of unrepresentativeness driving the empirical patterns we observe, we control for municipality fixed effects and also account for the time-varying effect of municipality size. We also control for vote fixed effects, accounting for changes in issue type across time. These controls do not affect our conclusions (as shown below).

<sup>41</sup>As a reminder, “unrepresentativeness” is calculated as the opposite of the correlation between each municipality's vote share closeness and the national closeness between 1981 and 1998 (prior to the release of any polls). See Online Appendix Figure A.2, Panel A for the distribution of unrepresentativeness.

ference between unrepresentative and representative municipalities in their relationship between election closeness and voter turnout ( $p = 0.693$ ). In both sets of municipalities the slope is positive and significant ( $p < 0.01$ ) and the difference in differences (comparing the eras with and without polls) is statistically significant as well ( $p = 0.037$ ). Finally, the magnitudes are substantial: a one-standard deviation closer election is associated with around 2.5 percentage points higher turnout when polls are released. In the absence of polls, a one-standard deviation closer election was associated with around 1.7 percentage points higher turnout in municipalities that were representative of Switzerland, and only 0.7 percentage points in municipalities that were unrepresentative.

We next test these predictions formally using a municipality  $\times$  vote panel, pooling data from the era with and without polls (and thus using our *ex post* vote closeness measure, because there is no poll closeness measure prior to 1998), and estimating the following model that controls for vote and municipality fixed effects ( $\gamma_v$  and  $\alpha_m$ , respectively):

$$\begin{aligned} turnout_{mv} = & \alpha_m + \gamma_v + \delta_1 closeness_v \times unrepresentativeness_m \times PollEra_v & (2) \\ & + \delta_2 closeness_v \times unrepresentativeness_m \\ & + \delta_3 unrepresentativeness_m \times PollEra_v + \varepsilon_{mv}. \end{aligned}$$

It is useful to map our conceptual framework's hypotheses to regression coefficients. Prediction (i) suggests a significant and negative coefficient on the interaction of closeness and unrepresentativeness. Prediction (ii) implies a positive and significant coefficient on the triple interaction. Prediction (iii) suggests that the sum of the coefficients  $\delta_1 + \delta_2$  will be insignificantly different from zero.

Matching the patterns seen in Figure 5, in Table 3, column 1, we find: (i) there exists a significant difference between representative and unrepresentative municipalities in the relationship between election closeness and turnout in the era without polls (the coefficient on  $closeness_v \times unrepresentativeness_m$  is negative and statistically significant). (ii) The effect of the release of polls on the relationship between election closeness and turnout is greater in unrepresentative municipalities (the coefficient on  $closeness_v \times unrepresentativeness_m \times PollEra_v$  is positive and statistically significant). (iii) With polls available, there no longer is a significant difference between representative and unrepresentative municipalities in their relationship between election closeness and turnout: We cannot reject that the sum of the coefficients on  $closeness_v \times unrepresentativeness_m$  and  $closeness_v \times unrepresentativeness_m \times PollEra_v$  equals 0,  $p = 0.798$ .

Unrepresentative municipalities are smaller than representative ones, leaving open the possibility that municipality size drives the patterns observed (unrepresentativeness is negatively correlated with electorate size,  $r = -0.15$ ). To account for the effects of municipality size, we control for the triple interaction among closeness, municipality electorate size, and a Poll Era dummy ( $closeness_v \times ElectorateSize_m \times PollEra_v$ ) as well as all of the lower-order terms. One can see in Ta-

ble 3, column 2, that accounting for differences in the size of municipalities does not affect our results.

Finally, one might wonder what are some of the underlying local political characteristics that may generate unrepresentativeness? We propose that one plausible source is political homogeneity: a very homogeneous municipality will likely *never* have locally close elections, as voters will always skew strongly toward one side. This implies that there will be little or no correlation between local closeness and national closeness. Indeed, we find a strong correlation between municipality political homogeneity and unrepresentativeness ( $r = 0.60$ ).<sup>42</sup> In Online Appendix Figure A.3 and Table A.5, we show that the patterns of heterogeneity observed with respect to municipality unrepresentativeness also appear with respect to homogeneity, as we would expect.

## 5 The Effects of Polls on Election Outcomes

### 5.1 Asymmetric Effects of Polls on Turnout and the Composition of Voters

For polls to affect election outcomes, they must change the composition of the electorate, beyond a uniform turnout effect. We consider two mechanisms potentially producing such a change. The first of these is an asymmetric response to close polls, with supporters of the trailing side in the poll responding differently compared to supporters of the leading side. We test for such an asymmetric response at the municipality-level, the most disaggregated level at which we observe voter turnout.

Because we do not observe municipality-level preferences regarding a referendum prior to the vote itself, we estimate support for the trailing side in the poll using the municipality’s vote share in the preceding legislative election for parties endorsing the trailing side in the upcoming vote.<sup>43</sup> We then estimate the following model on a balanced panel of 2,176 municipalities observed in all 57 votes with a pre-election poll (1998–2019):

$$y_{mv} = \lambda_{c(m)v} + \gamma_m + \alpha \text{support}_{mv} + \beta \text{support}_{mv} \times \text{closeness}_v + \epsilon_{mv}, \quad (3)$$

where  $y_{mv}$  is the municipality-level turnout;  $\text{support}_{mv}$  is the estimated share supporting the trailing side, varying (from 0 to 100%); closeness is defined as the standardized support for the trailing side in the pre-election poll;  $\text{canton} \times \text{vote}$  fixed effects and municipality fixed effects are captured by  $\lambda_{c(m)v}$  and  $\gamma_m$ , respectively.

<sup>42</sup>We calculate a municipality’s homogeneity as the average of how much a municipality’s voting outcomes differed from 50-50 in the era prior to the release of polls. The distribution of political homogeneity is provided in Online Appendix Figure A.2, Panel B.

<sup>43</sup>We present the distribution of trailing side support across  $\text{municipality} \times \text{vote}$  observations in Online Appendix Figure A.4. Because the parties running in the legislative elections differ across cantons and legislative elections, and because not all parties make recommendations on all votes, all of our analysis will consider estimated support for the trailing side conditional on  $\text{canton} \times \text{vote}$  fixed effects.

In Table 4, column 1, one can see that for votes with average levels of poll closeness, there is a small, positive, and marginally significant relationship between municipality support for the trailing side and municipality voter turnout. As polls get closer, municipalities with greater estimated support for the trailing side exhibit *differentially* higher turnout — beyond the higher turnout associated with close polls, which is captured by the  $\text{canton} \times \text{vote}$  fixed effects. A 20 percentage point (roughly one standard deviation) increase in support for the trailing side in a municipality is predicted to increase turnout by around 0.5 percentage points, when a poll is one standard deviation closer than the mean (a poll of around 55–45).<sup>44</sup> The heterogeneous effect of support for the losing side on turnout as a function of poll closeness is shown graphically in Figure 6, Panel A. One sees that the closer an election is predicted to be, the larger the gradient between support for the trailing side and turnout.<sup>45</sup>

We estimate the heterogeneous effect of close polls less parametrically in Table 4, column 2, allowing closeness to vary across terciles of municipalities' support for the trailing side in the poll. We find results that confirm an asymmetric effect of close polls: municipality support for the trailing side is associated with a borderline statistically significant, positive effect on turnout when polls are of average closeness. The differential turnout of municipalities with greater support for the trailing side (moving up to the second or third tercile of support) nearly doubles with a one standard deviation closer poll, a magnitude similar to that observed in the linear model. We finally consider the possibility that some of the heterogeneous effect of close polls arises from municipality size or representativeness; however, in column 3 one can see that including the interaction of these municipality characteristics with poll closeness has no impact on our estimated coefficients of interest.

An important question is whether the greater turnout we observe following close polls in municipalities with greater estimated support for the trailing side is actually driven by supporters of the trailing side within those municipalities. To answer this question, we examine vote outcomes at the municipality level, testing whether the municipalities with greater estimated trailing side support exhibit a higher *ex post* vote share for the trailing side following the release of closer polls.<sup>46</sup> Thus, we estimate equation 3, but now examining municipality vote share for the trailing side as the outcome.

We present the results in Table 4, column 4, and one can see that following closer polls, vote shares in favor of the trailing side differentially increase in municipalities with more estimated support for the trailing side. A 20 percentage point (roughly one standard deviation) increase in support for the trailing side in a municipality is predicted to increase the trailing side vote share

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<sup>44</sup>This can be calculated as the coefficient of 0.012 on trailing side support multiplied by 20, plus the coefficient of 0.0125 on the interaction term multiplied by 20 and by 1 (with the latter reflecting the closer poll).

<sup>45</sup>In Online Appendix Table A.6 and Figure A.5 one can see that excluding extreme values of estimated support for the trailing side (0% and 100%) does not affect our results.

<sup>46</sup>We note that even a null finding would still imply national-level changes in the composition of the electorate as a result of close polls. If municipalities supporting the trailing side show higher turnout (but with local vote shares held fixed), more supporters of the trailing side turn would turn out nationally.

by around 9 percentage points, when a poll is one standard deviation closer than the mean (a poll of around 55–45).<sup>47</sup> Thus, not only is there higher turnout in response to close polls in municipalities with greater support for the trailing side, but this response is stronger among supporters of the trailing side within these municipalities. The heterogeneous effect of support for the trailing side on vote shares as a function of poll closeness is shown graphically in Figure 6, Panel B. One sees that the closer an election is predicted to be, the larger the gradient between support for the trailing side and ultimate trailing side vote share. Finally, in Table 4, columns 5 and 6, we estimate the heterogeneous effect of close polls on vote shares less parametrically, reaching the same conclusions.

## 5.2 Heterogeneity in Polls’ Effects through Newspaper Coverage

The second source of a changed composition of the electorate that we consider arises from differential dissemination of polls across space. In locations where individuals read newspapers that report more on poll results, the impact of poll closeness should be magnified. If locations with greater coverage also have voters that differentially support a particular side in the election, then heterogeneity in coverage can change the composition of the electorate and thus voting outcomes. Heterogeneous effects of polls depending on newspaper coverage could also alter the composition of the electorate if newspapers differ in their readership’s ideology (Gentzkow and Shapiro, 2010).

Before considering the effects of newspapers on electoral outcomes (as we do below in Section 5.3), we first need to establish an effect of newspaper coverage of polls on turnout. Using canton  $\times$  vote panel data (the level of disaggregation at which we can observe newspaper readership), we test whether there exists a differential positive relationship between poll closeness and turnout in cantons with greater reporting on polls in local newspapers, controlling for vote fixed effects as well as canton fixed effects. We estimate the following model:

$$turnout_{cv} = \phi_c + \mu_v + \psi_1 closeness_v \times coverage_{cv} + \psi_2 coverage_{cv} + u_{cv}, \quad (4)$$

where  $turnout_{cv}$  is the turnout rate (in percent) in canton  $c$  for vote  $v$ ,  $\phi_c$  are a set of canton fixed effects, and  $\mu_v$  are a set of vote fixed effects. The interaction  $closeness_v \times coverage_{cv}$  is the explanatory variable of interest, with the coefficient  $\psi_1$  telling us whether close polls have a differential impact on turnout specifically when they are covered more by a canton’s newspapers.<sup>48</sup>

In Table 5, Panel A, column 1, one can see that indeed, voter turnout is significantly greater when closer polls are reported on more often. We plot the estimated effect of one standard deviation greater poll coverage across levels of (standardized) poll closeness in Figure 7. A poll that is one standard deviation closer than average increases voter turnout by a statistically significant

<sup>47</sup>This can be calculated as the coefficient of 0.3884 on trailing side support multiplied by 20, plus the coefficient of 0.0634 on the interaction term multiplied by 20 and by 1 (with the latter reflecting the closer poll).

<sup>48</sup>Note that the lower-order term  $closeness_v$  is omitted as it is collinear with the vote fixed effects.

0.5 percentage points when newspaper coverage is one standard deviation greater. At average closeness, more coverage has little effect, and when newspapers report more on polls that are *not* close, turnout is predicted to be substantially smaller, as one would expect.

Of course, it is possible that greater coverage of close polls in locally-read newspapers is correlated with a  $\text{canton} \times \text{vote}$ -specific unobservable that might shape turnout. Differences across Switzerland’s linguistic-cultural communities represent one possible source of variation in both newspaper poll coverage and voter turnout. For example, newspapers read by German-speaking Swiss may be more likely to report on close polls and German-speaking Swiss are may also be more likely to turn out to vote in close elections for reasons other than poll coverage. To account for differences in turnout across linguistic-cultural communities depending on a vote’s closeness or on a vote’s coverage, we control for interactions between an indicator that a canton is German-speaking with pre-election poll closeness as well as with cantonal poll coverage. Including these controls does not affect any of our results (Table 5, Panel A, column 2). Another possibility is that locally-targeted political campaigning is associated with both local newspaper coverage of close polls and turnout, but we do not find evidence of this (see Online Appendix Table A.7, columns 1 and 2). Finally, newspapers providing more coverage of closer polls may also include other coverage that motivates turnout — for example, by persuading readers that a particular vote is *important*. However, we do not find evidence of this mechanism either (see Online Appendix Table A.7, columns 3 and 4).

To directly address concerns regarding the endogenous local newspaper coverage of close polls, we exploit a canton’s voters’ arguably “incidental” exposure to polls. As explained in section 3.4 above, we decompose *total* coverage of polls in a canton into *endogenous* coverage, by newspapers whose largest audience lies in that canton, and *incidental* coverage, by newspapers that are read in that canton but whose largest audience lies elsewhere. Incidental coverage of polls in our data is only very weakly correlated with endogenous coverage (the correlation is -0.153).<sup>49</sup> We thus examine the impact of incidental coverage of pre-election polls at the  $\text{canton} \times \text{vote}$  level, plausibly a “cleaner” source of variation in exposure to information regarding the closeness of an upcoming election.<sup>50</sup>

In Table 5, Panel B, we present estimates from specifications analogous to those in Panel A, but now exploiting within-vote variation in exposure to *incidental* coverage of pre-election polls. One can see that greater coverage of closer polls continues to predict higher turnout (column 1) and that this effect is robust to including controls for interactions between an indicator that a canton is German-speaking with pre-election poll closeness as well as with cantonal poll coverage (column 2).<sup>51</sup>

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<sup>49</sup>We present each canton’s endogenous and incidental exposure to newspaper coverage of polls in Online Appendix Figure A.6.

<sup>50</sup>Of course, it is possible that a newspaper’s readers will have correlated political preferences across cantons, which shape turnout; these analyses are thus best viewed as suggestive.

<sup>51</sup>The coefficient on the interaction between poll closeness and incidental exposure is about 25% smaller than the

### 5.3 Counterfactual Election Outcomes

To evaluate the magnitude of these asymmetric effects of close polls, we simulate election outcomes under counterfactual polling and newspaper coverage scenarios. Our counterfactuals are motivated by real-world variation in polling outcomes (resulting from sampling and methodological differences), by restrictions to the publication of polls (enforced in some countries), as well as by differences in media coverage of poll results (alongside ideological sorting of voters into newspaper readership).

We first consider counterfactual outcomes under a scenario in which polls sent a signal of average closeness (61–39; around 1.5 standard deviations below maximal closeness of 50–50), rather than their actual closeness.<sup>52</sup> Under this scenario, supporters of the trailing side in votes with close polls would turn out differentially less, potentially overturning referendum results in which the trailing side in the polls managed to win the referendum.<sup>53</sup>

Specifically, to estimate counterfactual municipality turnout rates and vote shares, we subtract from a municipality’s actual turnout rate and actual vote share for the trailing side the differential, asymmetric effects of close polls generated by the municipality’s support for the trailing side (as estimated from the interaction terms presented in Table 4, columns 1 and 3). We estimate counterfactual votes for each side in a vote, by municipality, for the 57 votes that had polls between 1998 and 2019, then aggregate these to the national level. We find that had there been no close polls to stimulate trailing side supporter turnout, three high-stakes referenda would have had different outcomes: two controversial initiatives against immigration (one violating the terms of Switzerland’s relationship with the EU), as well as one on pension reform (see Table 6, Panel A).

In a second scenario, we consider the possibility that poll results were one standard deviation closer than the actual poll (censored at maximal closeness of 50–50). Under this scenario, supporters of the trailing side in votes with now closer polls would turn out differentially more, potentially overturning referendum results in which the trailing side in the polls lost a close vote. We model counterfactual turnout by applying the estimated asymmetric effects of closer polls that we estimate in Table 4, columns 1 and 3. We find that four additional referenda — on issues ranging from the armed forces, to immigration, to corporate taxation — would have had different outcomes had polls been just one standard deviation closer (see Table 6, Panel B).

In our final exercise, we consider the effects of counterfactual newspaper coverage of the actual coefficient in Panel A, but this does not necessarily imply that the coefficient in Panel A was biased: our measure of incidental poll coverage necessarily excludes coverage of polls in widely-read newspapers, which would plausibly have large effects on turnout. As a final exercise with the  $\text{canton} \times \text{vote}$  data, we use incidental exposure to poll coverage as an instrument for total exposure (and the interaction between poll closeness and incidental newspaper coverage of polls as an instrument for the interaction between poll closeness and total newspaper coverage of polls). In Online Appendix Table A.8, one can see that our conclusions are unaffected in the IV analysis.

<sup>52</sup>This is equivalent to a scenario without the release of national polls if, in the absence of polls, voters turn out as if knowing that they are in support of the trailing or leading side in a vote (e.g., because this sort of coarse information is available from parties’ recommendations and newspaper coverage), and as if they believe that the vote is of average closeness.

<sup>53</sup>This situation is equivalent to the 2016 US election in which Donald Trump trailed in the polls, but won the election.

polls for the 37 votes between 2000 and 2014 for which we observe newspaper coverage (and for which polls were released). We consider a scenario in which newspapers with readers supporting the losing side in the vote counterfactually increased their coverage of the poll to the sample maximum (for example, to stimulate readers' turnout).<sup>54</sup> We estimate counterfactual turnout by canton using equation 4, assuming that increased turnout in response to counterfactually greater coverage comes from supporters of the losing side. We then calculate the counterfactual national level vote share, applying the counterfactual turnout rates and vote shares, estimated canton-by-canton. We find that such a change in poll coverage in a *single* canton would have flipped a high-stakes referendum on immigration. A more systematic effort by newspapers supporting the losing side — increased poll coverage in five of Switzerland's twenty-six cantons — would have flipped the results of four referenda. If ten cantons' newspapers were to increase poll coverage, a fifth referendum would flip (see Table 6, Panel C).

## 6 Conclusion

We find that the release of polls causes changes in voter turnout, with magnitudes large enough to shape election outcomes. These results have important practical implications. While much research on political behavior has focused on the effects of *persuasive* information in social media, in newspapers, on television, or in advertisements, our findings indicate that information about an election's *competitiveness* can shape political behavior as well. In a context of increased political polarization (e.g., Boxell et al., 2017), persuasion aimed at changing the ideological preferences of voters may be less effective, making the turnout margin that we study — changing the ideological composition of the *voting* electorate — potentially more important than in the past.

Our analysis thus points to an important policy implication: the regulation of polls' conduct and their dissemination can have important consequences for election outcomes. There is a remarkable degree of variation across countries in such regulation: for example, in Australia and in the United States there is none; in Italy, polls are prohibited within 15 days of a vote; and, in Switzerland, no information on polls can be released in the 10 days before the vote. The impact of these regulations on a range of policy outcomes might be far greater than many policymakers realize.

One naturally wonders about the external validity of our existence result: how general is the causal effect of polls on turnout; how general is the asymmetric "underdog effect" we observe? While the context we study has distinctive features — we study voter turnout for referenda, rather than traditional elections, in a country with a long democratic tradition — we believe that our work likely generalizes to a range of important settings. First, referenda play a role around the

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<sup>54</sup>The assumption that newspaper readership is associated with readers' political preferences follows Gentzkow and Shapiro (2010). For simplicity, we assume that some newspapers are read only by supporters of the losing side in the vote. We also abstract from asymmetric turnout effects depending on support for the trailing or leading side in the poll.

world in deciding high-stakes issues: from Brexit, to the decision to end the Pinochet regime, to many important policy issues in the state of California (which shares features with the Swiss case, such as many referenda voted on each year). More generally, as described in Section 2, Swiss referenda often produce high-stakes political competitions between left- and right-wing parties. In this sense, Swiss referenda are single-issue analogues of the majoritarian political competition that exists elsewhere. It remains important to estimate causal effects of polls on voter turnout in other settings and to better understand the mechanisms producing these effects.

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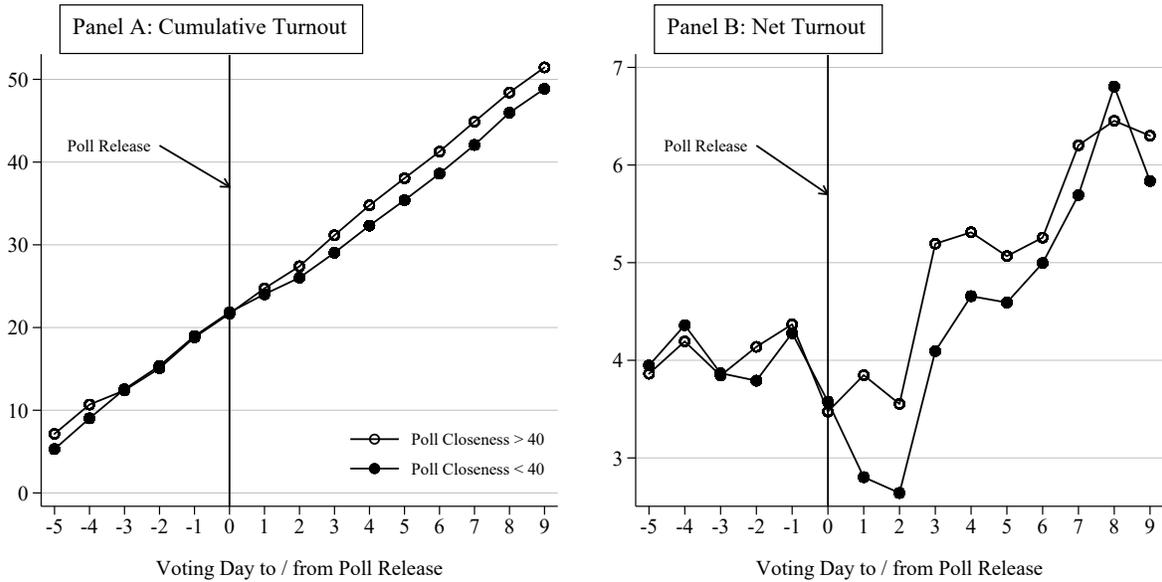
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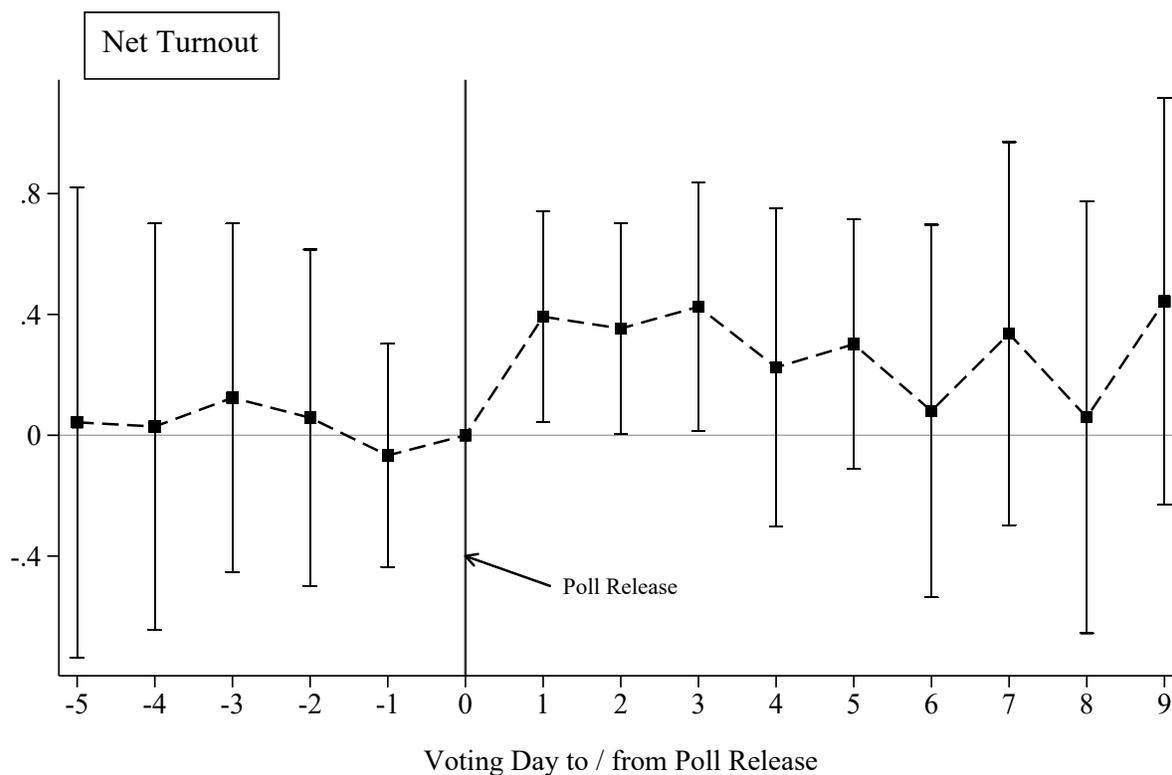
# Figures and Tables

**FIGURE 1: UNCONDITIONAL TURNOUT BEFORE AND AFTER POLL RELEASE**



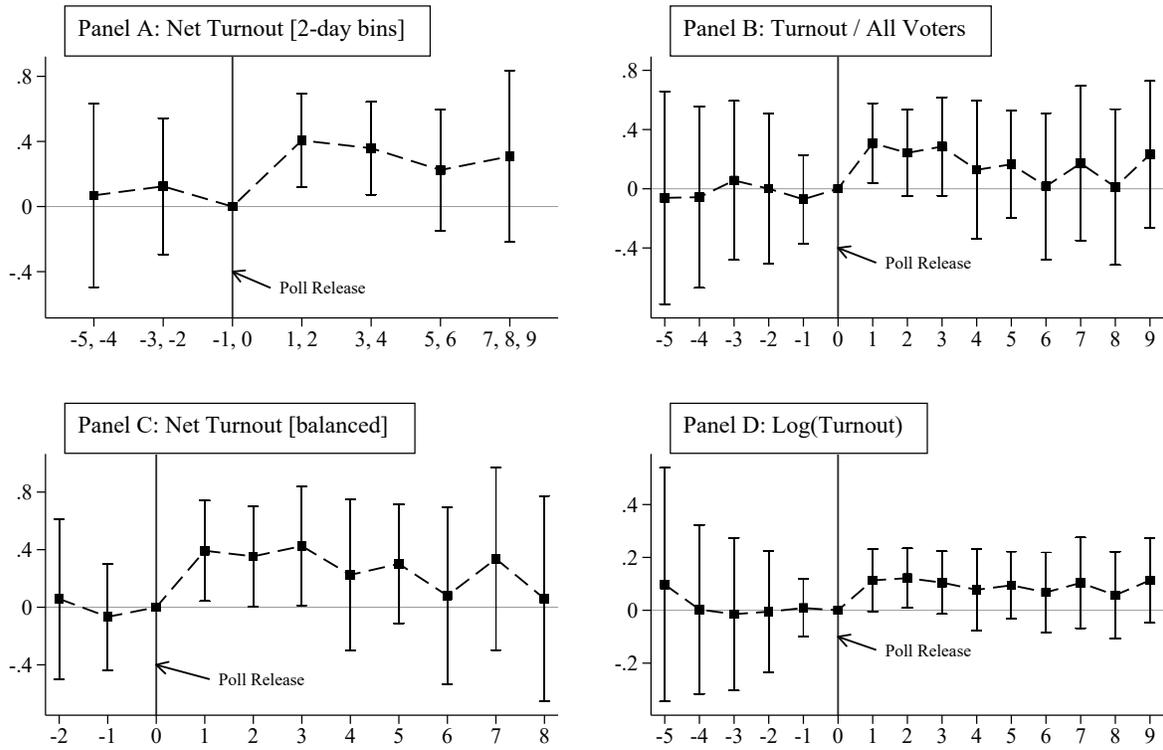
*Notes:* Panel A plots daily cumulative turnout, i.e., the percentage share of Genevan voters who turned out at or before a given voting day, separately for votes with poll closeness above or below the sample median of 40 (i.e., trailing side support above or below 40). Panel B shows an analogous plot for net turnout, i.e., the daily inflow of ballots divided by the stock of remaining voters (who did not turn out before a given voting day). The sample is an unbalanced panel of 52 votes observed from 5 voting days before to 9 voting days after poll release.

**FIGURE 2: THE EFFECT OF CLOSER POLLS ON NET VOTER TURNOUT: EVENT-STUDY BASELINE**



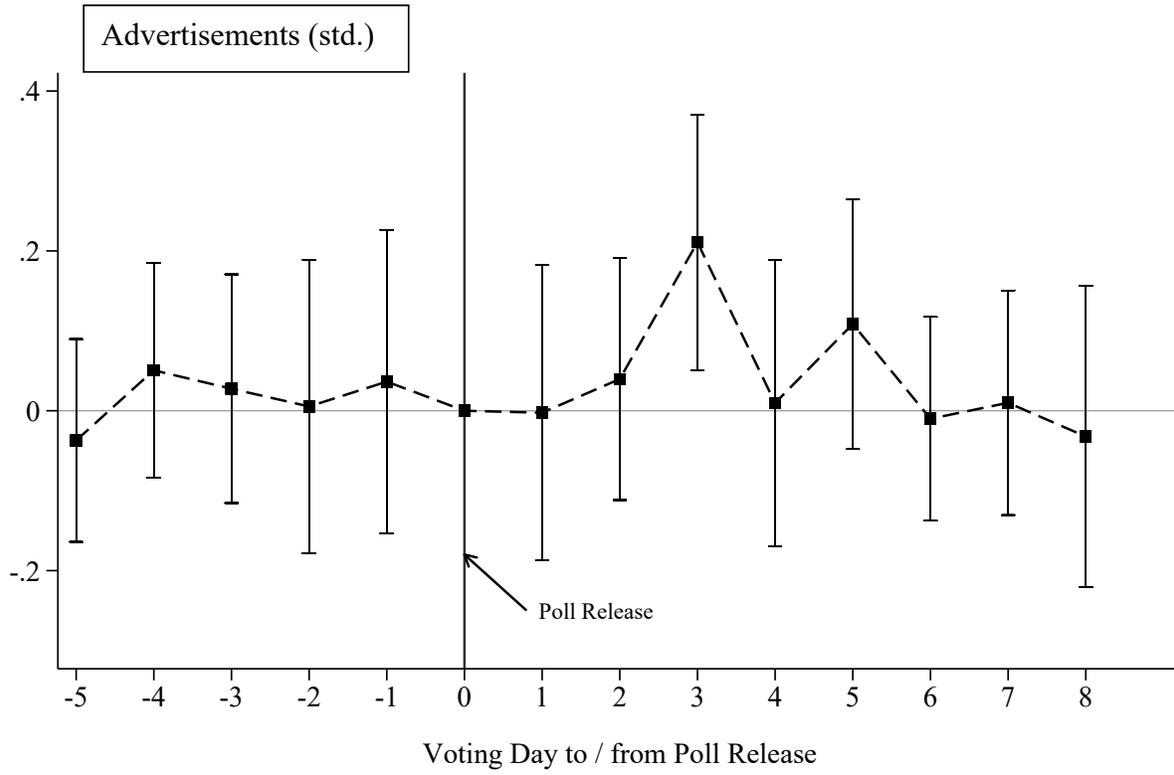
*Notes:* The event study graph plots day-specific effects of a one standard deviation increase in poll closeness on net turnout, i.e., the daily inflow of ballots in the canton of Geneva divided by the number of remaining Genevan voters who did not turn out before a given voting day, conditional on vote and voting day fixed effects. Squares represent coefficients and spikes depict 95% confidence intervals from OLS estimates (reported in Online Appendix Table A.3, Column 1), with standard errors clustered at vote level. The sample is an unbalanced panel of 52 votes observed from 5 voting days before to 9 voting days after poll release, where the day of poll release is the omitted category of reference.

**FIGURE 3: THE EFFECT OF CLOSER POLLS ON NET VOTER TURNOUT: EVENT-STUDY ROBUSTNESS**



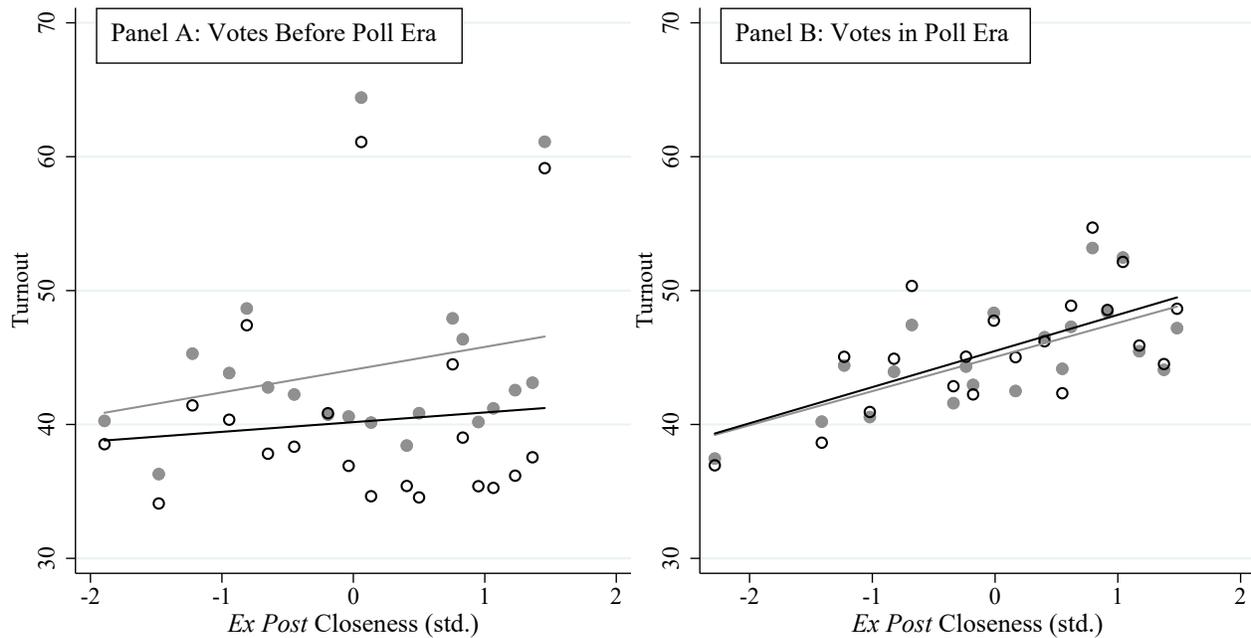
*Notes:* The figure shows variants of the event study graph presented in Figure 2. Panel A plots coefficients and 95% confidence intervals for bins of two voting days, reported in Online Appendix Table A.4, Column 1, using the day of poll release as well as the day just before poll release as the omitted category of reference. Panel B uses the daily inflow of ballots divided by all eligible Genevan voters as an alternative measure of turnout, and plots OLS estimates reported in Online Appendix Table A.3, Column 3. Panel C drops all voting days in which not every vote has ballots counted, and instead uses a balanced panel of 52 votes observed from 2 voting days before to 8 voting days after poll release. Panel D uses the natural logarithm of the daily number of incoming ballots in the canton of Geneva as an alternative measure of turnout, and plots OLS estimates reported in Online Appendix Table A.4, Column 5. 95% confidence intervals based on standard errors clustered at vote level.

**FIGURE 4: THE EFFECT OF CLOSER POLLS ON POLITICAL ADVERTISEMENTS: EVENT-STUDY**



*Notes:* The event study graph replicates Figure 2 with a standardized measure of political campaigning activity as the outcome. It plots day-specific effects of a one standard deviation increase in poll closeness on the standardized number of political advertisements in Geneva’s two major newspapers (*Tribune de Genève, Le Temps*), conditional on vote fixed effects and voting day fixed effects. The sample is an unbalanced panel of 52 votes observed from 5 voting days before to 8 voting days after poll release, where the day of poll release is the omitted category of reference. The last voting day of each vote is dropped because there are no Sunday editions of Geneva’s major newspapers. 95% confidence intervals based on standard errors clustered at vote level.

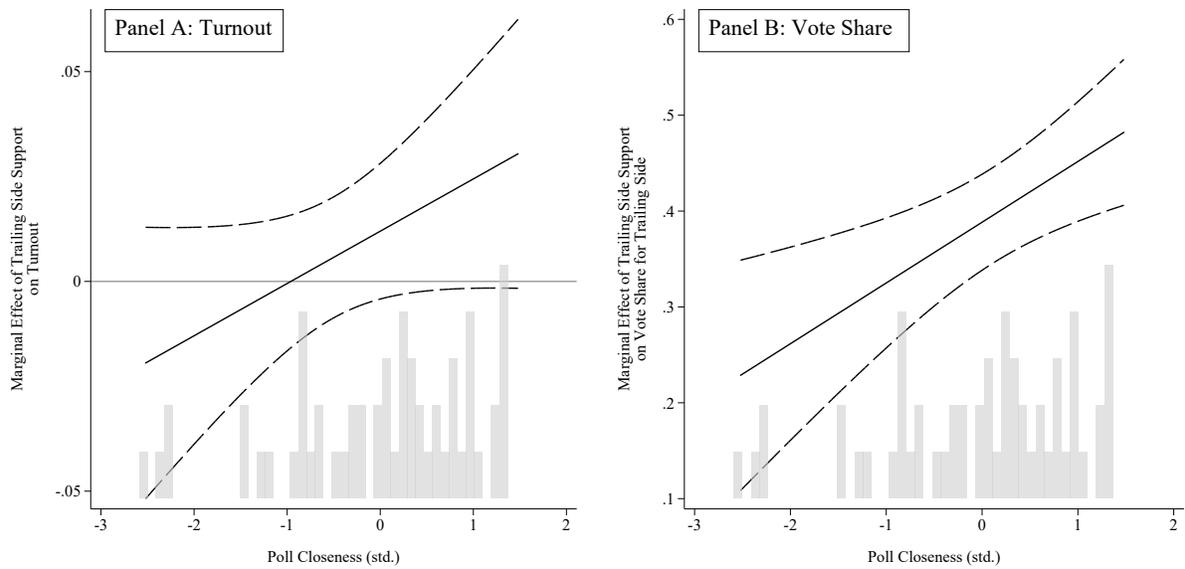
**FIGURE 5: THE EFFECT OF CLOSENESS ON TURNOUT BY MUNICIPALITY UNREPRESENTATIVENESS, BEFORE AND AFTER THE INTRODUCTION OF POLLS**



	Slopes Before Poll Era	Slopes in Poll Era
○ Unrepresentative Municipalities	0.724 (p = 0.646)	2.699 (p = 0.005)
● Representative Municipalities	1.700 (p = 0.244)	2.547 (p = 0.005)
<i>Differences within Era:</i>	<i>-0.976 (p = 0.010)</i>	<i>0.152 (p = 0.693)</i>
<i>Difference in Differences:</i>		<i>1.128 (p = 0.037)</i>

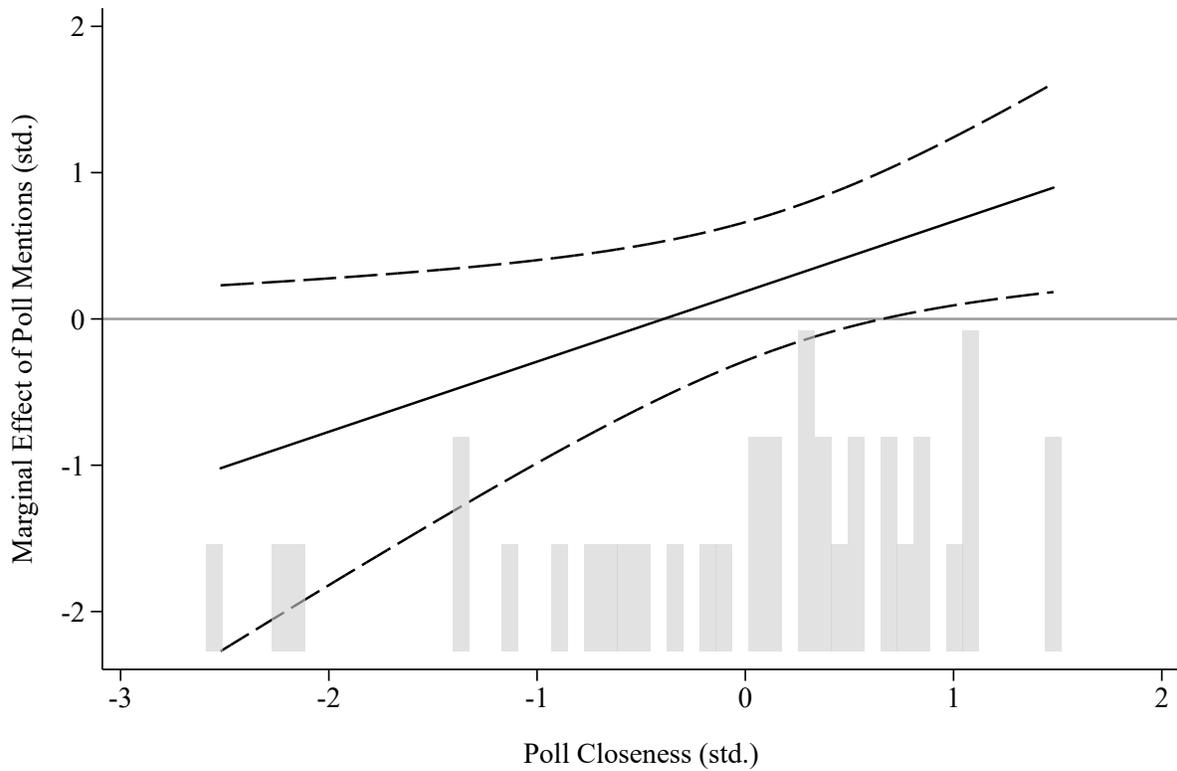
Notes: Panel A shows binned scatter plots correlating municipality-level voter turnout and national-level *ex post* closeness, splitting the sample of municipalities above and below median political unrepresentativeness, for 46 votes in the era before pre-election polls were introduced. Panel B replicates Panel A for 69 votes in the era with pre-election polls. Unrepresentativeness is a municipality’s historical tendency to produce voting results unrepresentative of national-level closeness, measured as the negative of the correlation coefficient between municipality-level and national-level *ex post* closeness of voting results in the era before pre-election polls were introduced. Estimates of slope parameters as well as p-values associated with tests that (differences in) slopes equal zero are obtained from an OLS regression using all 115 votes, with standard errors clustered at vote level.

**FIGURE 6: MARGINAL EFFECTS OF TRAILING SIDE SUPPORT ON TURNOUT AND VOTE SHARE FOR THE TRAILING SIDE DEPENDING ON POLL CLOSENESS**



*Notes:* The solid line plots the total effect of a unit increase in estimated *ex ante* support for the trailing side on turnout (Panel A) and on the vote share for the side trailing in the poll (Panel B), depending on standardized poll closeness. Dashed lines represent 95% confidence intervals based on standard errors clustered at vote level. The plot is based on OLS estimates reported in Table 4, Columns 1 and 4. The histograms show the distribution of (standardized) poll closeness across votes.

**FIGURE 7: MARGINAL EFFECTS OF NEWSPAPER POLL MENTIONS DEPENDING ON POLL CLOSENESS**



*Notes:* The solid line plots the total effect of a one standard deviation increase in poll mentions in cantonal newspapers on cantonal turnout depending on standardized poll closeness. Dashed lines represent 95% confidence intervals based on standard errors clustered at vote level. The plot is based on OLS estimates reported in Table 5, Panel A, Column 1. The histogram shows the distribution of (standardized) poll closeness across votes.

**TABLE 1: EXAMPLES OF ELECTION DAYS AND MOST IMPORTANT VOTES**

Date	Vote Title	NZZ Mentions	Vote Importance (Survey)
<b>1994-09-25</b>	<b>Federal Penal Code and Military Penal Code (Racial Discrimination)</b>	<b>39</b>	<b>6.12</b>
1994-09-25	Federal Decision Abolishing Subsidies for Domestic Breadstuff from Tariff Revenues	16	3.48
<b>2001-03-04</b>	<b>Initiative “Yes to Europe!”</b>	<b>68</b>	<b>6.61</b>
2001-03-04	Initiative “for Lower Prices of Pharmaceuticals”	53	5.79
2001-03-04	Initiative “for Road Safety with 30 km/h in Built-Up Areas”	36	5.53
<b>2009-11-29</b>	<b>Initiative “against the Construction of Minarets”</b>	<b>112</b>	<b>6.91</b>
2009-11-29	Initiative “for a Ban on Exports of War Material”	47	6.28
2009-11-29	Federal Decision on Special Funding for Air Traffic	27	3.85
<b>2019-05-19</b>	<b>Federal Act on Tax Reform and Funding for Old Age Insurance</b>	<b>77</b>	<b>7.42</b>
2019-05-19	Federal Decision Adopting the EU Directive on Gun Control	13	6.49

*Notes:* NZZ Mentions measures the number of times a vote was mentioned in the NZZ newspaper in the three months preceding election day. Vote Importance measures the average personal importance attached by VOX/VOTO survey respondents to a vote, on a 0-10 scale (10 indicating maximum importance).

TABLE 2: SUMMARY STATISTICS

PANEL A: VOTE $\times$ DAY-LEVEL DATA (GENEVA)					
	Mean	Std. Dev.	Min.	Max.	Obs.
Net Turnout (%)	4.58	1.96	0.02	16.75	757
Turnout / All Voters (%)	3.32	1.33	0.02	12.76	757
Log(Turnout)	8.76	0.56	3.91	10.02	757
Cumulative Turnout (%)	28.19	14.24	0.02	62.90	757
Poll Closeness	38.38	7.69	18.89	48.96	757
Advertisements	1.60	2.48	0.00	19.00	705
PANEL B: VOTE-LEVEL DATA					
Turnout	43.78	8.33	27.60	78.78	115
<i>Ex Post</i> Closeness	35.30	9.75	8.03	49.91	115
Poll Closeness	38.61	7.69	18.89	48.96	57
PANEL C: MUNICIPALITY $\times$ VOTE-LEVEL DATA					
Turnout	44.00	13.02	3.20	100.00	250240
Poll Era	0.60	0.49	0.00	1.00	250240
Unrepresentativeness	-0.59	0.19	-0.93	0.03	250240
Trailing Side's Estimated Support	38.23	23.02	0.00	100.00	124032
Vote Share for Trailing Side	42.83	18.25	0.00	100.00	124032
Electorate Size (in thousands)	1.98	7.08	0.03	233.14	250240
PANEL D: CANTON $\times$ VOTE-LEVEL DATA					
Turnout (%)	47.27	8.91	21.67	72.61	962
Poll Closeness	37.88	7.47	18.89	48.91	962
Poll Mentions	4.28	3.42	0.00	24.00	962
Incidental Poll Mentions	2.89	3.04	0.00	20.00	962

*Notes:* In each dataset, vote-specific variables refer to the most important vote per election day, as indicated by self-reported importance in VOX/VOTO surveys, or, for years prior to the existence of survey measures, by the number of vote mentions in the NZZ in the three months preceding the vote. *Vote  $\times$  Day-level Data:* Net Turnout measures turnout as the daily number of votes cast, in percent of eligible voters not having cast their vote on earlier days. Turnout / All Voters is the daily number of votes cast, in percent of eligible voters. Log(Turnout) is the natural logarithm of the daily number of votes cast. Cumulative Turnout is the daily running total of votes cast, in percent of eligible voters. Poll Closeness measures the trailing side's vote share in the pre-election poll, and varies from 0 to 50 (50 indicating maximum closeness). Advertisements is the daily count of political ads placed in the two major Genevan newspapers (*Tribune de Genève*, *Le Temps*). *Vote-level Data:* Turnout is the number of votes cast, in percent of eligible voters at the federal level. *Ex Post* Closeness is the vote share of the losing side at the federal level. Poll Closeness measured as in day  $\times$  vote-level data. *Municipality  $\times$  Vote-level Data:* Turnout is the number of votes cast, in percent of eligible voters at the municipal level. Poll Era is a dummy variable equal to 1 for the 69 votes held after the introduction of pre-election polls. Unrepresentativeness is a municipality's historical tendency to produce voting results unrepresentative of national-level closeness, measured as the negative of the correlation coefficient between municipality-level and national-level *ex post* closeness of voting results before pre-election polls were introduced. Trailing Side's Estimated Support is a proxy for a municipality's ex-ante predisposition to vote for the side which is trailing in the pre-election poll, measured as the percentage share of votes in the preceding national election for parties having recommended to vote for the side trailing in the pre-election poll. Vote Share for Trailing Side is a municipality's vote share for the side which was trailing in the pre-election poll. Electorate Size is the average number of eligible voters (in thousands) in a municipality across votes held before pre-election polls were introduced. *Canton  $\times$  Vote-level Data:* Turnout measures cantonal turnout as the number of votes cast, in percent of eligible voters. Poll Closeness measured as in day  $\times$  vote-level data. Poll Mentions is the number of times the pre-election poll for a vote is mentioned in cantonal newspapers read by at least 10% of a canton's inhabitants. Incidental Poll Mentions are poll mentions in cantonal newspapers whose largest market is in another canton.

**TABLE 3: HETEROGENEOUS EFFECTS OF ELECTION CLOSENESS AND POLLS DEPENDING ON MUNICIPALITY UNREPRESENTATIVENESS**

	(1)	(2)
<i>Ex Post</i> Closeness (std.) × Unrepresentativeness (std.)	-0.5676*** (0.2132)	-0.5696*** (0.2156)
<i>Ex Post</i> Closeness (std.) × Unrepresentativeness (std.) × Poll Era	0.6211** (0.2983)	0.6179** (0.3003)
Unrepresentativeness (std.) × Poll Era	1.9756*** (0.2613)	2.0288*** (0.2629)
Test for Convergence (p-value)	0.798	0.818
R-squared	0.697	0.698
Observations	250240	250240
Municipality Fixed Effects	Y	Y
Vote Fixed Effects	Y	Y
Electorate Size	N	Y

*Notes:* Each column presents results from an OLS regression with municipality-level voter turnout as the dependent variable. Unrepresentativeness is a municipality’s historical tendency to produce voting results unrepresentative of national-level closeness, measured by the negative of the correlation coefficient between municipality-level and national-level *ex post* closeness of voting results in the era before pre-election polls. Poll Era is a dummy equal to 1 for 69 votes held after the introduction of polls in 1998. Test for Convergence reports the p-value of an F-test that the sum of the coefficients on *Ex Post* Closeness (std.) × Unrepresentativeness (std.) and *Ex Post* Closeness (std.) × Unrepresentativeness (std.) × Poll Era (std.) equals 0. Column 2 controls for a triple interaction among *Ex Post* Closeness, Poll Era and the standardized average municipality electorate size, as well as all lower order terms. The sample is a balanced panel of 2176 municipalities observed in 115 votes held from 1981 to 2019. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE 4: ASYMMETRIC EFFECTS OF POLL CLOSENESS ON TURNOUT AND VOTE SHARES**

	Turnout (%)			Vote Share for Trailing Side (%)		
	(1)	(2)	(3)	(4)	(5)	(6)
Trailing Side's Estimated Support $\times$ Poll Closeness (std.)	0.0125*			0.0634***		
	(0.0073)			(0.0213)		
Trailing Side's Estimated Support	0.0120			0.3884***		
	(0.0082)			(0.0255)		
Trailing Side's Estimated Support (2 <sup>nd</sup> tercile) $\times$ Poll Closeness (std.)		0.2877*	0.3121**		0.6903	0.7167
		(0.1516)	(0.1517)		(0.4783)	(0.4654)
Trailing Side's Estimated Support (3 <sup>rd</sup> tercile) $\times$ Poll Closeness (std.)		0.5644**	0.5048**		2.1247***	2.0558***
		(0.2344)	(0.2131)		(0.7236)	(0.7312)
Trailing Side's Estimated Support (2 <sup>nd</sup> tercile)		0.1961	0.2012		6.3138***	6.3196***
		(0.1309)	(0.1292)		(0.4028)	(0.3990)
Trailing Side's Estimated Support (3 <sup>rd</sup> tercile)		0.4456	0.4598*		12.8107***	12.8268***
		(0.2725)	(0.2695)		(0.8451)	(0.8417)
R-squared	0.859	0.859	0.859	0.876	0.863	0.864
Observations	124032	124032	124032	124032	124032	124032
Electorate Size $\times$ Poll Closeness (std.)	N	N	Y	N	N	Y
Unrepresentativeness $\times$ Poll Closeness (std.)	N	N	Y	N	N	Y

*Notes:* The table presents estimates from OLS regressions using municipality-level voter turnout (columns 1-3) and vote share for the trailing side (columns 4-6) as dependent variables. The Trailing Side's Vote Share is defined as a municipality's share of votes cast in line with the trailing side in the pre-election poll, i.e., with the minority of poll respondents. Trailing Side's Estimated Support is a municipality's predetermined pre-disposition to vote for the side trailing in the pre-election poll, measured as a municipality's vote share, in percent of votes cast, in the preceding national election for parties whose voting recommendations are in line with the minority of poll respondents. Poll Closeness is the trailing side's vote share in the pre-election poll. In columns 2-3 and 5-6, municipalities are split into terciles of Trailing Side's Estimated Support. All specifications include municipality and canton  $\times$  vote fixed effects. Columns 3 and 6 additionally control for Poll Closeness interacted with Electorate Size and Unrepresentativeness. The sample is a balanced panel of 2176 municipalities observed in all 57 votes with a pre-election poll held from 1998 to 2019. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE 5: NEWSPAPER COVERAGE, CLOSENESS AND CANTONAL VOTER TURNOUT**

PANEL A: POLL MENTIONS IN CANTONAL NEWSPAPERS		
	(1)	(2)
Poll Mentions (std.) × Poll Closeness (std.)	0.4795** (0.2170)	0.5426** (0.2010)
Poll Mentions (std.)	0.1877 (0.2419)	1.2549** (0.6185)
R-squared	0.820	0.822
PANEL B: INCIDENTAL POLL MENTIONS		
Incidental Poll Mentions (std.) × Poll Closeness (std.)	0.3741* (0.1928)	0.4516*** (0.1635)
Incidental Poll Mentions (std.)	-0.0818 (0.2722)	1.3947* (0.7391)
R-squared	0.820	0.821
Observations	962	962
German × Poll Mentions (std.)	N	Y
German × Poll Closeness (std.)	N	Y

*Notes:* Each panel presents results from two OLS regressions with cantonal turnout as dependent variable, with all specifications including a full set of canton and vote fixed effects. In Panel A, Poll Mentions (std.) refer to the standardized count of poll mentions in cantonal newspapers read by at least 10% of a canton's inhabitants Panel B restricts attention to Incidental Poll Mentions, defined as mentions in cantonal newspapers whose main market lies in another canton. Poll Closeness is the trailing side's vote share in the pre-election poll. Column 2 additionally controls for a dummy equal to one for German-speaking cantons, interacted with both Poll Closeness (std.) and Poll Mentions (std.). The sample is a balanced panel of 26 cantons, observed in 37 votes held between 2000 and 2014. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

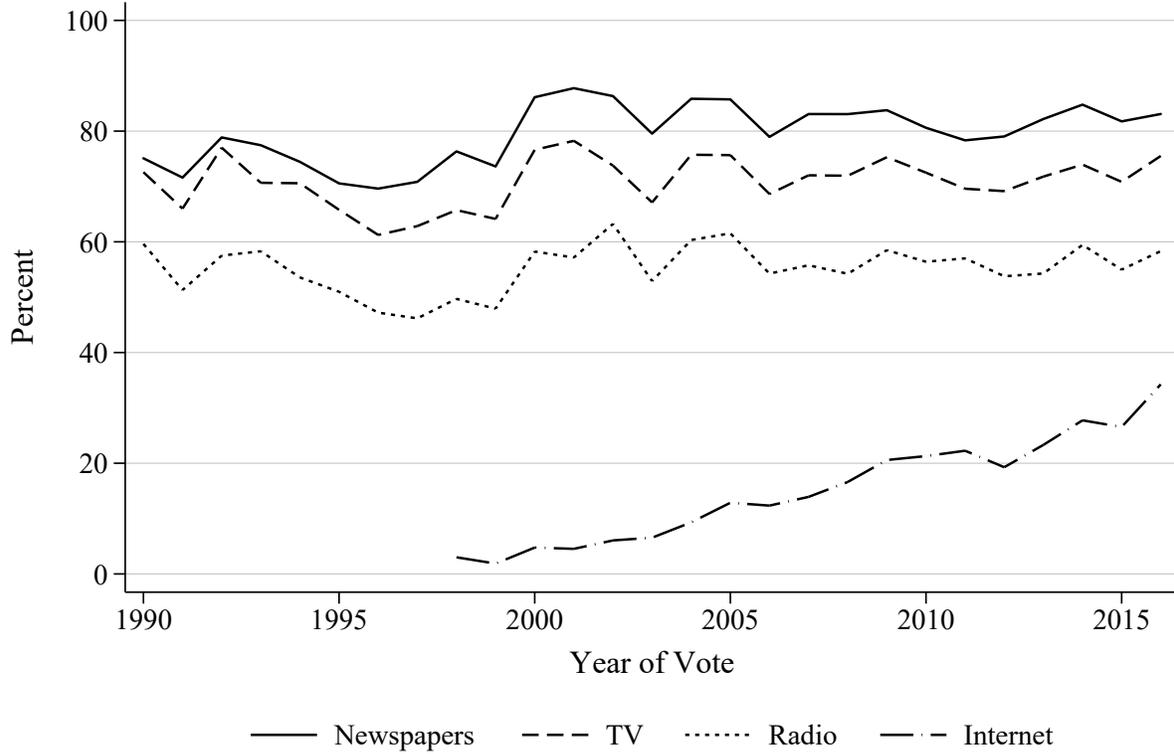
**TABLE 6: COUNTERFACTUAL TURNOUT AND VOTE RESULTS**

	Poll	Votes		Cantons
	Yes (%)	Actual Yes (%)	Counterfactual Yes (%)	
<b>PANEL A: AVERAGE POLL CLOSENESS</b>				
Initiative “against Abuse of Asylum” (November 24, 2002)	53.75	49.91	54.45	
Initiative “against Mass Immigration” (February 9, 2014)	46.24	50.33	48.63	
Federal Act on Old Age Pension Reform (September 24, 2017)	53.68	47.31	50.24	
<b>PANEL B: INCREASE IN POLL CLOSENESS</b>				
Federal Act on the Army and Military Administration (June 10, 2001)	59.49	50.99	48.74	
Federal Act on Corporate Tax Reform (February 24, 2008)	59.74	50.53	48.28	
Initiative “for the Expulsion of Criminal Foreigners (November 28, 2010)	55.67	52.91	49.97	
Initiative “Limiting the Construction of Second Homes” (March 11, 2012)	58.43	50.63	47.16	
<b>PANEL C: HIGHER POLL COVERAGE BY NEWSPAPERS SUPPORTING THE LOSING SIDE</b>				
Federal Act on the Army and Military Administration (June 10, 2001)	59.49	50.99	49.97	10
Initiative “against Abuse of Asylum” (November 24, 2002)	53.75	49.91	50.16	1
Federal Act on Corporate Tax Reform (February 24, 2008)	59.74	50.53	49.91	3
Initiative “Limiting the Construction of Second Homes” (March 11, 2012)	58.43	50.63	49.93	5
Initiative “against Mass Immigration” (February 9, 2014)	46.24	50.33	49.89	2

*Notes:* Table lists the actual Yes vote share, the Yes vote share predicted by the pre-election poll, and the counterfactual Yes vote share, for all votes with election outcomes flipped by the counterfactual scenarios. Each panel corresponds to one counterfactual scenario. Panel A assumes pre-election polls were set at average poll closeness and calculates the counterfactual Swiss-level Yes vote share for 57 votes from municipality-level turnout and vote shares obtained from subtracting the asymmetric effects of poll closeness implied by estimates in Table 4, Columns 1 and 4. Panel B replicates Panel A, but assuming counterfactual pre-election polls were one standard deviation (i.e., 7.62 percentage points) closer than actual polls, with counterfactual poll closeness bounded above by 50. Panel C calculates counterfactual Yes vote shares assuming that, in some cantons, newspapers read by voters supporting the losing side in the election increase poll mentions to the sample maximum. The change in turnout of the losing side induced by the increase in poll mentions is calculated using coefficients and the sample of 37 votes from Table 5, Panel A, Column 1. Counterfactual Yes vote shares in Panel C result from limiting the number of cantons subject to the counterfactual to the minimum necessary to flip the outcome of the vote. The rightmost column reports the minimum number of cantons subject to the counterfactual newspaper poll coverage required in order to flip the vote outcome.

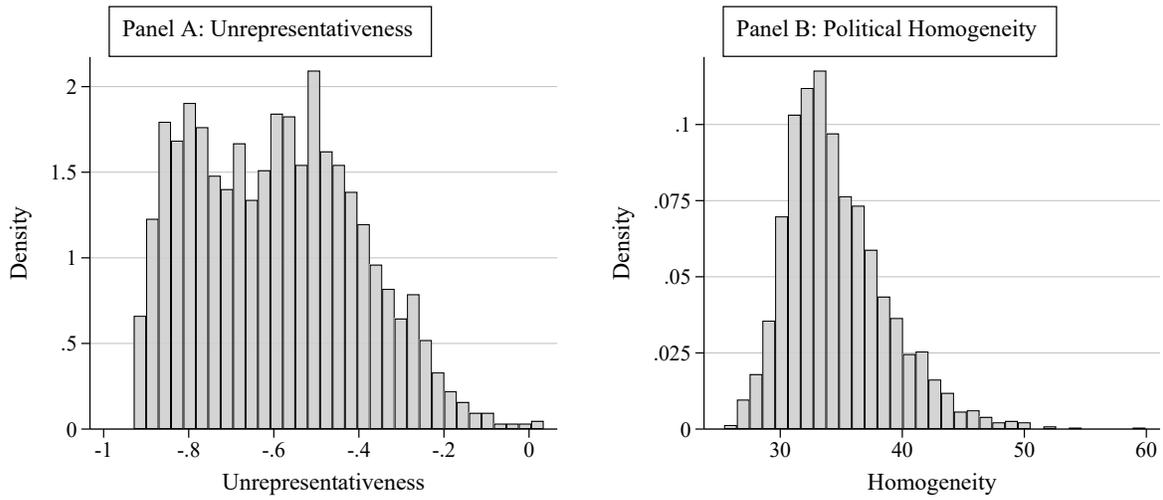
# Online Appendix: Not for Publication

FIGURE A.1: MEDIA USAGE FOR POLITICAL OPINION FORMATION



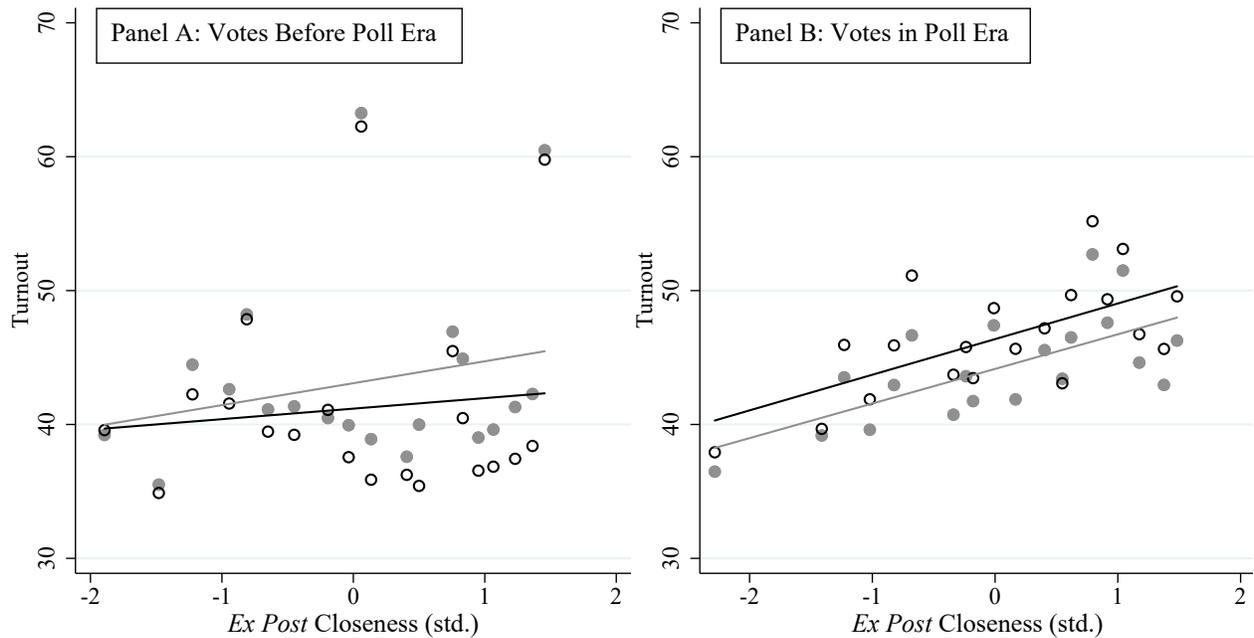
Notes: Responses from the VOX survey to the following prompt: “Through which media did you orient yourself and learn about the pros and cons of the last vote? Please indicate all possibilities that were accurate for the last vote.” The graph shows the share of survey respondents who indicated the use of newspapers, TV, radio, or the Internet.

**FIGURE A.2: DISTRIBUTIONS OF MUNICIPALITY UNREPRESENTATIVENESS AND HOMOGENEITY**



*Notes:* The figure shows the distribution of 2176 Swiss municipalities according to unrepresentativeness (panel A) and political homogeneity (panel B). Unrepresentativeness is a municipality's historical tendency to produce voting results unrepresentative of national-level closeness, measured as the negative of the correlation coefficient between municipality-level and national-level *ex post* closeness of voting results in the era before pre-election polls were introduced. Political homogeneity is a municipality's historical tendency to produce outcomes distant from 50-50, as measured by the average municipal-level margin of majority across all votes held in the era before pre-election polls were introduced.

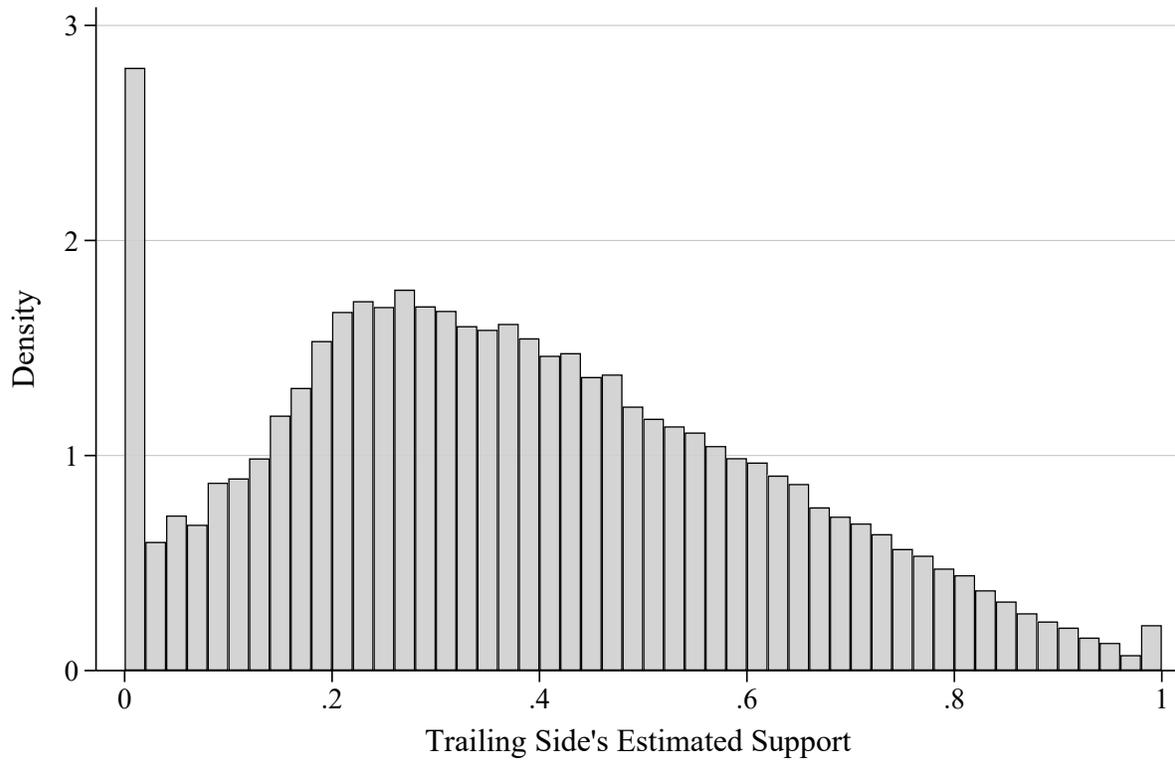
**FIGURE A.3: THE EFFECT OF CLOSENESS ON TURNOUT BY MUNICIPALITY HOMOGENEITY, BEFORE AND AFTER THE INTRODUCTION OF POLLS**



	Slopes Before Poll Era	Slopes in Poll Era
○ Homogeneous Municipalities	0.786 ( $p = 0.612$ )	2.661 ( $p = 0.005$ )
● Heterogeneous Municipalities	1.638 ( $p = 0.267$ )	2.585 ( $p = 0.005$ )
<i>Differences within Era:</i>	$-0.852$ ( $p = 0.005$ )	$0.077$ ( $p = 0.800$ )
<i>Difference in Differences:</i>		$0.928$ ( $p = 0.030$ )

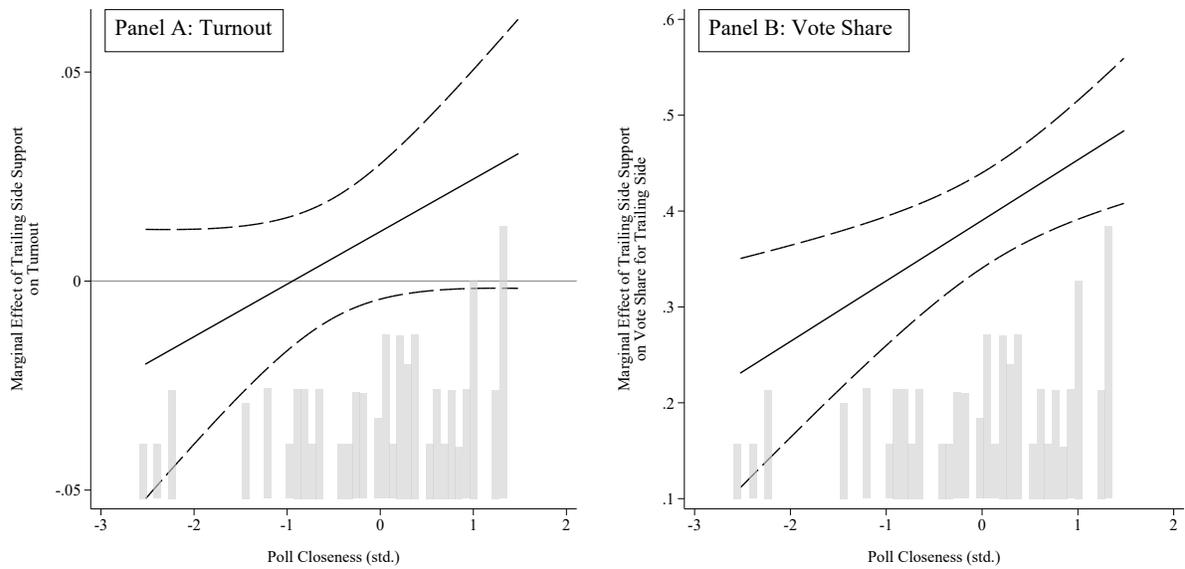
*Notes:* Panel A shows binned scatter plots correlating municipality-level voter turnout and national-level *ex post* closeness, splitting the sample of municipalities above and below median political homogeneity, for 46 votes in the era before pre-election polls were introduced. Panel B replicates Panel A for 69 votes in the era with pre-election polls. Political homogeneity is a municipality's historical tendency to produce outcomes distant from 50-50, as measured by the average municipal-level margin of majority across all votes held in the era before pre-election polls. Estimates of slope parameters as well as p-values associated with tests that (differences in) slopes equal zero are obtained from an OLS regression using all 115 votes, with standard errors clustered at vote level.

**FIGURE A.4:** DISTRIBUTION OF TRAILING SIDE'S ESTIMATED SUPPORT



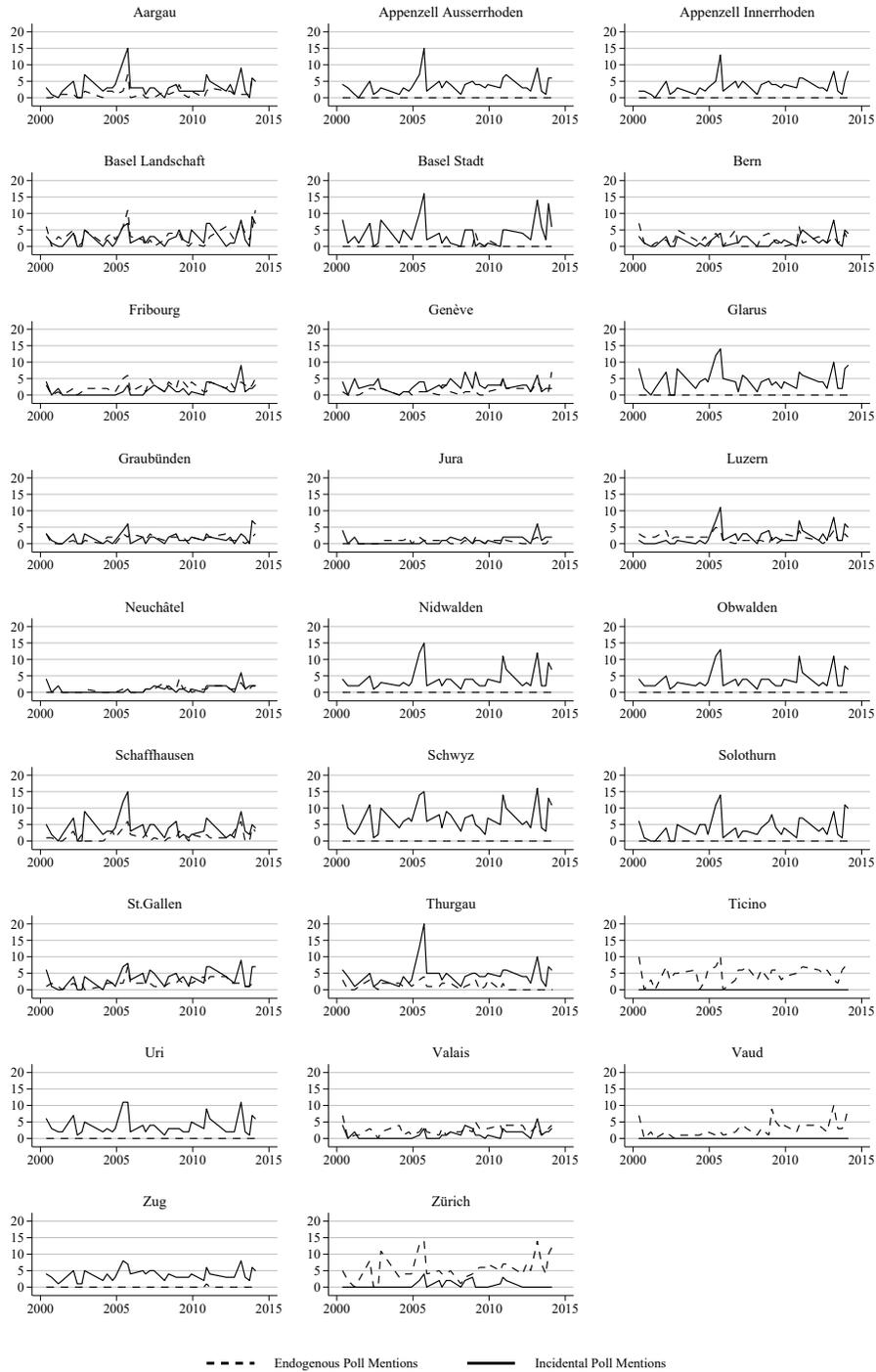
*Notes:* The figure shows the distribution of Trailing Side's Estimated Support across 2176 municipalities and 57 votes. Trailing Side's Estimated Support is a municipality's predetermined pre-disposition to vote for the side trailing in the pre-election poll, measured as a municipality's vote share, in percent of votes cast, in the preceding national election for parties whose voting recommendations are in line with the minority of poll respondents.

**FIGURE A.5: MARGINAL EFFECTS OF TRAILING SIDE SUPPORT ON TURNOUT AND VOTE SHARE FOR THE TRAILING SIDE DEPENDING ON POLL CLOSENESS: TRIMMED SAMPLE**



*Notes:* The solid line plots the total effect of a unit increase in *ex ante* support for the trailing side on turnout (Panel A) and on the vote share for the side trailing in the poll (Panel B), depending on standardized poll closeness. Dashed lines represent 95% confidence intervals based on standard errors clustered at vote level. The plot is based on OLS estimates using the trimmed sample that excludes all observations with 0% or 100% support for the trailing side, reported in Table A.6, Columns 1 and 4. The histograms show the distribution of (standardized) poll closeness across votes.

**FIGURE A.6: ENDOGENEOUS AND INCIDENTAL POLL MENTIONS IN CANTONS OVER TIME**



*Notes:* Each panel plots the number of endogenous and incidental poll mentions over time, for one canton. Endogenous poll mentions are poll mentions in newspapers read by at least 10% of a canton’s inhabitants and for which the canton is the largest market. Incidental poll mentions are poll mentions in newspapers read by at least 10% of a canton’s inhabitants, but whose largest market is in a different canton.

**TABLE A.1: LIST OF MOST IMPORTANT VOTES BY ELECTION DAY**

Date	Title	Turnout (%)	Yes (%)
1981-06-14	Initiative for "Equal Rights of Men and Women"	33.95	60.27
1981-11-29	Federal Decision on the Financial Order Improving the Federal Budget	30.35	68.95
1982-06-06	Federal Penal Code (Violent Crime)	35.19	63.71
1982-11-28	Initiative for "Preventing Abusive Pricing"	32.93	57.94
1983-02-27	Federal Decision on the Revision of Fuel Tariffs	32.42	52.69
1983-12-04	Federal Decision on the Regulation of Citizenship in the Constitution	35.84	60.81
1984-02-26	Initiative "for Civil Service Based on Factual Evidence"	52.77	36.17
1984-05-20	Initiative "against Bank Secrecy and the Power of Banks"	42.52	26.96
1984-09-23	Initiative "for a Safe, Economical and Eco-Friendly Energy"	41.62	45.77
1984-12-02	Initiative "for an Effective Protection of Motherhood"	37.66	15.78
1985-03-10	Initiative "for Extending Paid Holidays"	34.60	34.78
1985-06-09	Initiative "for the Right to Life"	35.72	30.96
1985-09-22	Federal Decision on Risk Guarantees for Innovations in SMEs	40.87	43.11
1985-12-01	Initiative "for Abolishing Vivisection"	37.97	29.47
1986-03-16	Federal Decision on the Accession to the United Nations	50.71	24.33
1986-09-28	Initiative "for Secured Vocational Education and Re-training"	34.82	18.38
1986-12-07	Initiative "for an Fair Levy on Heavy Traffic"	34.74	33.87
1987-04-05	Initiative "for Referenda against Military Expenses"	42.42	40.56
1987-12-06	Federal Decision on "Railway 2000"	47.70	56.99
1988-06-12	Initiative "for Reducing the Retirement Age"	42.02	35.12
1988-12-04	Initiative "against Land Speculation"	52.83	30.78
1989-06-04	Initiative "for Natural Farming - against Animal Factories"	35.96	48.95
1989-11-26	Initiative "for Switzerland Without an Army and a Comprehensive Peace Policy"	69.19	35.59
1990-04-01	Initiative "against Concrete - for Limiting Road Construction"	41.13	28.51
1990-09-23	Initiative "against Constructing New Nuclear Power Plants"	40.44	54.52
1991-03-03	Initiative "for Promoting Public Transport"	31.24	37.14
1991-06-02	Federal Decision on Federal Budget Reform	33.27	45.65
1992-02-16	Initiative "for the Drastic and Stepwise Limitation of Animal Experiments"	44.50	43.63
1992-05-17	Initiative "against Abuses of Reproduction Technology and Genetic Engineering"	39.18	73.83
1992-09-27	Federal Decision on the New Railway Link through the Alps (NRLA)	45.91	63.61
1992-12-06	Federal Act on the Accession to the European Economic Area	78.78	49.66
1993-03-07	Initiative "for Abolishing Animal Experiments"	51.26	27.77

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Date	Vote Title	Turnout (%)	Yes (%)
1993-06-06	Initiative "for Switzerland without New Fighter Jets"	55.61	42.81
1993-09-26	Federal Decision on Temporary Measures against Cost Increases in Health Care	39.80	80.55
1993-11-28	Initiative "for Reducing Alcohol Problems"	45.51	25.26
1994-02-20	Initiative "for Protecting the Alpine Region against Transit Traffic"	40.86	51.91
1994-06-12	Federal Decision on the Facilitated Naturalization for Young Foreign Nationals	46.78	52.84
1994-09-25	Federal Penal Code and Military Penal Code (Racial Discrimination)	45.93	54.65
1994-12-04	Federal Act on Coercive Measures under the Law on Foreigners	44.06	72.91
1995-03-12	Federal Decision on Curbing Expenditures	37.88	83.38
1995-06-25	Federal Act on Old Age Insurance	40.45	60.71
1996-03-10	Federal Decision Abolishing Cantonal Responsibility for the Equipment of Soldiers	31.04	43.70
1996-06-09	Initiative "Farmers and Consumers - for a natural Agriculture" (counter-proposal)	31.44	77.59
1996-12-01	Federal Act on Labor	46.76	32.97
1997-06-08	Initiative "for a Ban on Exports of War Material"	35.50	22.50
1997-09-28	Federal Decision on the Financing of the Unemployment Insurance	40.65	49.18
1998-06-07	Initiative "for Protecting Life and Environment from Genetic Engineering"	41.35	33.29
1998-09-27	Federal Act on Power-Dependent Levies on Heavy Traffic	51.85	57.20
1998-11-29	Initiative "for a Reasonable Drug Policy"	38.39	26.01
1999-02-07	Federal Decision on a Constitutional Article on Transplant Medicine	38.01	87.77
1999-04-18	Federal Decision on a New Constitution	35.93	59.16
1999-06-13	Federal Decision on Maternity Insurance	45.98	38.99
2000-03-12	Initiative "for Halving Motorised Traffic and Conserving Habitats"	42.41	21.33
2000-05-21	Federal Decision on Bilateral Treaties between Switzerland and the EU	48.35	67.19
2000-09-24	Initiative "for Regulating Immigration"	45.31	36.20
2000-11-26	Initiative "for Lower Hospital Costs"	41.69	17.89
2001-03-04	Initiative "Yes to Europe!"	55.84	23.15
2001-06-10	Federal Act on the Army and Military Administration (Armament)	42.55	50.99
2001-12-02	Initiative "for a Credible Security Policy and Switzerland without an Army"	37.96	21.90
2002-03-03	Initiative "for Accession to the UN"	58.48	54.61
2002-06-02	Federal Penal Code (Abortion)	41.85	72.15
2002-09-22	Initiative "Gold Reserves for the Old Age Insurance"	45.21	47.56
2002-11-24	Initiative "against Abuse of Asylum"	47.97	49.91
2003-02-09	Federal Act on Adjusting Cantonal Contributions to Hospitals	28.74	77.36
2003-05-18	Initiative "Energy without Nuclear Power - For a Stepwise Phaseout"	49.77	33.71
2004-02-08	Initiative "Liefelong Custody for Untreatable, Extremely Dangerous Offenders"	45.54	56.19
2004-05-16	Federal Act on Tax Refrom and Revision Stamp Duties	50.85	34.12

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Date	Vote Title	Turnout (%)	Yes (%)
2004-09-26	Federal Act on Compensation for Loss of Earnings (Motherhood)	53.82	55.45
2004-11-28	Federal Act on Stem Cell Research	37.04	66.39
2005-06-05	Federal Decision on the Association to the EU Schengen-Dublin Agreements	56.64	54.63
2005-09-25	Federal Decision Extending Free Movement of Persons to New EU Member States	54.29	55.98
2005-11-27	Initiative "Initiative for GMO-Free Agriculture"	42.25	55.67
2006-05-21	Federal Decision on Revising Constitutional Provisions for Education	27.80	85.58
2006-09-24	Federal Act on Asylum	48.92	67.76
2006-11-26	Federal Act on Family Allowances	45.01	67.98
2007-03-11	Initiative "for a Unified Social Health Insurance"	45.94	28.76
2007-06-17	Federal Act on Disability Insurance	36.20	59.09
2008-02-24	Federal Act on Corporate Tax Reform	38.63	50.53
2008-06-01	Initiative "for Democratic Naturalizations"	45.18	36.25
2008-11-30	Initiative "for a Flexible Retirement Age"	47.67	41.38
2009-02-08	Federal Decision Extending Free Movement of Persons to New EU Members	51.44	59.61
2009-05-17	Initiative "Yes to Complementary Medicine" (counter-proposal)	38.80	67.03
2009-09-27	Federal Decision on Funding the Disability Insurance by Raising the VAT	41.01	54.56
2009-11-29	Initiative "against the Construction of Minarets"	53.76	57.50
2010-03-07	Federal Act on the Occupational Pension Scheme	45.75	27.27
2010-09-26	Federal Act on the Unemployment Insurance	35.84	53.42
2010-11-28	Initiative "for the Expulsion of Criminal Foreigners"	52.93	52.91
2011-02-13	Initiative "for Protection against Armed Violence"	49.12	43.70
2012-03-11	Initiative "Limiting the Construction of Second Homes"	45.18	50.63
2012-06-17	Federal Act on Health Insurance (Managed Care)	38.65	23.95
2012-09-23	Federal Decision on a Constitutional Article Promoting Music Lessons for the Young	42.42	72.69
2012-11-25	Federal Act on Epizootic Diseases	27.60	68.28
2013-03-03	Initiative "against Rip-Off Salaries"	46.74	67.96
2013-06-09	Federal Act on Asylum	39.43	78.45
2013-09-22	Initiative "Repealing Compulsory Military Service"	46.89	26.79
2013-11-24	Federal Act on Tolls for the Use of National Roads	53.61	39.54
2014-02-09	Initiative "against Mass Immigration"	56.57	50.33
2014-05-18	Initiative "for Protecting Fair Wages (Minimum Wage Initiative)"	56.36	23.73
2014-09-28	Initiative "for a Public Health Insurance"	47.18	38.16
2014-11-30	Initiative "Stop Overpopulation - for Securing Natural Life Resources"	49.98	25.90
2015-03-08	Initiative "for an Energy Tax Instead of the Value Added Tax"	42.06	8.03
2015-06-14	Initiative "for Bequest Taxes on the Wealthy for Funding the Old Age Insurance"	43.71	28.96

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Date	Vote Title	Turnout (%)	Yes (%)
2016-02-28	Initiative "for Enforcing the Expulsion of Criminal Foreign Nationals"	63.73	41.15
2016-06-05	Federal Act on Asylum	46.79	66.78
2016-09-25	Initiative "for a Stronger Old Age Insurance"	43.13	40.60
2016-11-27	Initiative "for a Structured Nuclear Phaseout"	45.38	45.80
2017-02-12	Federal Decision on Facilitated Naturalization of Third Generation Foreign Nationals	46.84	60.41
2017-05-21	Federal Act on Energy	42.89	58.22
2017-09-24	Federal Act on Old Age Pension Reform	47.39	47.31
2018-03-04	Initiative "for Abolishing Radio and Television Fees"	54.84	28.44
2018-06-10	Initiative "for Crisis-Proof Money: Money Creation Only by the Central Bank"	34.55	24.28
2018-09-23	Initiative "for Healthy, Environmentally Friendly and Fair Food"	37.52	38.70
2018-11-25	Federal Act on Social Insurance	48.38	64.72
2019-02-10	Initiative "against Urban Sprawling - for a Sustainable Settlement Development"	37.92	36.34
2019-05-19	Federal Act on Tax Reform and Funding for Old Age Insurance	43.74	66.38

**TABLE A.2:** LIST OF NEWSPAPERS CONSULTED FOR POLL COVERAGE AND POLITICAL ADS

Newspaper	Language	# of cantons for which it has been used
Aargauer Zeitung	German	1
Badener Woche	German	1
Basellandschaftl. Ztg.	German	1
Basler Zeitung	German	2
Berner Zeitung	German	2
Blick	German	20
Blick am Abend	German	15
Bund	German	1
Büwo	German	1
Caffè della domenica (Il)	Italian	1
Corriere del Ticino	Italian	1
Côte (La)	French	1
Engadiner Post	German	1
(L')Express (aggregated with L'Impartial)	French	1
Freiburger Nachrichten	German	1
Giornale del Popolo	Italian	1
Gruyère (La)	French	1
Liberté (La)	French	1
Matin (Le)	French	6
Matin Dimanche (Le)	French	6
Matin Bleu (Le)	French	6
Mattino della Domenica (Il)	Italian	1
Neue Luzerner Zeitung GES (sometimes aggregated with: Neue Nidwaldner Zeitung; Neue Obwaldner Zeitung; Neue Schwyzer Zeitung; Neue Urner Zeitung; Neue Zuger Zeitung)	German	6
Nouvelliste (Le)	French	1
NZZ	German	3
NZZ am Sonntag	German	14
Ostschweiz am Sonntag	German	4
Quotidien Jurassien (Le)	French	1
Regione Ticino (La)	Italian	1
Rheinzeitung	German	2
Schaffhauser Nachrichten	German	1
Sonntag (Schweiz am Sonntag from 2013)	German	5
Sonntags Blick	German	21
Sonntags Zeitung	German	19
St. Galler Tagblatt (sometimes aggregated with: Appenzeller Zeitung)	German	5
Südostschweiz GES (Die)	German	4
Südostschweiz am Sonntag	German	1
Tages-Anzeiger	German	7
Temps (Le)	French	2
Thurgauer Zeitung	German	1
Tribune de Genève	French	1
Walliser Bote	German	1

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Newspaper	Language	# of cantons for which it has been used
Wiler Zeitung	German	1
Zentralschweiz am Sonntag	German	5
Zuger Woche	German	1
Zürichsee Zeitung	German	1
20 Minuten	German	19
20 Minutes	French	6
20 Minuti	Italian	1
24 Heures	French	1

**TABLE A.3: DAILY TURNOUT BEFORE AND AFTER POLL RELEASE DEPENDING ON POLL CLOSENESS: SINGLE DAYS**

	Net Turnout (%)		Turnout / All Voters (%)		Log(Turnout)	
	(1)	(2)	(3)	(4)	(5)	(6)
5 days before poll × Poll Closeness (std.)	0.0429 (0.3879)	-0.0154 (0.3902)	-0.0614 (0.3580)	-0.1186 (0.3583)	0.0973 (0.2203)	0.0767 (0.2239)
4 days before poll × Poll Closeness (std.)	0.0288 (0.3348)	-0.0684 (0.3300)	-0.0571 (0.3053)	-0.1431 (0.2981)	0.0031 (0.1592)	-0.0324 (0.1532)
3 days before poll × Poll Closeness (std.)	0.1241 (0.2872)	0.0278 (0.2920)	0.0562 (0.2676)	-0.0381 (0.2703)	-0.0147 (0.1437)	-0.0390 (0.1464)
2 days before poll × Poll Closeness (std.)	0.0579 (0.2775)	0.0864 (0.2860)	0.0003 (0.2526)	0.0241 (0.2593)	-0.0051 (0.1144)	0.0057 (0.1186)
1 day before poll × Poll Closeness (std.)	-0.0667 (0.1841)	-0.0591 (0.1900)	-0.0712 (0.1496)	-0.0658 (0.1532)	0.0088 (0.0542)	0.0142 (0.0560)
1 day after poll × Poll Closeness (std.)	0.3926** (0.1743)	0.3731** (0.1753)	0.3088** (0.1343)	0.2931** (0.1352)	0.1131* (0.0588)	0.1101* (0.0602)
2 days after poll × Poll Closeness (std.)	0.3534** (0.1741)	0.3289* (0.1770)	0.2422 (0.1457)	0.2267 (0.1502)	0.1218** (0.0560)	0.1162** (0.0572)
3 days after poll × Poll Closeness (std.)	0.4253** (0.2052)	0.4438** (0.2107)	0.2853* (0.1652)	0.2998* (0.1696)	0.1048* (0.0594)	0.1120* (0.0623)
4 days after poll × Poll Closeness (std.)	0.2247 (0.2619)	0.1996 (0.2707)	0.1279 (0.2319)	0.1117 (0.2421)	0.0777 (0.0774)	0.0770 (0.0813)
5 days after poll × Poll Closeness (std.)	0.3014 (0.2061)	0.3219 (0.2111)	0.1654 (0.1801)	0.1799 (0.1852)	0.0946 (0.0636)	0.1024 (0.0660)
6 days after poll × Poll Closeness (std.)	0.0805 (0.3072)	0.0773 (0.3103)	0.0168 (0.2463)	0.0152 (0.2515)	0.0678 (0.0751)	0.0693 (0.0779)
7 days after poll × Poll Closeness (std.)	0.3365 (0.3158)	0.3503 (0.3220)	0.1722 (0.2605)	0.1840 (0.2665)	0.1037 (0.0854)	0.1097 (0.0883)
8 days after poll × Poll Closeness (std.)	0.0594 (0.3561)	0.0551 (0.3562)	0.0115 (0.2625)	0.0102 (0.2645)	0.0574 (0.0818)	0.0604 (0.0839)
9 days after poll × Poll Closeness (std.)	0.4430 (0.3354)	0.4018 (0.3303)	0.2324 (0.2468)	0.2071 (0.2477)	0.1135 (0.0797)	0.1109 (0.0816)
R-squared	0.488	0.511	0.300	0.330	0.235	0.258
Observations	757	757	757	757	757	757
Vote Fixed Effects	Y	Y	Y	Y	Y	Y
Voting Day from/to Poll Fixed Effects	Y	Y	Y	Y	Y	Y
Day to Election Fixed Effects	N	Y	N	Y	N	Y

*Notes:* The table presents OLS estimates with three measures of daily turnout in Geneva as dependent variables: Net Turnout (columns 1 and 2) defined as the number of votes cast, in percent of eligible voters net of those voters who cast their vote on earlier days; Turnout / All Voters (columns 3 and 4) defined as the number of votes cast, in percent of all eligible voters; Log(Turnout) (columns 5 and 6) defined as the natural logarithm of the number of votes cast. Poll Closeness is the trailing side's vote share in the pre-election poll whose release date is the omitted day of reference. The sample is an unbalanced panel of 52 votes held between 2001 and 2019 observed from 5 voting days before to 9 voting days after poll release. Standard errors in parentheses, clustered at the vote level: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A.4:** DAILY TURNOUT BEFORE AND AFTER POLL RELEASE DEPENDING ON POLL CLOSENESS: BINS OF TWO DAYS

	Net Turnout (%)		Turnout / All Voters (%)		Log(Turnout)	
	(1)	(2)	(3)	(4)	(5)	(6)
4-5 days before poll × Poll Closeness (std.)	0.0690 (0.2808)	-0.0126 (0.2766)	-0.0237 (0.2638)	-0.0978 (0.2574)	0.0451 (0.1618)	0.0145 (0.1584)
2-3 days before poll × Poll Closeness (std.)	0.1243 (0.2085)	0.0873 (0.2111)	0.0638 (0.2005)	0.0266 (0.2025)	-0.0143 (0.1124)	-0.0231 (0.1148)
1-2 days after poll × Poll Closeness (std.)	0.4063*** (0.1440)	0.3806*** (0.1417)	0.3111*** (0.1054)	0.2929*** (0.1044)	0.1130*** (0.0412)	0.1061** (0.0403)
3-4 days after poll × Poll Closeness (std.)	0.3584** (0.1422)	0.3512** (0.1457)	0.2422* (0.1285)	0.2387* (0.1335)	0.0868* (0.0434)	0.0875* (0.0459)
5-6 days after poll × Poll Closeness (std.)	0.2243 (0.1853)	0.2292 (0.1856)	0.1267 (0.1556)	0.1305 (0.1580)	0.0768 (0.0468)	0.0789 (0.0484)
7-9 days after poll × Poll Closeness (std.)	0.3088 (0.2630)	0.2952 (0.2638)	0.1719 (0.2003)	0.1648 (0.2028)	0.0866 (0.0597)	0.0862 (0.0615)
R-squared	0.486	0.509	0.298	0.327	0.233	0.256
Observations	757	757	757	757	757	757
Vote Fixed Effects	Y	Y	Y	Y	Y	Y
Voting Day from/to Poll Fixed Effects	Y	Y	Y	Y	Y	Y
Day to Election Fixed Effects	N	Y	N	Y	N	Y

*Notes:* The table presents OLS estimates with three measures of daily turnout in Geneva as dependent variables: Net Turnout (columns 1 and 2) defined as the number of votes cast, in percent of eligible voters net of those voters who cast their vote on earlier days; Turnout / All Voters (columns 3 and 4) defined as the number of votes cast, in percent of all eligible voters; Log(Turnout) (columns 5 and 6) defined as the natural logarithm of the number of votes cast. Poll Closeness is the trailing side's vote share in the pre-election poll whose release date (and the preceding day) are the omitted days of reference. The sample is an unbalanced panel of 52 votes held between 2001 and 2019 observed from 5 voting days before to 9 voting days after poll release. Standard errors in parentheses, clustered at the vote level: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A.5: HETEROGENEOUS EFFECTS OF ELECTION CLOSENESS AND POLLS DEPENDING ON MUNICIPALITY POLITICAL HOMOGENEITY**

	(1)	(2)
<i>Ex Post</i> Closeness (std.) × Homogeneity (std.)	-0.5674*** (0.1900)	-0.5659*** (0.1904)
<i>Ex Post</i> Closeness (std.) × Homogeneity (std.) × Poll Era	0.5874** (0.2631)	0.5822** (0.2630)
Homogeneity (std.) × Poll Era	2.3689*** (0.2319)	2.3936*** (0.2319)
Test for Convergence (p-value)	0.913	0.928
R-squared	0.700	0.700
Observations	250240	250240
Municipality Fixed Effects	Y	Y
Vote Fixed Effects	Y	Y
Electorate Size	N	Y

*Notes:* Each column presents results from an OLS regression with municipality-level voter turnout as the dependent variable. Political Homogeneity is a municipality's historical tendency to produce voting results distant from 50-50, as measured by the average municipal-level margin of majority across all votes held in the era before pre-election polls. Poll Era is a dummy equal to 1 for 69 votes held after the introduction of polls in 1998. Test for Convergence reports the p-value of an F-test that the sum of the coefficients on *Ex Post* Closeness (std.) × Homogeneity (std.) and *Ex Post* Closeness (std.) × Homogeneity (std.) × Poll Era (std.) equals 0. Column 2 controls for a triple interaction among *Ex Post* Closeness, Poll Era and the standardized average municipality electorate size, as well as all lower order terms. The sample is a balanced panel of 2176 municipalities observed in 115 votes held from 1981 to 2019. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A.6:** ASYMMETRIC EFFECTS OF POLL CLOSENESS ON TURNOUT AND VOTE SHARES: TRIMMED SAMPLE

	Turnout (%)			Vote Share for Trailing Side (%)		
	(1)	(2)	(3)	(4)	(5)	(6)
Trailing Side's Estimated Support $\times$ Poll Closeness (std.)	0.0126*			0.0631***		
	(0.0074)			(0.0212)		
Trailing Side's Estimated Support	0.0118			0.3903***		
	(0.0082)			(0.0254)		
Trailing Side's Estimated Support (2 <sup>nd</sup> tercile) $\times$ Poll Closeness (std.)		0.2872*	0.3146**	0.6783	0.7121	
		(0.1516)	(0.1513)	(0.4780)	(0.4625)	
Trailing Side's Estimated Support (3 <sup>rd</sup> tercile) $\times$ Poll Closeness (std.)		0.5658**	0.5003**	2.1197***	2.0355***	
		(0.2350)	(0.2124)	(0.7217)	(0.7262)	
Trailing Side's Estimated Support (2 <sup>nd</sup> tercile)		0.1958	0.2014	6.3631***	6.3703***	
		(0.1305)	(0.1285)	(0.4005)	(0.3962)	
Trailing Side's Estimated Support (3 <sup>rd</sup> tercile)		0.4393	0.4552*	12.8812***	12.9013***	
		(0.2715)	(0.2679)	(0.8417)	(0.8382)	
R-squared	0.859	0.859	0.859	0.876	0.863	0.863
Observations	119394	119394	119394	119394	119394	119394
Electorate Size $\times$ Poll Closeness (std.)	N	N	Y	N	N	Y
Unrepresentativeness $\times$ Poll Closeness (std.)	N	N	Y	N	N	Y

*Notes:* The table presents estimates from OLS regressions using municipality-level turnout (columns 1-3) and vote share for the trailing side (columns 4-6) as dependent variables. The Trailing Side's Vote Share is defined as a municipality's share of votes cast in line with the trailing side in the pre-election poll, i.e., with the minority of poll respondents. Trailing Side's Estimated Support is a municipality's predetermined pre-disposition to vote for the side trailing in the pre-election poll, measured as a municipality's vote share, in percent of votes cast, in the preceding national election for parties whose voting recommendations are in line with the minority of poll respondents. Poll Closeness is the trailing side's vote share in the pre-election poll. In columns 2-3 and 5-6, municipalities are split into terciles of Trailing Side's Support. All specifications include municipality and canton  $\times$  vote fixed effects. Columns 3 and 6 additionally control for Poll Closeness interacted with Electorate Size and Unrepresentativeness. The sample is an unbalanced panel of 2176 municipalities observed in 57 votes with a pre-election poll held from 1998 to 2019, excluding all observations with 0% or 100% support for the trailing side. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A.7:** NEWSPAPER COVERAGE, CLOSENESS, POLITICAL ADVERTISEMENT AND VOTE IMPORTANCE

PANEL A: POLL MENTIONS IN CANTONAL NEWSPAPERS	Advertisements (std.)		Importance (std.)	
	(1)	(2)	(3)	(4)
Poll Mentions (std.) × Poll Closeness (std.)	0.0408 (0.0378)	0.0389 (0.0377)	0.0419 (0.0506)	0.0376 (0.0509)
Poll Mentions (std.)	0.2266*** (0.0526)	0.1393** (0.0658)	0.0416 (0.0597)	0.0427 (0.0953)
R-squared	0.876	0.877	0.329	0.329
PANEL B: INCIDENTAL POLL MENTIONS				
Incidental Poll Mentions (std.) × Poll Closeness (std.)	0.0287 (0.0455)	0.0519 (0.0412)	0.0479 (0.0359)	0.0328 (0.0481)
Incidental Poll Mentions (std.)	0.2459*** (0.0547)	0.2977*** (0.0857)	0.0364 (0.0594)	0.0132 (0.1122)
R-squared	0.878	0.878	0.329	0.329
Observations	962	962	957	957
German × Poll Mentions (std.)	N	Y	N	Y
German × Poll Closeness (std.)	N	Y	N	Y

*Notes:* Each panel presents results from four OLS regressions using two dependent variables: the standardized number of newspaper advertisements in cantonal newspapers (Columns 1 and 2), and standardized importance, as rated by a canton's average VOX survey respondents (Columns 3 and 4). All specifications include a full set of canton and vote fixed effects. In Panel A, Poll Mentions (std.) refer to the standardized count of poll mentions in cantonal newspapers read by at least 10% of a canton's inhabitants. Panel B restricts attention to Incidental Poll Mentions, defined as mentions in cantonal newspapers whose main market lies in another canton. Poll Closeness is the trailing side's vote share in pre-election poll. Columns 2 and 4 additionally control for a dummy equal to one for German-speaking cantons, interacted with both Poll Closeness (std.) and Poll Mentions (std.). The sample is a balanced panel of 26 cantons, observed in 37 votes held between 2000 and 2014. Standard errors clustered at the vote level in parentheses: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

TABLE A.8: NEWSPAPER COVERAGE, CLOSENESS AND CANTONAL VOTER TURNOUT: IV ESTIMATES

	<i>First Stage</i>		<i>Second Stage</i>
	(1) Poll Mentions (std.)	(2) Poll Mentions (std.) × Poll Closeness (std.)	(3) Turnout
Incidental Poll Mentions (std.) × Poll Closeness (std.)	0.0231 (0.0392)	0.3880*** (0.0433)	
Incidental Poll Mentions (std.)	0.7351*** (0.0397)	0.1020* (0.0578)	
Poll Mentions (std.) × Poll Closeness (std.)			0.9789** (0.4790)
Poll Mentions (std.)			-0.2472 (0.3788)
R-squared	0.866	0.699	0.819
Observations	962	962	962
Test Joint Significance Excluded Instruments	p < 0.0001	p < 0.0001	
Test $\beta$ (Incidental Poll Mentions) $\geq 1$	p < 0.0001		

Notes: The table presents two-stage least squares estimates using Incidental Poll Mentions as an instrument for Poll Mentions in cantonal newspapers. Columns 1 and 2 show the two first-stage estimates. Column 3 shows estimates of the second stage. All specifications include canton and vote fixed effects. The sample is a balanced panel of 26 cantons observed in 37 votes held between 2000 and 2014. Standard errors in parentheses, clustered at the vote level: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .