Working Paper

Polls, the Press, and Political Participation:
The Effects of Anticipated Election Closeness on Voter Turnout

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Abstract

We exploit naturally occurring variation in the existence, closeness, and dissemination of pre-election polls to identify a causal effect of anticipated election closeness on voter turnout in Swiss referenda. Closer elections are associated with greater turnout only when polls exist. Examining within-election variation in newspaper reporting on polls across cantons, we find that close polls increase turnout significantly more where newspapers report on them most. This holds examining only "incidental" exposure to coverage by periodicals whose largest audience is elsewhere. The introduction of polls had larger effects in politically unrepresentative municipalities, where locally available information differs most from national polls.

Keywords: Voter turnout, media, polls
JEL Classification: D72, P16

1 Introduction

Voter turnout is among the political behaviors of greatest interest to social scientists. Recent empirical work has revealed much about particular drivers of the decision to vote: the effects of 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), media content (Strömberg, 2004, Gentzkow, 2006, DellaVigna and Kaplan, 2007, Enikolopov et al., 2011, and Gentzkow et al., 2011), and compulsory voting laws (León, 2017 and Hoffman et al., 2017).[1] Yet, there is a surprising lack of clear, causal evidence for one of the most widely-discussed drivers of turnout: anticipated election closeness.[2]

Observational studies often find suggestive correlations between election closeness and voter turnout, but are undermined by concerns regarding reverse causality and omitted variables bias (see, for example, Barzel and Silberberg, 1973, Cox and Munger, 1989, Matsusaka, 1993, Shachar and Nalebuff, 1999, and Kirchgässner and Schulz, 2005). *Ex post* election closeness may be an endogenous outcome of turnout. Associations between *ex ante* closeness (i.e., as measured by polls) and turnout might reflect omitted variables such as issue type: issues about which voters are passionate may also be issues on which the electorate is more closely split. Moreover, political "supply-side" behavior might drive the empirical correlations as well: political ads may be more prevalent when elections are anticipated to be close, and ads themselves may drive turnout.[3]

Aiming to test for a causal effect of anticipated election closeness using a transparent research design, a series of field experiments provide voters with information regarding election closeness (across individuals within a single election), typically finding no significant effects (Gerber and Green, 2000, Bennion, 2005, Dale and Strauss, 2009, Enos and Fowler, 2016, Gerber et al., 2017). However, a lack of complete experimental control makes these results difficult to interpret: null results might be driven by common information sets outside of the experiment, which would produce convergence in posterior beliefs regarding closeness at the time of the elections—and therefore similar turnout levels—between treatment and control groups.[4]

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[1]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 personality (Cantoni et al., 2016) to traditional and social media (Enikolopov and Petrova, 2015, Enikolopov et al., 2016, Durante et al., 2017), and the behavior of other citizens (Perez-Truglia and Cruces, 2015, González, 2016, and Cantoni et al., 2017).

[2]Such a causal effect might arise for a variety of theoretical reasons, from (perhaps flawed) instrumental calculations of costs and benefits, to intrinsic or social costs from failing to vote that vary with the closeness of the election. Canonical rational choice models (e.g., Downs, 1957) predicted that closeness, by increasing the likelihood of pivotality, will generate higher turnout; note, however, that this logic only strictly applies to small or extraordinarily close elections. Still, anticipated election closeness may cause higher turnout through other mechanisms even in large elections: social preferences (e.g., DellaVigna et al., 2016) or 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) will generate higher turnout for closer elections if the anticipated social or intrinsic costs of not voting are higher when elections are expected to be close.

[3]In related work using observational data, Coate et al. (2008) structurally estimate a model of voter turnout using data from Texas liquor referenda, finding too few close elections to fit the pivotal voter model.

[4]A series of lab experiments also provide clean tests for a causal effect of anticipated closeness on turnout (e.g.,

In this paper we exploit naturally occurring variation in the existence, closeness, and dissemination of pre-election polls, as well as naturally occurring variation in the political composition of Swiss municipalities, to identify a causal effect of anticipated election closeness on voter turnout in Swiss federal referenda.[5] These referenda are extremely high-stakes—votes in our sample shaped, among other things, Switzerland's military policy, its relationship with Europe, its immigration policy, its treatment of minority groups, and its national infrastructure—and we study political behavior within them using a novel, hand-collected dataset consisting of voter turnout, voters' perceptions of a referendum's importance, political advertising in local newspapers, poll results, and local newspapers' reporting on those polls for every Swiss referendum for which municipality-level voter turnout is available.

Relative to existing studies of the relationship between election closeness and turnout, our analysis makes two primary empirical contributions. First, in contrast to other studies exploiting naturally occurring variation, we implement a multi-pronged research design that can credibly address concerns regarding reverse causality and omitted variables. We examine variation in both *ex post* and *ex ante* closeness; we estimate models with election fixed effects, exploiting *within-election*, cross-canton variation in local newspaper reporting on close pre-election polls; we take seriously the potential endogeneity of locally-available information, exploiting "incidental" variation in locally-read newspapers' reporting on polls; and, we develop and test a set of hypotheses regarding heterogeneous effects of the introduction of polls to distinguish between the effects of anticipated election closeness and potential unobserved correlates. Second, in contrast to field experimental work, we are able to exploit more pronounced differences in information sets available to voters in different locations at the time of the election, thus reducing concerns that treatment and comparison groups in the analysis will base their turnout decisions on similar information sets.

We propose that information provided by polls, disseminated by newspapers, leads voters to update their beliefs about election (referendum) closeness. We hypothesize that when a pre-election poll is close and voters learn about that poll (e.g., from reading a newspaper that reports the results), voter turnout will increase. Our first approach to studying the effects of anticipated election closeness on voter turnout exploits variation in the *existence* of pre-election polls due to the introduction of the first widely disseminated, national-level poll in Switzerland in 1998. One would expect that in the absence of polls, voters may not be well informed about the closeness of a vote; this makes it difficult to condition their turnout on election closeness, and thus the relationship between voter turnout and the *ex post* closeness of an election will be weak. In contrast, when polls exist, if there is a causal effect of anticipated closeness on turnout, the better information

about closeness provided by polls should generate a stronger relationship between closeness and turnout.

Consistent with these predictions, evidence from a cross-vote analysis reveals that in the 1981–1998 era—before national level polls were conducted and disseminated—there is an extremely weak relationship between voter turnout and the *ex post* closeness of an election. In contrast, in the era with polls (1998–2014 in our sample of referenda), there exists a strong relationship between election closeness and turnout.[6] This cross-era comparison is intriguing, but it naturally raises concerns; one is that, rather than election closeness causing high turnout (and being reflected in an association between *ex post* closeness and turnout), instead, higher turnout may cause elections to be closer *ex post*.

While we cannot measure the *ex ante* closeness of elections prior to the introduction of polls, we can examine the cross-vote relationship between *ex ante* closeness from the national pre-election poll and election turnout for the 1998–2014 sample. Consistent with our predictions, we find a statistically and economically significant relationship between *ex ante* closeness and voter turnout: a one standard deviation increase in poll closeness (around 7 percentage points) increases turnout by around 1.5 percentage points. This is slightly larger than the effect we observe from a one standard deviation increase in newspaper political advertising, and equivalent to around a one-half standard deviation increase in voters' assessment of the importance of a given vote. This relationship holds even when controlling for various measures of a referendum's importance to voters and for a measure of political advertising in six large, "national-level" newspapers. Finally, we find that when multiple polls were conducted prior to a referendum, the final poll released is more strongly associated with turnout than are earlier polls, as one would expect if sequential polling results were incorporated into voters' posterior beliefs regarding closeness, which then shaped turnout.

Of course, one still might be concerned that our finding of a significant cross-election relationship between poll closeness and subsequent turnout is driven by some omitted election characteristic—a referendum's "issue type" may drive both turnout and closeness, even controlling for measures of a vote's importance and political advertising. To address concerns regarding election-specific unobservables, using a canton×vote panel, we examine *within-election* variation in the coverage of the national-level poll by newspapers read by citizens of a canton. Importantly, newspapers were the primary source of political information among Swiss voters throughout the period we study.[7]

Controlling for canton and election fixed effects—and thus purging our estimates of the effects

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[6]Similar in spirit to this analysis, Morton et al. (2015) show that the availability of exit poll results in French elections reduces turnout in late-voting constituencies.

[7]The nationally-representative "VOX survey," conducted following each vote, asks Swiss citizens a broad range of political questions. One of these directly asks, "Through which media did you orient yourself and learn about the pros and cons of the last vote?" In each survey, newspapers were the most frequent selection, with around 80% of respondents indicating the importance of newspapers as a source of political information.

of a fixed (national-level) "issue type" driving turnout—we find that greater cantonal newspaper coverage of close polls significantly increases voter turnout. A one standard deviation increase in a canton's newspaper coverage of polls increases the effect of poll closeness by around 0.5 percentage points.

Observing an effect of close polls controlling for election fixed effects addresses concerns regarding election-specific unobservables that affect all of Switzerland. However, the coverage of close polls in locally read newspapers—the variation we exploit—might reflect a canton×vote-specific unobservable. We explore several possibilities.

First, there exists the possibility that our findings are driven by canton×vote-specific variation in locally-targeted political campaigning. To address this concern, we hand-collect political advertising data in the full set of 50 cantonal newspapers read by at least 10% of a canton's inhabitants in the months preceding each referendum in our sample. We then directly control for political advertising in a canton's local newspapers for a given referendum. This canton×vote control, too, does not affect our results.

Next, we consider the possibility that our results arise from differences across Switzerland's linguistic-cultural communities, controlling for an interaction between an indicator that a canton is German-speaking with our measure of pre-election poll closeness. Again, this does not affect our findings.

Finally, we consider the possibility that our findings are driven not by information about closeness, but by correlated tastes, or persuasive information about a vote's importance, varying at the canton×vote level. To examine whether variation in exposure to information about close polls is confounded by variation in local political tastes or by exposure to persuasive information regarding a vote's importance, we directly control for voters' expressed views on a vote's importance (aggregated to the canton level for each referendum) from a nationally-representative post-vote survey.[8] If our within-election measure source of variation in beliefs about closeness—the interaction between poll closeness and newspaper coverage—merely captured unobserved canton×vote variation in a referendum's importance, controlling directly for a vote's importance should eliminate the relationship observed. In fact, controlling for the importance of a vote does not affect our findings at all.

As an alternative approach to addressing concerns that local newspaper coverage of close polls is endogenous, we exploit a canton's "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. In principle, it is possible that cantons' interests (and news reporting) are correlated for a given election,

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[8]To the extent that coverage of close polls caused turnout to increase, which then produced a greater *ex post* sense of a vote's importance, this specification may be "over-controlling."

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but we find that conditional on election fixed effects (which capture the national-level interest in an issue), incidental reporting on polls in a canton is practically uncorrelated with locally-targeted reporting. We find that greater exposure to only the incidental reporting on close polls is associated with greater turnout as well. This finding is robust to all of the controls considered in our analysis of newspaper reporting more broadly.

We finally test several predictions from a simple conceptual framework that embeds our hypothesized mechanism that close polls cause voters to update their beliefs about closeness, and thus to turn out in greater numbers. In the absence of polling, it is plausible that voters will gauge an upcoming election's closeness by "locally sampling" among their friends and neighbors. This strategy will yield beliefs that match the actual national-level closeness only if the local sample is politically representative of the country as a whole. Thus, in nationally politically unrepresentative municipalities, it will not be easy for individuals to condition their turnout decision on national-level vote closeness, even if they wished to do so. On the other hand, even in the absence of polls, it will be possible for for individuals in politically representative municipalities to condition their turnout decision on national-level vote closeness.

Local sampling to gauge closeness in the absence of polls—and the use of polls to gauge closeness when polls exist—should produce several clear patterns in the data. First, in the era before polls exist, there may exist a relationship between election closeness and turnout in politically representative municipalities, but there should not be a strong relationship between the national-level closeness of an election and the turnout of voters in politically unrepresentative municipalities. Second, because a national poll has a larger effect on voters' information sets in politically unrepresentative municipalities, the introduction of pre-election polls should have a significantly larger effect on the relationship between election closeness and turnout in politically unrepresentative municipalities. Third, if voters in politically representative and politically unrepresentative municipalities all condition their turnout decisions on national level poll results, there should be convergence toward the same turnout effect of election closeness.

We test these three predictions using a municipality×vote panel, pooling data from the era with and without polls, and find support for all three predictions. Prior to the introduction of polls, politically unrepresentative municipalities exhibited no relationship between turnout and (*ex post*) closeness, while politically representative municipalities did exhibit a positive relationship. The introduction of polls had a significantly larger positive effect on the relationship between closeness and turnout in politically unrepresentative municipalities. And, in the era with polls, politically unrepresentative municipalities' relationship between closeness and turnout became statistically indistinguishable from that of politically representative municipalities: the introduction of polls produced the same closeness-turnout relationship in these different municipalities. Examining the relationship between *ex ante* closeness and turnout for the era with polls reproduces the "convergence" result.

These findings represent, to our knowledge, the first credible evidence of a causal effect of

anticipated closeness on turnout within high-stakes, large elections.[9] While each set of results may potentially raise its own empirical concerns, our cumulative body of evidence consistently points towards a causal effect of closeness on turnout. To confound this finding, unobserved variation would have to (i) differentially and robustly drive turnout in close elections in the post-1998 era with polls; (ii) drive turnout when locally read newspapers report on the close polls under a variety of specifications; (iii) be not reflected in voters' assessment of vote importance; and, (iv) differentially alter the relationship between election closeness and voter turnout in municipalities unrepresentative of Switzerland.

As we discuss further in the conclusion, these findings have potentially important policy implications: to the extent that polls shape voter turnout, they also have the potential to affect election outcomes; thus, policies relating to the conduct of polls and their dissemination become very high-stakes, indeed.

In what follows, in Section 2, we discuss the context of our study and in Section 3, we describe our data and present summary statistics. In Sections 4, 5, and 6, we present our empirical analyses at the vote-level, canton×vote-level, and municipality×vote-level, respectively. Finally, in Section 7, we offer concluding thoughts.

2 Swiss National Referenda

Switzerland is a federal republic consisting of 26 cantons and 2,324 municipalities (as of 2016). Along with a distinct federal structure, Switzerland has a long tradition of direct democracy, practiced at all three levels: federal, cantonal, and municipal.[10] The two main instruments of direct democracy at the federal level (the level on which we focus) are the popular initiative and the referendum.

Since 1891, Swiss citizens have had the right to call for a popular initiative, with which they can partially or totally 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.[11] In response to an

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[9]It is worth noting that our findings do *not* provide direct evidence either in favor of, or opposed to, the canonical pivotal voter model. Our finding of a significant causal effect of anticipated closeness on turnout in a setting in which any voter's likelihood of being pivotal is trivially small suggests that considerations *other than* pivotality play an important role in the link between anticipated closeness and voter turnout, or that there exists an interaction between a behavioral bias (e.g., overweighting low probability events) and election closeness.

[10]See `https://www.ch.ch/en/political-rights/`, last accessed March 12, 2017, for basic information on Swiss direct democratic institutions at the federal level. More detailed discussions of direct democracy in the Swiss Cantons can be found in Vatter (2004) and Trechsel and Serdült (1999).

[11]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, making 23 votes in total. In nearly every case in our data, popular and cantonal majorities go hand in hand. Between 1981 and 2014 (our sample period), there were four votes (out of 280) 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 % percent of voters voting yes) while the majority of cantons approved. Note that

initiative, the Federal Council and the Federal Assembly may propose a direct counter-proposal; usually, this is a more "moderate" proposal. [12]

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 all international treaties— are subject to a mandatory referendum requiring a majority of voters and cantons to be passed.

Due to these diverse direct democratic instruments, Swiss citizens vote on federal ballots two to four times per year, with each voting 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 Economic Area. During our sample period alone (1981–2014), Swiss citizens voted on 280 federal ballots, and these ballots were held on 97 voting days. While the Swiss were 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 has two options on how to cast the ballot: either at the polling booth (typically open on Sundays), or by regular mail. This last option offers voting at very low transaction costs.[13]

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, a printed version of the parliamentary debates (if any), and often outside opinions from interest groups. Political parties regularly take positions and issue voting recommendations. In our sample of 280 votes, the populist right-wing party (SVP) provided a recommendation on how to vote in all but one vote; the centrist party (CVP) and the right-wing party (FDP) provided recommendations in all but four votes; and, the major left-wing party (SP) provided a recommendation in all but 17 votes. The left and the right often (but not always) provided voters with contrasting recommendations. For instance, the left-wing and populist-right wing parties issued the same voting recommendation in 76 out of 280 cases.[14] Due to the party recommendations, Swiss voters have quite precise information on how the major political actors feel about the federal votes at hand.

In addition, most federal votes are extensively debated in the media (TV, radio and dozens of

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there is no minimum voter turnout required for the referendum to be binding.

[12]In the case of a counter-proposal, voters are currently able to approve both the initiative and the counter proposal, if both are preferred to the status quo (before 1998, voters could only approve the initiative or the counter-proposal, but not both at the same time). Voters who support both the initiative and the counter-proposal are required to indicate which they prefer to determine which is to be implemented if both initiative and counter-proposal were approved.

[13]See Funk (2010) for additional institutional information and for a discussion of the different turnout effects of the introduction of voting by mail among citizens living in small and large communes.

[14]The left-wing party agrees with the right-wing party on 123 votes and with the centrist party on 143 votes.

local newspapers). One noteworthy event altering the political media landscape occurred in 1998, when the public television station decided to pay a research institute, called "*gfs.bern*" (or "*gfs*"), to conduct the first widely-disseminated national voting forecasts conducted in Switzerland. The idea was simply to get 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.[15] This introduction of pre-election polling provides one of the sources of variation we will exploit, allowing to split the sample period into eras with and without pre-election polls. Further variation is generated through dissemination of these pre-election poll results. We will focus on dissemination through local newspapers, as newspapers are the most important source of information used by Swiss voters. 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 may underestimate the effects of anticipated election closeness.

3 Data and Summary Statistics

3.1 Voter Turnout

Electoral data for all federal votes (initiatives, counter-proposals, and referenda) are available from the website of the Swiss federal office of statistics.[16] We use data at the municipal level (available for votes since 1981) on: eligible voters; votes cast; turnout in percent; empty ballots; valid ballots; votes in support of the initiative; votes against the initiative; and share of votes in support of the initiative in percent. Our primary variable of interest from this dataset is voter turnout, defined as the number of votes cast, in percent, of the eligible voter population.[17] Our database includes voting data from 2,342 municipalities for 280 votes (individual referenda), held on 97 voting dates.[18] We construct voting data at the canton and federal level by aggregating the municipal level data to the larger geographical units.

3.2 Pre-Election Poll Results

Since 1998, *gfs.bern* has conducted surveys eliciting the voting intentions of Swiss citizens before all federal votes. As noted above, the sponsor for these surveys is Swiss Radio and TV, which

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[15]See the interview with Antonio Antoniazzi, employee at the public television station: `http://www.srginsider.ch/service-public/2014/02/04/srg-umfragen-das-musst-du-wissen/`, last accessed March 28, 2017.

[16]See: `http://www.bfs.admin.ch/bfs/portal/de/index/themen/17/03/blank/data/01.html`, last accessed March 28, 2017.

[17]Turnout is calculated at the level of the individual referendum. In practice, turnout is very similar for all votes held on a given voting date: a regression of turnout on voting date fixed effects generates residuals with a standard deviation of 0.122 percentage points.

[18]Note that there existed 2,352 municipalities in Switzerland in 2014, but no data reported for 10 of them, because they had common ballot boxes with other municipalities. Note, too, that some historical municipalities merged in our sample period. We aggregate these to construct a balanced panel based on the set of municipalities in existence in 2014. All of our results are robust to using an unbalanced panel or dropping municipalities that experienced a merger.

receives federal money for its public service. Two rounds of polls are typically conducted, with results published around 10 and 30 days prior to the voting date. 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.[19] Our main variable of interest is the predicted "share yes" in the final poll prior to a vote: 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)). In some analyses, we will also consider the predicted "share yes" in the earlier poll. Poll results are available from the *gfs.bern* website for all federal votes starting with the vote held on September 26, 2004.[20] For earlier votes, we gathered poll results through an extensive newspaper search (for details regarding our selection of newspapers, see Section 3.3).

3.3 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.[21] 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 the Online Appendix, Table A.1, for a list of the newspapers). To measure local coverage of pre-election polls, we count the number of times a pre-election poll was mentioned in each of these 50 newspapers between 2000 and 2014. We used three different strategies in this search: online databases, "Factiva" and "Swissdox"[22]; newspapers' own online archives; and, manual search in the Swiss National Library in Bern.

3.4 The Political "Supply Side": Political Advertising in Newspapers

We exploit two sources on political advertising activity relevant to the referenda we study. First, data from Kriesi (2009) on political ads in in six major ("national-level") Swiss newspapers: *NZZ*, *Blick*, *Tages-Anzeiger*, *Le Matin*, *Journal de Genève*, and *Tribune de Genève*. To measure campaigning intensity before federal votes, we calculate the sum of ads placed in these six major newspapers. As a complement to these data, we collected advertising data from a much broader set of newspapers: all of the newspapers considered in our search for coverage of pre-election polls, described

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[19]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.

[20]See, `http://www.gfsbern.ch/de-ch/`, last accessed March 28, 2017.

[21]See `http://www.wemf.ch/`, last accessed March 28, 2017.

[22]See `https://global.factiva.com` and `http://swissdox.ch/Swissdox2/`, both last accessed March 28, 2017.

in Section 3.3. We sum up to the canton×vote level our counts of political ads relating to each vote in each newspaper in each canton. Because there are greater complications associated with properly weighting and aggregating these dozens of smaller newspapers up to the national level, we prefer to use the "national-level" newspapers in our more aggregate, vote-level analyses, while we use the data collected on advertising in these smaller newspapers in our canton×vote-level analyses.

3.5 Importance of a Vote

We find it plausible that the decision to turn out to vote by a voter on the margin will be based on the "most important" vote held on a given voting date. To determine the most important voting issue on a given voting date, we combine data from several sources. First, we use responses in nationally-representative, post-election surveys (the "VOX surveys"), which have been conducted after each federal vote since 1977 (these surveys, like the pre-election polls, have been conducted by the *gfs*).[23] We specifically rely on survey respondents' views of the importance to the nation of each voting issue (or referendum) on a given voting date. These views have been elicited in all VOX surveys since June 6, 1993.

This survey-based measure of a vote's importance is direct, and it covers all votes in the post-1998 era with polls; however, it does not cover the earliest votes in our sample in the era without polls. Thus, we supplement the VOX survey data with a count of the number of articles mentioning each election issue in Switzerland's preeminent German newspaper, the *NZZ*, in the three months preceding each voting date.[24] In the absence of survey data on the importance of the various referenda held on a given voting date, the issue with the most *NZZ* articles is identified as the most important vote on a given voting date. For illustration, several voting dates' referenda are listed in Table 1, along with their importance as measured in the VOX survey and in the *NZZ* article count.[25]

3.6 Summary Statistics

Summary statistics for the variables used in our analysis are presented in Table 2; when several votes were held on a given voting date, the variables refer to the most important vote held on that day (coded as noted in Section 3.5). At the vote level, one can see that turnout averaged around 43%, with a standard deviation of 8.5 percentage points.

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[23]The survey data can be found at `http://forscenter.ch/en/data-and-research-information-services/2221-2/special-projects/vox-voxit/`, last accessed March 28, 2017.

[24]We checked the six "national-level" newspapers in Switzerland (*NZZ*, *Blick*, *Tages Anzeiger*, *Le Matin*, *Journal de Genève*, and *Tribune de Genève*) for an available online archive from 1981–2014, but only the *NZZ* had a complete archive throughout this time period.

[25]In Online Appendix Table A.2, we list the "most important" votes on the 97 voting dates in our sample, 46 in the era before pre-election polls were introduced, and 51 after. Note that we can also use the *NZZ* article count for the entire 1981–2014 period (rather than the combination of the article count and the VOX survey) and our results are very similar.

We define our key explanatory variable, closeness, as the losing side's vote share in the referendum: the higher its value, the closer a referendum. Our measure of *ex post* closeness averages 36%, with a standard deviation of 9.5 percentage points. *Ex ante* closeness, as resulting from pre-election polls, averages 37.5%, with a standard deviation of 7.5 percentage points. One can see that *ex ante* closeness is available for 40 votes; this is a subset of the 51 votes held after the first poll was released in 1998—not every vote in the post-1998 era had a poll conducted. The most important vote on a given voting date on average generated around 125 political ads in Switzerland's national-level newspapers; it was rated as a 7.4 on a 1–10 scale of importance for the nation, and a 5.9 on a 1–10 scale of importance for individual voters; it also generated around 60 articles in the *NZZ* newspaper in the three months prior to the voting date.

When examining the canton×vote level data, one sees that the most important vote on a given voting date had poll results reported in 3.5 newspaper articles read in a canton, on average. There were, on average, 70 political advertisements on the most important vote in the newspapers read in a canton, on average. Average levels of turnout and self-reported personal importance of a vote are similar in the canton×vote data to those observed in the election-level data.

Finally, in the municipality×vote level data, one can see two dimensions of cross-municipality heterogeneity that we will consider: "unrepresentativeness" and "homogeneity", both of which provide an indicator of a citizen's ability to gauge national-level election closeness from local sampling of opinions. Unrepresentativeness measures the mean absolute deviation of the municipal vote share from the national vote share, across all votes in our sample period (1981–2014), and it averages around 9 percentage points across municipalities. Homogeneity measures a municipality's political homogeneity, defined as the mean distance from a 50-50 voting outcome, averaged across all votes between 1981 and 2014. For the average municipality, this is around 18 percentage points. Finally, we will consider heterogeneity across municipalities of different sizes, using the size of a municipality's electorate, averaged across voted from 1981 to 2014. On average, a municipality in our sample has around 2,000 eligible voters.

4   Vote-Level Analysis

Votes held on different issues on the same election day have nearly identical turnout, which is plausibly driven by the most important voting issue on a voting date. It would thus be inappropriate to treat each voting issue on a voting date as an independent observation. We take a conservative approach, examining closeness for one issue—the most important issue—and turnout for only that single issue on each voting date. As noted above, to determine the most important voting issue on a given voting date, we use the VOX survey responses when available and a count of the number of articles mentioning each election issue in the *NZZ* when the VOX data are unavailable.

Our analysis begins by examining the relationship between closeness and turnout in both the era before pre-election polls were conducted (1981–1998) and the era with pre-election polls (1998–

2014). In comparisons between these two eras—pooling all elections between 1981 and 2014—
we necessarily use *ex post* closeness (i.e., the actual election outcome) as our measure of a close
election. By definition, in the era without polls we have no *ex ante* measure of closeness. We
will also examine the era with polls alone, below, and will present associations between *ex ante*
closeness and turnout for this period.

We begin with a very simple exercise, presenting a binned scatter plot and best-fit regression
lines of: (i) residual turnout against residual election closeness (conditional on election impor-
tance) for the era without polls; and (ii) residual turnout against residual election closeness (con-
ditional on election importance) for the era with polls (see Figure 1).[26] The binned scatter plots tell
a very clear story: in the era without polls, once one accounts for an issue's importance, there is es-
sentially no relationship between election closeness and turnout.[27] In contrast, when pre-election
polls are released, there exists a strong association between closeness and turnout.[28] This pattern
is precisely what one would expect if polls provided information about likely closeness, which led
voters to update their beliefs, and to turn out more when they learned an election was likely to be
close.

Of course, the scatter plots can only be suggestive of an effect of polls. Turnout may be causing
ex post closeness in the era with polls, rather than closeness causing turnout. One may also won-
der whether our control for an election's importance sufficiently controls for unobserved cross-
election differences that may be associated with both turnout and *ex post* closeness. It is worth
noting that for reverse causality or omitted variables bias to drive the results in Figure 1, it would
need to be the case that they were "era-varying"—differentially affecting outcomes post-1998. It
is not obvious what such an era-varying unobservable would be, but it remains an important
concern.

To begin to address concerns regarding reverse causality and omitted variables, we next exam-
ine only the era with polls, allowing us to correlate *ex ante* closeness with turnout, ruling out re-
verse causality as a driver of any relationship found. We estimate the following regression model:

$$turnout_v = \beta_0 + \beta_1\,closeness_v + \beta_2\,importance_v + \beta_3\,advertising_v + \varepsilon_v. \tag{1}$$

The model uses *ex ante* closeness to predict voter turnout at the vote (*v*) level, controlling for a
vote's importance and for political advertising in national-level newspapers (both varying at the
vote level).

We begin, in Table 3, column 1, by estimating a parsimonious model in which we only control
for a vote's importance using the *NZZ* article count as a measure of a vote's importance (to match

[26]Our control for election importance is the mentions of a vote in the *NZZ*, a measure available consistently through-
out the period.

[27]This is consistent with the findings in Kirchgässner and Schulz (2005).

[28]To be precise, in a regression of turnout on importance and *ex post* closeness, the coefficient on *ex post* closeness is
0.027 (s.e.: 0.094) in the era before polls, and 0.209 (s.e.: 0.101) in the era with polls.

the specification estimated in producing the binned scatter plots in Figure 1). One can see that the relationship between *ex ante* closeness and turnout is highly significant. In Table 3, column 2, we add a control for a count of political advertisements related to the vote in national-level newspapers, in order to better capture cross-vote differences that might drive both turnout and closeness. We find that greater political advertising is positively (not quite statistically significantly) associated with turnout, but including it as a control does not meaningfully affect the estimated relationship between *ex ante* closeness and turnout. To rule out the possibility that turnout and closeness were both driven by a time trend (which might explain differing patterns pre- and post-1998), in Table 3, column 3, we add a time trend to the specification in column 2, and continue to find a significant, positive relationship between poll closeness and subsequent turnout.

One still might be concerned about our ability to adequately control for issue type: newspaper articles about a vote are surely a noisy measure. Fortunately, for votes in the era with polls, we have a more direct measure of the importance of a vote, from the VOX survey. Voters' self-reported views on the importance of an issue are indeed more predictive of turnout than the count of newspaper articles about the election (the R-squared jumps when using the former). However, using the VOX survey measure of importance instead of the newspaper measure does not weaken the estimated relationship between poll closeness and turnout. Just the opposite: in Table 3, columns 4–6, one can see that the estimated coefficient on closeness is slightly larger and more precisely estimated.

Our findings in the cross-vote analysis are consistent with voters incorporating poll results into their posterior beliefs regarding closeness, which then shape turnout. An auxiliary prediction of this hypothesized process is that polls conducted closer to the actual vote should be more predictive of voter turnout than polls conducted earlier—the former send a clearer signal regarding closeness than do the latter. In Table 4, we explore this prediction; we first replicate the most parsimonious and most demanding specifications from Table 3, columns 4 and 6, but using the subset of votes for which multiple polls were conducted (see Table 4, columns 1 and 2). We then estimate these same specifications, but using the earliest poll available for each most important vote, rather than the latest poll available. As one would expect, closeness in these earlier polls is positively associated with turnout, but less strongly so than for the later polls (see Table 4, columns 3 and 4). When both early and late polls are included as explanatory variables in the same regression, closer later polls predict turnout quite strongly, and earlier polls have very little additional predictive power (see Table 4, columns 5 and 6).

5   Canton×Vote-level analysis

Our cross-vote analysis addressed several important concerns in interpreting raw correlations between voter turnout and election closeness—particularly, reverse causality and several specific concerns about omitted variables. However, one might still be concerned that there exist election-

level unobservables that we failed to account for that drove the post-1998 association we observed between *ex ante* closeness and turnout. One strategy for addressing concerns about election-level unobservables is to examine *within-vote* variation in exposure to information that shapes beliefs about vote closeness. We do this next, exploiting variation across cantons in the newspaper reporting on polls for a given vote.

Using our canton×vote panel data, we test whether there exists a differential positive relationship between *ex ante* poll closeness and turnout in cantons with greater reporting on polls in local newspapers, controlling for vote fixed effects—and thus a national-level "issue type"—as well as canton fixed effects. We estimate the following model:

$$turnout_{cv} = \alpha_c + \delta_v + \beta_1 closeness_v \times coverage_{cv} + \beta_2 coverage_{cv} + \epsilon_{cv}, \tag{2}$$

where $turnout_{cv}$ is the turnout rate (in percent) in canton c for vote v, α_c are a set of canton fixed effects, and δ_v are a set of vote fixed effects. The interaction $closeness_v \times coverage_{cv}$ is the explanatory variable of interest, with the coefficient β_1 telling us whether close polls have a differential impact on turnout specifically when they are covered more by a canton's newspapers. We also include the lower order term $coverage_{cv}$, which tells us how a canton's newspapers' coverage of polls with closeness equal to zero affects turnout; we do not include $closeness_v$ as it is absorbed by the vote fixed effects.

In Table 5, Panel A, column 1, we present the results from estimating equation 2. We find that, consistent with information about close polls affecting turnout, the estimated coefficient on the interaction between closeness and coverage is positive and statistically significant. The interaction between poll closeness and newspaper coverage of polls is also practically important: in a canton with one standard deviation greater news coverage of a poll, a one standard deviation closer poll (7.5 percentage points) is associated with around a 0.5 percentage point ($= 7.5 \times 1 \times 0.062$) increase in voter turnout. In results not shown, the coefficient on $coverage_{cv}$ (i.e., the effect of coverage of polls at closeness equal to zero) is negative and significant, equal to -2.14. Closeness equal to zero is far outside the observed range of vote closeness, of course; at the mean level of closeness (37.5), the effect of a standard deviation greater coverage of polls on turnout is around 0.19, and is statistically not different from 0. At maximal closeness (a vote share of 50 for the losing side), the effect of a standard deviation greater coverage of polls on turnout is a statistically significant full percentage point ($p = 0.023$).

Observing an effect of close polls controlling for vote fixed effects addresses concerns regarding vote-specific unobservables that affect all of Switzerland. One might wonder, however, whether the coverage of close polls in locally-read newspapers—the variation we exploit—reflects a canton×vote-specific unobservable. We explore several possibilities in the subsequent columns of Table 5.

First, we consider the possibility that political campaigning targeted locally is associated with

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local newspaper coverage of polls and with turnout. To account for locally-targeted political campaigning, we hand-collect political advertising data in the full set of 50 cantonal newspapers read by at least 10% of a canton's inhabitants in the month preceding each referendum in our sample. We then directly control for political advertising in a canton's newspapers for a given referendum. As can be seen in Table 5, Panel A, column 2, this control, too, does not affect our results.

Differences across Switzerland's linguistic-cultural communities represent another possible source of variation in both newspaper poll coverage and voter turnout. For example, perhaps newspapers read by German-speaking Swiss are more likely to report on close polls and German-speaking Swiss are also more likely to turn out to vote in close elections, but the former does not cause the latter. To account for differences in turnout across linguistic-cultural communities depending on a vote's closeness, we control for an interaction between an indicator that a canton is German-speaking with our measure of pre-election poll closeness. Again, this does not affect our findings (column 3).

Finally, we consider the possibility that our findings are driven by variation in an issue's perceived importance at the canton×vote level. This variation might be due to differences in preferences across cantons: cantons whose voters particularly care about the outcome of a vote will likely exhibit both greater newspaper coverage of polls and higher turnout. Differences in perceived issue importance at the canton×vote level might also arise from differences in exposure to information affecting perceptions of a vote's importance. Newspaper articles or political advertisements affecting perceptions of a vote's importance might drive turnout, and might also come alongside articles reporting on polls' closeness.

To determine whether variation in exposure to information about close polls is confounded by variation in a canton's political preferences or by exposure to information regarding a vote's importance, we directly control for voters' expressed views on a vote's importance, aggregated to the canton level for each referendum.[29] If our within-vote source of variation in beliefs about closeness—the interaction between poll closeness and newspaper coverage—merely captured unobserved canton×vote variation in a referendum's importance, controlling directly for a vote's importance should eliminate the relationship observed. In fact, controlling for the importance of a vote does not affect our findings at all (column 4).

As a final robustness check, we control for all three of the alternative mechanisms we proposed: political advertising; linguistic-cultural differences; and, variation in perceived referendum importance. Accounting for all three of these channels does not affect our results (column 5).

While the analysis in Table 5 provides evidence against several confounding factors, one still might be concerned about the endogenous reporting on close polls at the canton×vote level. It is natural to think that newspaper editors will choose to publish articles on close polls specifically

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[29]The measure of a vote's importance comes from the *ex post* VOX survey. To the extent that coverage of close polls caused turnout to increase, which then produced a greater *ex post* sense of a vote's importance, this specification may be "over-controlling," biasing our estimated effects of coverage of close polls toward zero.

in cantons where voters are particularly attuned to an election. While we aim to account for this using our canton×vote measure of a issue's importance, that control might be imperfect.

As an alternative approach to addressing concerns regarding the endogenous local newspaper coverage of close polls, we exploit a canton's voters' (arguably) "incidental" exposure to polls. The thinking behind "incidental" exposure is as follows: 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.

For illustration, consider a stylized example based on the two Swiss cantons of Aargau and Zurich. Aargau is a relatively small (population around 650,000), German-speaking canton. Zurich is also a German-speaking canton, and is the largest canton in Switzerland (population around 1.5 million). In Table 6, we present a list of the newspapers read by at least 10% of the population of each canton; because both cantons are German-speaking, it is unsurprising that some newspapers read by at least 10% of the population of one canton are also read by at least 10% of the population in the other. One can see in the Table, however, that there are also some Zurich-only newspapers and some Aargau-only papers.

Now consider our assignment of newspapers to the categories of "endogenous" or "incidental." We assume that an editor targets endogenous news toward the interests of the canton with the largest number of readers of his newspaper. In our example, the targeted canton is Zurich for the newspapers read only in Zurich, Aargau for the newspapers read only in Aargau, and Zurich for the newspapers read in both Zurich and (the much smaller) Aargau. This leaves us—in this stylized example—with no exogenous news in Zurich, and with exogenous news arriving in Aargau from the newspapers read in both Aargau and Zurich.

In practice, to calculate incidental news coverage of polls, we find the largest readership group across all cantons for each newspaper in each year, and drop all newspaper mentions of polls in the canton that has a given newspaper's largest population of readers. Other cantons reading that newspaper will be exposed to that newspaper's poll coverage incidentally, providing us with our measure of incidental coverage.[30]

While in principle it is possible that a canton's "endogenous" poll coverage (that is, coverage specifically targeting that canton's readers) could be strongly correlated with a canton's "incidental" coverage (coverage arguably targeting a different canton's readers), we find that incidental coverage of polls in our data is practically uncorrelated with endogenous coverage (the correlation is -0.036). We thus examine the impact of incidental coverage of pre-election polls at the canton×vote level, possibly a "cleaner" source of variation in exposure to information regarding the closeness of an upcoming election.

In Table 5, Panel B, we present estimates from specifications analogous to the ones in Panel A,

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[30]We present each canton's endogenous and incidental exposure to newspaper coverage of polls in Online Appendix Figure A.1.

but exploiting within-election variation in exposure to *incidental* coverage of pre-election polls. Looking at the results in column 1, one can see that the interaction between poll closeness and (incidental) newspaper coverage of polls is statistically significant, about 25% smaller than the coefficient in Panel A. Note that 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 the largest effect on turnout.

In columns 2–5, we replicate the same robustness checks discussed above in the context of Panel A. The inclusion of a variety of controls accounting for alternative mechanisms has only a small effect on the estimated coefficient on the interaction between poll closeness and (incidental) newspaper coverage of polls, though in one case no longer statistically significant.

The result in Panel B, columns 4 and 5, are particularly noteworthy: one might have been concerned that editors not only target readers in a particular canton, but also more broadly target the interests of readers from a particular linguistic-cultural community. This would mean that some of the variation in poll coverage we capture in our measure of incidental exposure was, in fact, targeted. It is thus reassuring that including an interaction between an indicator that a canton is German-speaking with our measure of pre-election poll closeness does not affect our results.

As a final exercise with the canton×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 Table 7, we first show the first stage estimates, which are strong. Importantly, the coefficient on incidental articles on polls in the first stage predicting total articles on polls is not greater than 1, suggesting that an additional incidental article is not associated with more endogenous articles.[31] The IV estimate (using the empirical specification from Table 5, column 5) is somewhat larger than the OLS, suggesting that in a canton with one standard deviation greater news coverage of a poll, a one standard deviation closer poll is associated with around a 1 percentage point increase in voter turnout.[32]

That the IV estimate is greater than the OLS estimate suggests two possibilities. First, endogenous coverage of close polls may be greater when turnout is lower for other reasons: newspaper editors may wish to stimulate turnout when they believe it will be lower than they think it ought to be. Second, measurement error—certainly a concern given our measure of newspaper articles as a source of information on polls—biases the OLS estimates downward.

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[31] The p-value from a one-sided test is < 0.10.

[32] As in the OLS regressions, we do not report the estimated coefficient on *coverage*$_{cv}$ in the second stage, as it estimates the effect of coverage at closeness equal to zero, which is far out of sample. The effect of a standard deviation increase in coverage on turnout at mean closeness (37.5) is -0.49 percentage points ($p = 0.246$). At maximal closeness (50), the effect of a standard deviation increase in coverage on turnout is 1.12 percentage points ($p = 0.154$).

6 Municipality×Vote-level analysis

Our proposed mechanism behind the findings presented thus far is that pre-election polls provide information on the closeness of an upcoming election, with close polls causing voters to update their beliefs, and to increase their turnout. Such a mechanism implies auxiliary predictions regarding heterogeneity in the impact of the information provided by polls; we test these auxiliary predictions next.

In the absence of information from national, pre-election polls, it is plausible that voters will gauge an upcoming election's closeness by "locally sampling" among their friends and neighbors. This strategy will yield beliefs that match the actual national-level closeness only if the local sample is politically representative of the country as a whole. In municipalities that are more politically representative of Switzerland, it may be possible for voters to condition their turnout decision on an informative signal of national-level vote closeness—even in the absence of polls. In politically unrepresentative municipalities, it will not be easy for individuals to condition their turnout decision on national-level vote closeness in the absence of polls, even if they wished to do so.

Local sampling to gauge closeness in the absence of polls—and the use of polls to gauge closeness when polls exist—should produce several clear patterns in the data: (*i*) in the era before polls exist, there may exist a relationship between election closeness and turnout in more politically representative municipalities, but there should not be a strong relationship between closeness and turnout in politically unrepresentative municipalities; (*ii*) because a national poll has a larger effect on voters' information sets in politically unrepresentative municipalities, the introduction of pre-election polls should have a significantly larger effect on the relationship between election closeness and turnout in politically unrepresentative municipalities; and, (*iii*) if voters in politically representative and politically unrepresentative municipalities all condition their turnout decisions on national level poll results, which supersede the locally-available information, there should be convergence toward the same turnout effect of election closeness in the era with polls.

One can see suggestive evidence of these patterns in simple scatter plots: when one examines the relationship between *ex post* closeness and turnout (conditional on a vote's importance) prior to the introduction of polls, one sees a weak, positive relationship in municipalities above the median in representativeness, and a weak, negative relationship in municipalities below the median in representativeness (see Panel A of Figure 2). After polls were introduced, the relationship between *ex post* closeness and turnout becomes strong and positive in both unrepresentative and representative municipalities—and there is essentially complete convergence (see Panel B of Figure 2). One can also examine the relationship between *ex ante* closeness and turnout in the era with polls, and one can see that this looks very similar for unrepresentative and representative municipalities.

We test our three predictions more rigorously using a municipality×vote panel, pooling data

from the era with and without polls (and thus using an *ex post* measure of election closeness), and estimating the following model with municipality fixed effects:

$$
\begin{aligned}
turnout_{mv} \;=\;\; & \alpha_m + \beta_1 closeness_v + \beta_2 closeness_v \times unrepresentative_m \\
& + \beta_3 closeness_v \times unrepresentative_m \times PollEra_v + \beta_4 closeness_v \times PollEra_v \\
& + \beta_5 unrepresentative_m \times PollEra_v + \varepsilon_{mv}.
\end{aligned}
\tag{3}
$$

We first estimate the model without election fixed effects to allow us to separately identify the level effect of election closeness on turnout in the era with and without polls. Subsequently, we will also estimate equation 3 including election fixed effects, exploiting only variation across municipalities within election.

It is useful to match the conceptual framework's hypotheses to regression coefficients. Prediction (*i*) suggests a positive, possibly significant, coefficient on $closeness_v$ ($\beta_1 > 0$); as well as a significant and negative coefficient on $closeness_v \times unrepresentative_m$ ($\beta_2 < 0$). Prediction (*ii*) implies a positive and significant coefficient on $closeness_v \times unrepresentative_m \times PollEra_v$ ($\beta_3 > 0$). Prediction (*iii*) suggests that the sum of the coefficients on $closeness_v \times unrepresentative_m \times PollEra_v$ and $closeness_v \times unrepresentative_m$ will be insignificantly different from zero (that is, a failure to reject $\beta_2 + \beta_3 = 0$). In a model with election fixed effects, we can test the second (stronger) part of prediction (*i*), as well as predictions (*ii*) and (*iii*).

In Table 8, column 1, we present results from estimating equation 3. One can see in the table that the predictions suggested by our mechanism are all confirmed. First, in the era before national level polls were released, in a municipality with an average (i.e., "0") level of political unrepresentativeness, there is a positive, but statistically insignificant, relationship between *ex post* closeness and turnout. More unrepresentative municipalities exhibit a statistically significantly weaker relationship between *ex post* closeness and turnout. The introduction of polls, indeed, is associated with a differentially large (and statistically significant) increase in the relationship between closeness and turnout in more unrepresentative municipalities. We also find that the introduction of polls produced "convergence" in the relationship between closeness and turnout across municipalities: the increase in the effect of closeness on turnout in unrepresentative municipalities has statistically closed the gap that existed in the era prior to the existence of polls. In Table 8, column 2, we estimate the same specification, but include election fixed effects. Because our coefficients of interest are all higher-order interaction terms, our hypothesis tests are unaffected.[33]

One question about our findings is whether they are simply picking up political differences

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[33]Note that we can limit our analysis to the era in which pre-election polls were conducted, allowing us to examine the relationship between *ex ante* closeness and turnout across municipalities, but constraining us to testing only prediction (*iii*). One can see in Online Appendix, Table A.3 that *ex ante* closeness predicts turnout, with no differential effect of close polls between politically representative and unrepresentative municipalities.

between large and small municipalities. To explore this possibility, we control for the "triple interaction" among closeness, municipality electorate size, and a Poll Era dummy ($closeness_v \times electorate_m \times PollEra_v$) as well as all of the lower-order terms.[34] One can see in Table 8, column 3, that including these controls does not affect our results.

We can also consider an alternative source of variation in individuals' ability to draw clear inferences regarding election closeness from local sampling: municipality political homogeneity. Local sampling of political opinion in a very homogeneous population will not be able to provide a clear signal regarding election closeness, while in a more heterogeneous population, one might be able to determine whether an election is likely to be close. We thus have very similar predictions regarding municipality political homogeneity to those tested regarding municipality political unrepresentativeness. We conduct exercises identical to those in Table 8, but substituting a municipality's political homogeneity for its representativeness, and find very similar results (see the Online Appendix, Table A.4). We thus find quite robust evidence of behavior precisely in line with a model in which polls shape voters' beliefs about election closeness, and thus shape the turnout decision.

7   Conclusion

We identify an effect of anticipated election closeness on voter turnout that is not only statistically significant, but also economically meaningful. The effect on turnout of a one standard deviation increase in poll closeness—1.5 percentage points—is slightly larger than the effect of a one standard deviation increase in political ads in newspapers and similar to the effect of a half standard deviation increase in voters' assessment of the importance of a given vote. Newspaper reporting on polls is also important: we find that a one standard deviation higher level of coverage of a one standard deviation closer poll increases turnout by 0.5 to 1 percentage point.

That anticipated closeness, shaped by the existence and dissemination of polls, causally affects voter turnout begs the question of whether polls affect electoral outcomes. While homogeneous responses to a single, uniformly disseminated poll would leave the electorate unchanged, variation in results across polls and heterogeneous newspaper coverage of polls will produce different expectations of election closeness across locations, and across voters who read different newspapers. These voters will likely also have different political preferences (Gentzkow and Shapiro, 2010), thus shaping the composition of the voting electorate.

Our analysis thus complements existing work on the importance of information and media in political behavior. While much of this work has focused on *persuasive* information 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

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[34]Electorate size is the number of eligible voters in a municipality, averaged across votes (not the number of voters who turnout).

(e.g., Boxell et al., 2017), persuasion aimed at changing the ideological composition of the *entire* electorate may be less effective, making the turnout margin—changing the ideological composition of the *voting* electorate—potentially more important than in the past.

Though beyond the scope of our analysis, and admittedly quite speculative, an application to the 2016 United States Presidential election is interesting. Political commentators have suggested that low voter turnout played a role in Donald J. Trump's victory.[35] Interestingly, while media consistently predicted a Clinton victory, in a sample of 5 media outlets, we find that on Election Day, more right-leaning sources—likely to be read by more right-leaning voters—reported lower estimates of the probability of a Clinton victory than did more left-leaning sources (see Online Appendix Figure A.1). If closer polls motivate greater turnout, variation in polls reported across media outlets may have played some role in shaping turnout in the U.S. Presidential Election.

This suggests that regulation of polls' conduct and 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 10 days before the vote.

We believe our work can be extended in several directions. Further understanding the effect of polls on electoral outcomes, beyond the effect on voter turnout levels, is an important avenue for future research. Also, given that rational calculations of pivotality are unlikely to explain the turnout effects we find in large elections, we believe there is scope for more theoretical and empirical work on alternative voting models based on social and intrinsic motives, or incorporating behavioral biases.

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[35]See, e.g., the *Washington Post* article, "Hillary Clinton's campaign was crippled by voters who stayed home," by Philip Bump, dated November 9, 2016. Article available at `https://goo.gl/Irfy0c`, last accessed May 15, 2017.

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Figures and Tables

FIGURE 1: EX POST CLOSENESS AND TURNOUT –
BEFORE AND AFTER INTRODUCTION OF POLLS
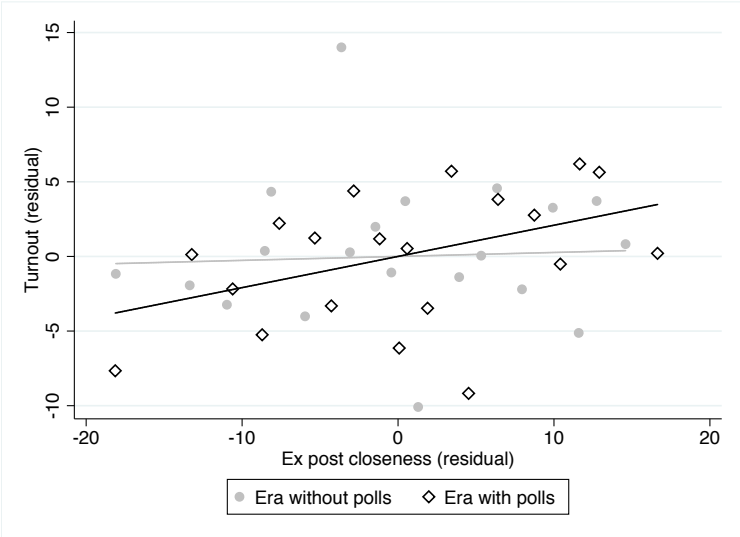
Notes: Binned scatter plot showing the relationship between *ex post* election closeness and voter turnout in eras with and without pre-election polls, conditional on the number of times a voting issue was mentioned in the national *NZZ* newspaper. The most important vote per voting day is coded based on the self-reported importance in VOX surveys, and number of vote mentions in the *NZZ* in years prior to the existence of the VOX survey. The plots are based on 46 votes before the introduction of polls and 51 votes after the introduction of polls.

(A) EX POST CLOSENESS – BEFORE POLLS   **(B)** EX POST CLOSENESS – POLLS EXIST

(C) EX ANTE CLOSENESS – POLLS EXIST

Notes: Panel A shows binned scatter plots showing the relationship between *ex post* election closeness and voter turnout in era without pre-election polls, for municipalities below and above the median for unrepresentativeness, conditional on the number of times a voting issue was mentioned in the national *NZZ* newspaper. Panel B shows the analogous plots for the era with pre-election polls. Panel C replicates Panel B, but uses *ex ante* election (i.e., poll) closeness. The plots are based on 46 votes before the introduction of polls and 51 votes after the introduction of polls.

TABLE 1: EXAMPLES OF VOTING DAYS, VOTES

Date	Title of Vote	NZZ Mentions	Importance of Vote (VOX)
1998-11-29	**Funding public transport (FinoeV)**	**107**	**8.13**
1998-11-29	Cereal products	19	5.29
1998-11-29	Sensible drug policy	77	7.27
1998-11-29	Labour law	44	6.95
2001-03-04	**Yes to Europe!**	**68**	**8.18**
2001-03-04	Pharmaceutical drug initiative	53	6.64
2001-03-04	Roads for everyone	36	6.05
2005-06-05	**Schengen and Dublin Agreement**	**116**	**7.82**
2005-06-05	Registered partnership law	33	6.14
2014-02-09	**Initiative against mass immigration**	**109**	**8.56**
2014-02-09	Funding abortion is a private affair - Initiative	33	6.11
2014-02-09	Funding and developing railway infrastructure	46	7.05

Notes: NZZ Mentions measures the number of times a vote was mentioned in the *NZZ* newspaper in the three months preceding the voting day. Importance of Vote (VOX) measures individuals' self-reported importance of the vote for the country on a 0–10 scale (10 indicating maximal importance).

	Obs.	Mean	Std. Dev.
PANEL A: *Vote-Level Data*			
Federal Turnout	97	43.3	8.5
Ex Post Closeness	97	36.0	9.5
Ex Ante Closeness	40	37.5	7.5
Political Advertisements (Major Newspapers)	94	126.4	151.7
Importance of Vote (VOX) General	65	7.4	0.6
Importance of Vote (VOX) Personal	65	5.9	0.8
NZZ Mentions of Vote	97	58.9	36.3
PANEL B: *Canton × Vote-Level Data*			
Cantonal Turnout	2522	44.0	11.4
Poll Mentions in Cant. Newspapers	1170	3.52	3.50
Incidental Poll Mentions in Cant. Newspapers	1170	2.38	2.97
Political Advertisements (Cant. Newspapers)	1170	69.78	69.43
Importance of Vote (VOX) Personal, by Canton	1641	5.94	1.28
PANEL C: *Municipality × Vote-Level Data*			
Municipal Turnout	226733	43.4	13.5
Unrepresentativeness	227174	9.1	3.1
Homogeneity	227174	17.6	1.8
Electorate Size	227174	1969.6	6658.0

Notes: The most important vote per voting day is coded based on the self-reported importance in VOX surveys, and number of vote mentions in the *NZZ* in years prior to the existence of the VOX survey. Vote-Level Data: Turnout measures voter turnout (in %). *Ex Post* Closeness measures the vote share of the losing side in a vote, and varies between 0 (minimal closeness) and 50 (maximal closeness). *Ex Ante* Closeness measures the closeness of the poll conducted most closely to the election date. It is defined analogously to *Ex Post* Closeness. Political Advertisements (Major Newspapers) measures the number of advertisements before a vote, in one of the six major newspapers: *NZZ, Tages Anzeiger, Blick, Le Matin, Tribune de Genêve, Le Temps.* Importance of Vote (VOX) measures the average importance surveyed citizens attach to a vote (on a scale between 0 and 10), either for the country of Switzerland (General) or the survey respondent herself (Personal). *NZZ* Mentions of Vote measures the number of times a vote was mentioned in the *NZZ* in the three months before the vote. Canton × Vote-Level Data: Cantonal Turnout measures voter turnout in a canton (in %). Poll Mentions in Cant. Newspapers measures the number of times a poll was mentioned in newspapers read by at least 10% of the canton's inhabitants in a given year, but whose largest market is in a different canton. Incidental Poll Mentions in Cant. Newspapers measures the number of times a poll was mentioned in newspapers read by at least 10% of the canton's inhabitants in a given year. Political Advertisements (Cant. Newspapers) measures the number of political advertisements in the same set of newspapers in the month before a vote. Importance of Vote (VOX) Personal, by Canton measures self-reported importance of the vote for the survey respondent, averaged by canton. Municipality × Vote-Level Data: Municipal Turnout measures voter turnout in a municipality (in %). Unrepresentativeness is the absolute difference between the municipal vote share and the national vote share, averaged across votes from 1981–2014. Homogeneity is the absolute difference between the municipal vote share and a 50-50 vote, averaged across votes from 1981–2014. Electorate size is the average number of eligible voters in a municipality across votes from 1981–2014.

TABLE 3: EX ANTE CLOSENESS AND VOTER TURNOUT

	(1)	(2)	(3)	(4)	(5)	(6)
Ex Ante Closeness	0.207**	0.179*	0.175*	0.256***	0.234***	0.214***
	(0.095)	(0.097)	(0.091)	(0.072)	(0.082)	(0.075)
Political Advertisements		1.191	1.354		0.880	1.493**
(Major Newspapers)		(0.834)	(1.050)		(0.548)	(0.609)
Importance Vote (*NZZ*)	0.054*	0.051*	0.050*			
	(0.030)	(0.029)	(0.030)			
Importance Vote (VOX)				5.827***	5.600***	6.002***
				(1.413)	(1.479)	(1.416)
Linear Time Trend	N	N	Y	N	N	Y
Observations	40	40	40	40	40	40
R-squared	0.170	0.223	0.225	0.434	0.463	0.499

Notes: Each column presents results from an OLS regression with robust standard errors reported in parentheses. Dependent variable is turnout at the federal level. Sample of votes is restricted to the most important vote per voting day. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

TABLE 4: THE EFFECTS OF EARLIER VERSUS LATER PRE-ELECTION POLLS

	(1)	(2)	(3)	(4)	(5)	(6)
Ex Ante Closeness	0.267***	0.206**			0.217*	0.182
	(0.071)	(0.081)			(0.120)	(0.126)
Ex Ante Closeness, Second to Last Poll			0.192*	0.135	0.070	0.035
			(0.096)	(0.093)	(0.140)	(0.132)
Importance Vote (VOX)	Y	Y	Y	Y	Y	Y
Political Advertisements (Major Newspapers)	N	Y	N	Y	N	Y
Linear Time Trend	N	Y	N	Y	N	Y
Observations	35	35	35	35	35	35
R-squared	0.423	0.474	0.387	0.448	0.428	0.475

Notes: Each column presents results from an OLS regression with robust standard errors reported in parentheses. Dependent variable is turnout. Sample of votes is restricted to the most important vote per voting day for voting days with two polls conducted prior to the vote. *** p<0.01, ** p<0.05, * p<0.1

TABLE 5: CANTONAL NEWSPAPER COVERAGE OF POLLS, POLL CLOSENESS, AND CANTONAL VOTER TURNOUT

	(1)	(2)	(3)	(4)	(5)
PANEL A: *Local information exposure (poll mentions in cantonal newspapers)*					
Poll Mentions in Cantonal Newspapers ×	0.062**	0.061*	0.063**	0.062*	0.061*
Closeness	(0.030)	(0.030)	(0.031)	(0.031)	(0.032)
PANEL B: *Incidental information exposure (incidental poll mentions in cantonal newspapers)*					
Incidental Poll Mentions in Cantonal	0.046*	0.045	0.057**	0.045*	0.053**
Newspapers × Closeness	(0.026)	(0.027)	(0.023)	(0.026)	(0.024)
Cantonal Political Ads	N	Y	N	N	Y
German Speaking × Closeness	N	N	Y	N	Y
Importance of Vote (VOX) Personal, by Canton	N	N	N	Y	Y
Observations	962	962	962	957	957
R-squared	0.820	0.820	0.820	0.821	0.821

Notes: Each column presents results from an OLS regression with standard errors clustered at the vote level reported in parentheses. Dependent variable is cantonal voter turnout. Poll Mentions in Cantonal Newspapers is a standardized measure of cantonal newspaper coverage of pre-election poll results. Incidental Poll Mentions in Cantonal Newspapers is a standardized measure of cantonal newspaper coverage of pre-election poll results, but only in newspapers whose largest readership lies outside the canton in question. Cantonal Political Ads is a measure of political ads appearing in cantonal newspapers. German Speaking is an indicator of the cantonal language. Canton and vote fixed effects as well as first-order terms associated with interactions are included in all specifications. Sample of votes is restricted to the most important vote per voting date. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

TABLE 6: NEWSPAPER READERSHIP AND INCIDENTAL NEWS

Newspaper	Zurich: Readership > 10%?	Aargau: Readership > 10%?	Zurich: Incidental?	Aargau: Incidental?
Sonntags Blick	**X**	*x*		✓
Blick	**X**	*x*		✓
Sonntags Zeitung	**X**	*x*		✓
Tages-Anzeiger	**X**	*x*		✓
20 Minuten	**X**	*x*		✓
Neue Zürcher Zeitung	**X**			
NZZ am Sonntag	**X**			
Blick am Abend	**X**			
Aargauer Zeitung		**X**		
Badener Woche		**X**		

Notes: Table indicates newspapers read by at least 10% of a canton. "**X**" indicates that the canton contains the largest group of readers of a particular newspaper, while "*x*" indicates that the canton does not contain the largest group of readers of the newspaper (but the newspaper is read by at least 10% of the canton). A "✓" indicates that a canton's exposure to news from a particular newspaper is "incidental," as newspaper coverage targeting the canton with the largest group of readers will not be targeting that particular canton.

	(1)	(2)	(3)
	First Stage Regressions		*Second Stage*
Dependent Variable:	Poll Mentions in Cantonal Newsp.	Poll Mentions in Cantonal Newsp. × Closeness	Turnout
Incidental Poll Mentions in Cantonal Newspapers × Closeness	-0.001 (0.005)	0.388* (0.210)	
Incidental Poll Mentions in Cantonal Newspapers	0.687*** (0.212)	11.28 (8.601)	
Poll Mentions in Cantonal Newspapers × Closeness			0.129** (0.057)
F-statistic: p-value of excluded instruments	< 0.001	< 0.001	
Observations	957	957	957
R-squared	0.868	0.863	0.822

Notes: The table presents two-stage least squares estimates of the model estimated in Table 5, column (5), but using Incidental Poll Mentions in Cantonal Newspapers × Closeness as an instrument for Poll Mentions in Cantonal Newspapers × Closeness, and using Incidental Poll Mentions in Cantonal Newspapers as an instrument for Poll Mentions in Cantonal Newspapers. Columns (1) and (2) in the table present the two first stage estimates. Column (3) presents the second stage estimates. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

HETEROGENEOUS EFFECTS OF CLOSENESS AND POLLS DEPENDING ON
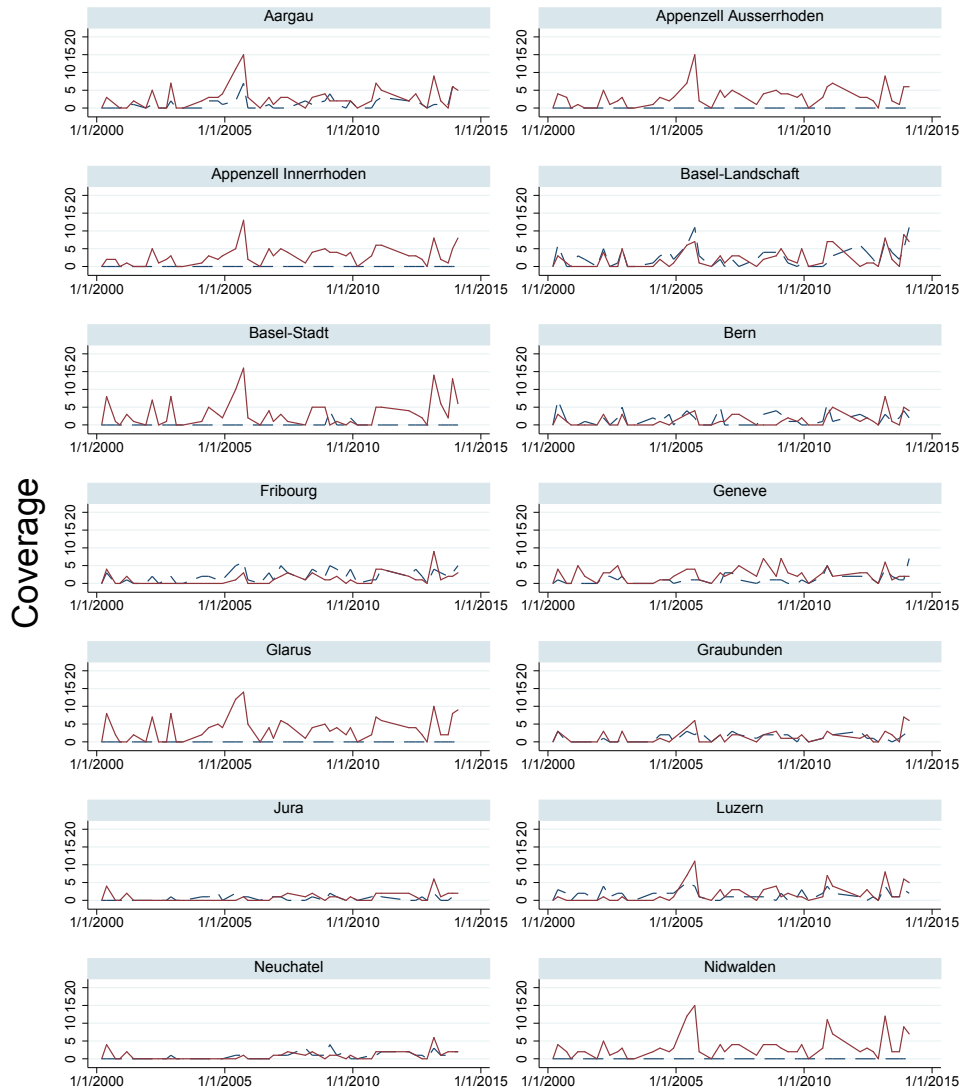MUNICIPALITY UNREPRESENTATIVENESS

	(1)	(2)	(3)
Ex Post Closeness	0.145		
	(0.161)		
Ex Post Closeness × Unrepresentativeness (std.)	-0.058***	-0.058***	-0.058***
	(0.017)	(0.017)	(0.017)
Ex Post Closeness × Unrepresentativeness (std.) × Poll Era	0.073**	0.073**	0.072**
	(0.028)	(0.028)	(0.028)
Ex Post Closeness × Poll Era	0.190		
	(0.196)		
Unrepresentativeness (std.) × Poll Era	-1.119	-1.119	-1.023
	(1.052)	(1.052)	(1.058)
Differential Closeness Effect by Unrepresentativeness in Poll Era	0.490	0.490	0.513
(P-value of test: *Ex Post* Closeness × Unrepresentativeness × Poll Era + *Ex Post* Closeness × Unrepresentativeness = 0)			
Municipality Fixed Effects	Y	Y	Y
Ballot Fixed Effects	N	Y	Y
Electorate Size Interactions	N	N	Y
Observations	225,234	225,234	225,234
R-squared	0.286	0.693	0.693

Notes: Each column presents results from an OLS regression with standard errors clustered at the vote level reported in parentheses. Dependent variable is Municipal Level Voter Turnout. *Ex Post* Closeness is the losing side's vote share in the final result of the election. Unrepresentativeness is a standardized measure of the similarity between a municipality's voting outcomes and Switzerland's voting outcomes as a whole. Poll Era is a dummy variable equal to 1 for votes held after the introduction of national pre-election polls in 1998. Column (3) controls for the "triple interaction" among closeness, municipality electorate size, and a Poll Era dummy ($closeness_v \times electorate_m \times PollEra_v$) as well as all of the lower-order terms. Sample of votes is restricted to the most important vote per voting day, selected on self-reported importance in VOX surveys. *** p<0.01, ** p<0.05, * p<0.1

Online Appendix: Not for Publication

Appendix Figure and Tables

FIGURE A.1: ENDOGENOUS AND INCIDENTAL POLL COVERAGE FOR EACH CANTON
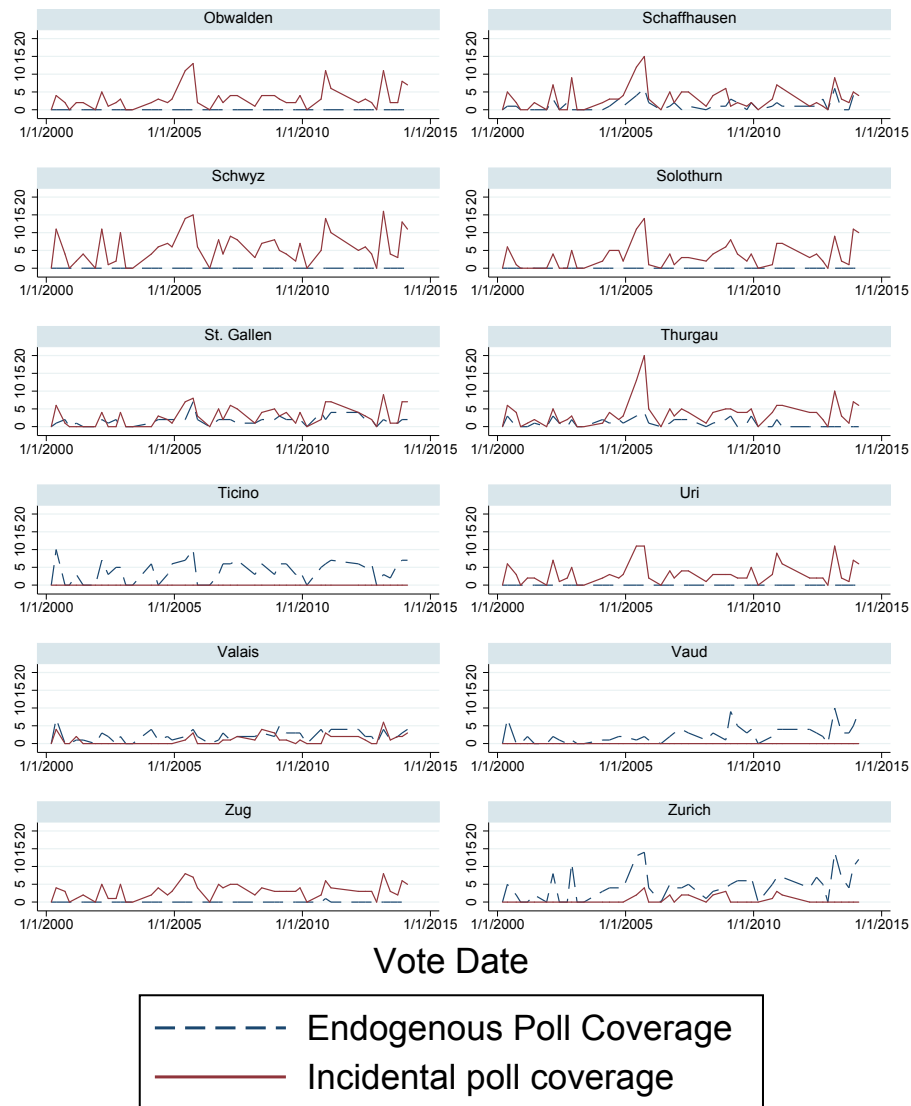
Notes: Endogenous poll coverage is defined as the number of articles reporting on polls in cantonal newspapers read in a canton that is the largest market for the newspaper. Incidental coverage is defined as coverage in a newspaper read in a canton that is not the largest market for the newspaper.

FIGURE A.1: ESTIMATED PROBABILITY OF A CLINTON VICTORY BY OUTLET SLANT
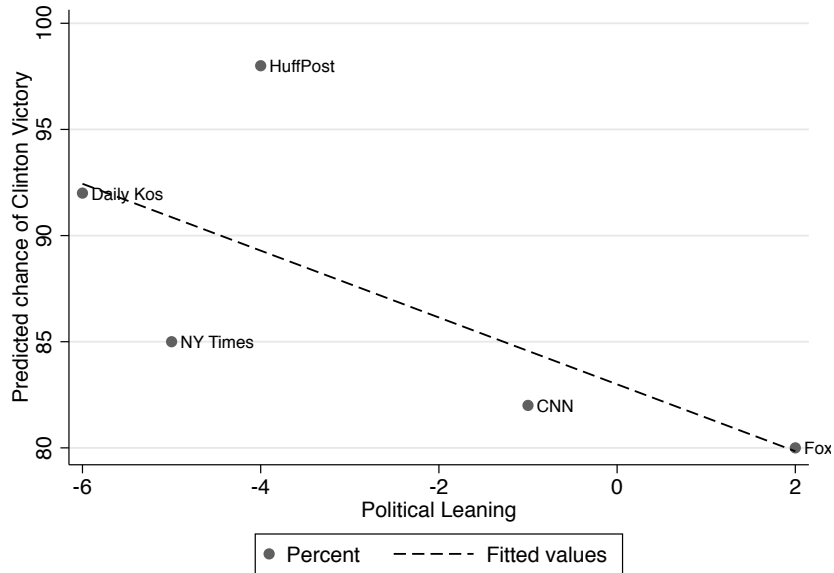
Notes: Estimated Clinton probability of victory reported in various media on Election Day 2016, plotted against the slant of the media outlet. Media slant for outlets other than the Daily Kos is based on Pew data.[1] Media slant for the Daily Kos is estimated using Quantcast[2], FactCheck/New York Times[3], Media Bias Fact Check[4], and Fake News Checker[5].

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[1]http://www.journalism.org/2014/10/21/political-polarization-media-habits/
[2]https://www.quantcast.com/dailykos.com#demographicsCard
[3]http://www.nytimes.com/2010/04/05/technology/05snopes.html
[4]https://mediabiasfactcheck.com/daily-kos/
[5]http://www.fakenewschecker.com/fake-news-source/daily-kos

TABLE A.1: 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

Newspaper	Language	# of cantons for which it has been used
Tages-Anzeiger	German	7
Temps (Le)	French	2
Thurgauer Zeitung	German	1
Tribune de Genève	French	1
Walliser Bote	German	1
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.2: LIST OF MOST IMPORTANT VOTES BY VOTING DAY

Date	Title Measure	Turnout (%)	% Yes
1981-06-14	Equal rights for men and women - counter proposal	33.94	60.27
1981-11-29	Financial regulation and improvement of federal budget	30.35	68.95
1982-06-06	Foreigner law	35.18	49.64
1982-11-28	Preventing abusive pricing	32.93	56.13
1983-02-27	Revision of fuel tariffs	32.42	52.69
1983-12-04	Regulation of citizenship	35.84	60.81
1984-02-26	Genuine alternative civilian service on basis of factual proof	52.75	36.17
1984-05-20	Against misuse of banking confidentiality and power of banks	42.51	26.96
1984-09-23	Safe, economical and environmentally sound energy supply	41.60	45.77
1984-12-02	Effective maternity protection	37.65	15.78
1985-03-10	Extending paid leave	34.59	34.78
1985-06-09	Right to life	35.70	30.96
1985-09-22	Risk guarantee for innovation in SME	40.86	43.11
1985-12-01	Abolishing vivisection	37.96	29.47
1986-03-16	Switzerland joining UN	50.69	24.33
1986-09-28	Ensured vocational training and retraining	34.81	18.38
1986-12-07	Taxation of heavy traffic	34.74	33.87
1987-04-05	Armament referendum	42.42	40.56
1987-12-06	Railway 2000	47.69	56.99
1988-06-12	Reducing the Old Age and Survivors' Insurance retirement age	42.02	35.12
1988-12-04	Urban-rural-initiative against speculation in real estate	52.83	30.78
1989-06-04	Small-scale farmers initiative	35.96	48.95
1986-11-26	Switzerland without army and comprehensive peace policy	69.18	35.59
1990-04-01	No to concrete	41.12	28.51
1990-09-23	No to nuclear power stations (moratorium)	40.43	54.52
1991-03-03	Funding public transport	31.24	37.14
1991-06-02	Restructuring federal finances	33.27	45.65
1992-02-16	Abolishing vivisection	44.49	43.63
1992-05-17	Water rescue	39.20	37.06
1992-09-27	Resolution of alpine transit	45.90	63.61
1992-12-06	European Economic Area (EEA)	78.77	49.66
1993-03-07	Abolishing vivisection	51.23	27.77
1993-06-06	Against new combat aircrafts in Switzerland	55.60	42.81
1993-09-26	Measures in unemployment insurance	39.74	70.40
1993-11-28	Financial regulations	45.42	66.66
1994-02-20	Protecting alpine region against transit traffic	40.84	51.91
1994-06-12	Simplified naturalization for young foreigners	46.75	52.84
1994-09-25	Change in StgB/MStg: Prohibiting racial discrimination	45.91	54.65
1994-12-04	Coercive measures regarding foreigners' rights	44.04	72.91
1995-03-12	Restricting expenditure	37.85	83.38
1995-06-25	Change Old Age and Survivors' Insurance	40.36	60.71

Continued on next page

Date	Title Measure	Turnout (%)	% Yes
1996-03-10	Revision of national language article in federal constitution	30.91	76.17
1996-06-09	Nature-friendly agriculture - counterproposal	31.40	77.59
1996-12-01	Change in labour law	46.57	32.97
1997-06-08	Banning arms export	35.47	22.50
1997-09-28	Funding unemployment insurance	40.62	49.18
1998-06-07	Gene Protection Initiative	41.34	33.29
1998-09-27	Performance-related heavy vehicle charge (LSVA)	51.86	57.20
1998-11-29	Funding public transport (FinoeV)	38.32	63.50
1999-02-07	Transplantation medicine	38.00	87.77
1999-04-18	New federal constitution	35.92	59.16
1999-06-13	Maternity insurance	45.98	38.99
2000-03-12	Initiative for halving the amount of traffic	42.40	21.33
2000-05-21	Bilateral agreements with the EU	48.31	67.19
2000-09-24	Regulation of immigration	45.29	36.20
2000-11-26	Flexibility of AHV (Old Age and Survivors' Insurance)	41.68	39.47
2001-03-04	Yes to Europe!	55.83	23.15
2001-06-10	Military law on armament	42.54	50.99
2001-12-02	Switzerland without army	37.95	21.90
2002-03-03	Joining UN	58.48	54.61
2002-06-02	Regulation of deadlines	41.82	72.15
2002-09-22	Gold Initiative	45.21	46.37
2002-11-24	Against misuse of asylum law	47.98	49.91
2003-02-09	Cantonal contributions to hospital care	28.69	77.36
2003-05-18	Energy without nuclear power	49.79	33.71
2004-02-08	Draft against Avanti-Initiative	45.59	37.20
2004-05-16	11th revision of AHV (Old Age and Survivors' Insurance)	50.85	32.10
2004-09-26	Income compensation for service provision or maternity	53.85	55.45
2004-11-28	Law for stem cell research	37.02	66.39
2005-06-05	Schengen and Dublin agreement	56.66	54.63
2005-09-25	Expanding free movement of persons	54.29	55.98
2005-11-27	GMO (genetically modified organisms) free Initiative	42.23	55.67
2006-05-21	Education article	27.74	85.58
2006-09-24	Asylum law	48.96	67.76
2006-11-26	Family allowances	45.00	67.98
2007-03-11	Unified health insurance	45.96	28.76
2007-06-17	5th revision of IV (disability insurance)	36.21	59.09
2008-02-24	Corporate Tax reform II	38.61	50.53
2008-06-01	Naturalisation Initiative	45.24	36.25
2008-11-30	Initiative for a flexible Old Age and Survivors' Insurance	47.73	41.38
2009-02-08	Free movement of persons Switzerland-EU	51.48	59.61
2009-05-17	Article of Constitution regarding complementary medicine	38.83	67.03
2009-09-27	Supplementary funding of IV	41.05	54.56

Date	Title Measure	Turnout (%)	% Yes
2009-11-29	Banning minarets	53.84	57.50
2010-03-07	Occupational pension funds: Adjusting the conversion rate	45.83	27.27
2010-09-26	Revision of unemployment insurance law	35.88	53.42
2010-11-28	Deportation Initiative	53.06	52.91
2011-02-13	Weaponry Initiative	49.25	43.70
2012-03-11	Ending boundless construction of secondary residence	45.28	50.63
2012-06-17	Health Care Insurance Act (Managed Care)	38.73	23.95
2012-09-16	Promoting youth music	42.56	72.69
2012-11-25	Law for epizootic	27.67	68.28
2013-03-03	Initiative "against rip-off salaries" (salaries of executives)	46.91	67.96
2013-06-09	Asylum law	39.50	78.45
2013-09-22	Abolition of conscription	47.04	26.79
2013-11-24	Initiative "1:12 - for equal wages"	53.85	34.70
2014-02-09	Initiative against mass immigration	56.78	50.33

TABLE A.3: HETEROGENEOUS EFFECTS OF CLOSENESS DEPENDING ON MUNICIPALITY UNREPRESENTATIVENESS: ERA WITH POLLS

	(1)	(2)	(3)	(4)
Ex Post Closeness × Unrepresentativeness (standardized)	0.015 (0.022)	0.015 (0.022)		
Ex Post Closeness	0.335*** (0.113)			
Ex Ante Closeness × Unrepresentativeness (standardized)			0.008 (0.018)	0.008 (0.018)
Ex Ante Closeness			0.278*** (0.100)	
Treatment Period	Post-1998			
Municipal Fixed Effects	Y	Y	Y	Y
Ballot Fixed Effects	N	Y	N	Y
Observations	118,422	118,422	92,880	92,880
R-squared	0.346	0.732	0.367	0.724

Notes: Each column presents results from an OLS regression with standard errors clustered at the vote level reported in parentheses. Dependent variable is Municipal Level Voter Turnout. Poll Era is a dummy variable equal to 1 for votes held after the introduction of national pre-election polls in 1998. Because pre-election polls were not released for all votes after 1998, the sample size differs depending on whether *Ex Post* or *Ex Ante* Closeness is considered. Sample of votes is restricted to the most important vote per voting day, selected on self-reported importance in VOX surveys. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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TABLE A.4: HETEROGENEOUS EFFECTS OF CLOSENESS AND POLLS DEPENDING ON MUNICIPALITY POLITICAL HOMOGENEITY

	(1)	(2)	(3)
Ex Post Closeness × Political Homogeneity (standardized) × Poll Era	0.071***	0.071***	0.070***
	(0.022)	(0.022)	(0.022)
Ex Post Closeness × Poll Era	0.191		
	(0.196)		
Political Homogeneity (standardized) × Poll Era	-0.881	-0.881	-0.801
	(0.827)	(0.828)	(0.826)
Ex Post Closeness × Homogeneity (standardized)	-0.057***	-0.057***	-0.057***
	(0.015)	(0.015)	(0.015)
Ex Post Closeness	0.145		
	(0.161)		
Differential Closeness Effect by Homogeneity in Poll Era (P-value of test: *Ex Post* Closeness × Homogeneity × Poll Era + *Ex Post* Closeness × Homogeneity = 0)	0.417	0.417	0.439
Municipality Fixed Effects	Y	Y	Y
Ballot Fixed Effects	N	Y	Y
Observations	225,234	225,234	225,234
R-squared	0.287	0.693	0.693

Notes: Each column presents results from an OLS regression with standard errors clustered at the vote level reported in parentheses. Dependent variable is Municipal Level Voter Turnout. *Ex Post* Closeness is the losing side's vote share in the final result of the election. Political Homogeneity is a standardized measure of the municipality's historical tendency to produce voting results farther from 50-50. Poll Era is a dummy variable equal to 1 for votes held after the introduction of national pre-election polls in 1998. Column (3) controls for the "triple interaction" among closeness, municipality electorate size, and a Poll Era dummy ($closeness_v \times electorate_m \times PollEra_v$) as well as all of the lower-order terms. Sample of votes is restricted to the most important vote per voting day, selected on self-reported importance in VOX surveys. *** $p<0.01$, ** $p<0.05$, * $p<0.1$