

If I know you offline, I will vote for you online? The role of offline ties in an online public election

Nicole Schwitter

University of Warwick

nicole.schwitter.1@warwick.ac.uk

2023 – 06 - 05

Abstract:

Understanding election participation and voting are crucial topics in political science. Elections are the cornerstone of democratic governance, and the behaviour of voters in these elections is a critical determinant of electoral outcomes. This study makes use of publicly available election data within the online community Wikipedia to shed light on the significance of social capital in shaping election participation. Wikipedia – a community where volunteers maintain an encyclopaedia - features democratically elected administrators with special rights. Using hybrid multilevel random effects models, this study shows the importance of offline interactions in public online elections: it highlights how offline meeting participation influences both users voting behaviour and their success in elections for administrators. This study emphasizes the significance of offline relationships in shaping online democratic processes and contributes to a better understanding of voting behaviour in public elections.

Keywords: online community, public election, social capital, voting process, Wikipedia

Understanding which factors shape citizens' voting behaviour is a classical task of political science. Voting serves as a fundamental pillar of democratic societies, as it enables individuals to express their preferences, shape policy outcomes, and hold their representatives accountable. By investigating the dynamics behind voting decisions, researchers can unravel the complex interplay of individual attitudes, social influences, institutional frameworks, and broader contextual factors that influence the democratic process. From large-scale anonymous voting processes like the election of the parliament in the United Kingdom to smaller public assembly votes like town meetings in New England or the *Landsgemeinde* in Switzerland, voting takes place in various forms. While only rarely the focus of researchers (Stadelmann-Steffen and Dermont 2016), public assembly votes offer opportunities to better understand the dynamics behind voting decisions and specifically allow voting behaviour to be observed.

One crucial aspect that has been emphasized in explaining political participation is the influence of individuals' social networks (see for an overview Campbell 2013). Public assembly votes offer a distinct and unique setting to investigate such dynamics within a visible context. The present study will make use of publicly available and well-documented elections: requests for adminship on Wikipedia. In this voting process, registered users express their vote in a public space to decide whether nominated others should be granted special rights. By analysing voting patterns in this specific online community, which maintains one of the most visited websites worldwide and has garnered considerable and widespread scientific attention (see e.g. Steinsson 2023; van de Rijt et al. 2014), this article seeks to shed light on the broader relationship between social networks and political participation.

While primarily recognised as an online encyclopaedia, Wikipedia also encompasses a noteworthy offline component: Wikipedia and particularly its German-language edition is characterised by regular local offline meetups which give editors the chance to get to know each other personally. This article asks how offline social relationships influence Wikipedians' voting

behaviour as well as their decision to run as and success of becoming administrator. It contributes to the literature on public (assembly) elections by highlighting the importance of one's social network and demonstrates how web data can be used to gain more insights into decision-making processes.

Understanding The Role of Offline Ties in Online Elections

There is a long history of research on voting behaviour: Since the classical, prominent study by Lazarsfeld et al. (1944), researchers have tried to explain the real-world decision to vote. Voting within online communities is a much younger phenomenon, but nevertheless there is considerable research on elections within Wikipedia, particularly from the field of machine learning. In this section, I will derive testable hypothesis and discuss previous research regarding four different explananda: running as administrator (hypotheses R), winning elections (hypotheses W), voting in elections (hypotheses V), and voting supportively, i.e. voting pro, in elections (hypotheses P).

Running to Become an Administrator

Before elections can take place, users need to be nominated, either by others or via self-nomination. Past research has shown that political ambition varies between groups of people and that the decision to run comes down to a variety of considerations (see e.g. Kanthak and Woon 2015). In the context of gender differences in political positions, outside recruitment (Fox and Lawless 2010) and exposure to role models (Beaman et al. 2009; Gilardi 2015) have been highlighted as important factors amongst others to explain election participation as candidate. In the context of open-source online projects, Crowston and Fagnot (2018) understand Wikipedia as a social movement and argue that participants who report a higher level of identification with the project are more likely to contribute more as it can lead to feelings of obligations.

Against this background, I argue that face-to-face meetings offer an additional venue for interaction and strengthen a user's commitment to the community. Given the general importance of networks in social movements (see e.g. Diani and McAdam 2003) especially for leaders of such (see Ganz 2010), it can be expected that a user who is involved in the offline component of Wikipedia might be more inclined to get more involved online. Another line of argumentation is also imaginable: Instead of arguing that users who are active meetup goers also want to take on a role in the online community, it might be the case that users want to become administrators first and decide to take part in meetings to signal more commitment (or even campaign at meetings) and increase their chances. Offline meetings might also expose users to more potential role models or at least to more committed users who might support and nominate them. In this sense, offline meetings could function as smoke-filled back rooms (see e.g. De Luca et al. 2002; see on anecdotal evidence regarding Wikipedia Stegbauer 2009: Chapter 15). All lines of argumentation lead me to expect a positive effect of the attendance of meetups, and thus the following hypotheses:

Hypothesis R1: The more meetups a user has attended, the more probable they are to run as administrator.

Hypothesis R2: The more other users a user has met, the more probable they are to run as administrator.

The network position of users might further affect their probability to run as administrator. Centrality is a node attribute which captures how central or important a node is in a network. Individuals who are central in (communication) networks function as key sources of information and resources (Cullen et al. 2015; Emerson 1962) and are also provided with larger access to information and other resources. Generally, a central network position comes with

power and influence (Friedkin 1993). I assume that users which are central in the offline network strive for a position of importance in the online space.

Hypothesis R3: The probability to run as administrator increases the more central the position of a user in the offline network is.

Promotion Success: Candidate's Characteristics

In elections, the candidate with more (or enough) voter support wins. In line with ideas based on the concept of social capital, I argue that being connected to others positively influences the probability to be elected: Relationships are assumed to have value and having positive ties should increase support at elections. The present analysis focuses on individual social capital which refers to the actor's network location and the embedded resources they have access to, i.e. network resources and network structures (Lin 2001; Portes 1998).

In the context of Wikipedia, I argue that the offline ties and the network position of candidates matter. Research on other online communities has shown that strong ties tend to develop from offline meetings (see e.g. Angelopoulos and Merali 2015; Ganglbauer et al. 2014) and I assume that offline connections to other Wikipedians might be of particular importance to Wikipedians: Potentially strong ties in the offline world should be helpful as these offer additional channels a candidate can activate for support. Attending meetings might further signal stronger commitment to Wikipedia. Following this, I assume that the sheer attendance of meetings also influences the probability of winning. This reasoning can also be applied to the network position: More central nodes are expected to be more likely to become administrator as centrality signals commitment, power, and access to more resources. In the occupational context, people in more central network positions are also more likely to be promoted (Brass 1984, 1985).

Hypothesis W1: The probability to win an election increases with the number of meetings a candidate has attended.

Hypothesis W2: The probability to win an election increases with the number of voters a candidate has met.

Hypothesis W3: The probability to win an election increases the more central the position of a candidate in the offline network.

Burke and Kraut (2008) and Kordzadeh and Kreider (2016) highlighted which individual factors are relevant for the success and promotion of Wikipedia users: They find that having an extensive and diverse experience, a high level of total contribution, and a longer tenure positively influence the probability of being promoted. Burke and Kraut (2008) also include the social activity by including editing on user talk pages. While they do not discuss their effects in detail, their overall model fares well at predicting successful election outcomes. In line with this, Picot-Clémente et al. (2015) find that interaction with other users and administrators, measured as exchanging messages on talk pages, is relevant in predicting promotion success. Oppong-Tawiah et al. (2016) use semantic analysis and make use of the comments posted on election pages. They find that the most influential determinants in explaining promotion success is structural capital in the community's core activity. Overall, research suggests that being connected to others online positively influences the probability to be elected.

Voter-Candidate-Relationship

This section will focus on the *voter* and their relationship to the candidate. A direct relationship from a user to the candidate might make the user more likely to vote. This follows from perceived obligations to support friends: trust and obligations are key to social capital (Coleman 1990; Putnam 2000). As the voting process on Wikipedia is public, candidates know who voted and who supported them so that it is visible whether their friends and acquaintances have fulfilled their expectations; there thus can be a certain pressure to vote. Beyond Wikipedia, there is a well-documented friends-and-neighbours-effect which shows candidates in various

electoral settings receive more electoral support in and around their hometown area (see e.g. Campbell et al. 2019; Key and Heard 1949; Tabvits 2009). Using survey experiments, Campbell et al. (2019) find that local roots allow voters to make inferences about politicians' actions. This argumentation can also hold in the context of Wikipedia: Voting for a user one knows reduces the uncertainty as one better knows what to expect. Generally, if two users have met, they have more information about one another and can thus also be more likely to cast an informed vote (without needing to incur extra costs by collecting information via other avenues).

In this study, I will test whether meetup ties lead to an increase in the probability to vote at all, and whether meetup ties influence the probability to vote supportively (assuming positive interactions at offline meetings):

Hypothesis VI: The probability to vote increases if the user knows the candidate, i.e. they have attended a meeting together.

Hypothesis PI: The probability to vote positively increases if the user knows the candidate, i.e. they have attended a meeting together.

Turek et al. (2011) and Jankowski-Lorek et al. (2013) model the election process on the Polish Wikipedia using a multidimensional social network. They find positive effects of co-editing, while having a shared revert history leads to opposing votes. There is only weak evidence that the discussion interaction matters.

When voting, users assess whether a candidate is a good fit for the position. This assessment can, on one hand, be a simple assessment of whether the candidate fulfils certain criteria. On the other hand, it can also be a relative assessment in which the attributes of a candidate are compared to the voter themselves. Whether a positive vote will be cast is then not a function of just the candidate alone, but a function of both the candidate and the voter and their relation

to each other (Leskovec et al. 2010). I assume that candidates which fare better on this relative assessment are more likely to be supported as voters search for the most qualified users to become administrators. As outlined in the previous section, I assume, and it has been shown (by Oppong-Tawiah et al. 2016; Picot-Clémente et al. 2015), that being strongly embedded within other users makes a candidate more probable to be successful in their candidacy. Taken together, I expect that the centrality of users is also assessed in relative terms:

Hypothesis P2: The probability to vote supportively increases the more central the position of a candidate in the offline network in comparison to the position of the user.

Leskovec et al. (2010) analysed the assessment strategies of voters. Certain forms of relative assessments have shown to matter in their analysis. Positive votes were observed to be more probable when a nominee has a greater number of edits and/or greater number of awards than the voter.

Voter-Voter-Relationship

Voting is described to be a social experience with people sharing political decisions, discussing them, and often voting together (Unt et al. 2017). People discuss their political attitudes within their networks which can shape their individual choices (Pattie and Johnston 2001). Ties can help diffuse information on how to get involved and the current state of the political sphere (Knoke 2004; McClurg 2003). Sinclair (2012) pointed out how basic political acts are subject of social pressures: Others in a social network notice and might conform to expressions of political opinion, particularly if conformity is likely to be highly visible. The social network can matter as the group can instil shared attitudes that drive the given behaviour, or by a desire to conform to dominant group behaviour (Bhatti and Hansen 2012).

The voting process on Wikipedia can be observed by everyone, and it can be argued that observing friends who are voting can highlight one's duty to also vote (Verba et al. 1995); social

interactions can have a mobilising effect (Rosenstone and Hansen 1993). Get-out-the-vote studies have shown how such pressures and interpersonal voter contact can increase turnout (see e.g. Gerber and Green 2000; Gerber et al. 2008). These studies have not focused on secret ballot voting; when such effects exist in secrecy, it can be assumed that they are even stronger in public. Manin (2015) has explicitly pointed out the disadvantages of non-secret voting, and highlighted how open voting allows for pressure and influence, particularly from one's immediate social. Additionally, public votes can reduce the cost of information: A potential voter might be able to get information about the election directly from their voting contact or trust their decision altogether without needing additional information. This leads to the following hypotheses:

Hypothesis V2: The probability to vote increases, the more other voters a user knows.

Hypothesis P3: The probability to vote supportively increases, the more other voters who vote supportively a user knows.

Hypothesis P4: The probability to vote supportively decreases, the more other voters who vote opposingly a user knows.

Cabunducan et al. (2011) and Lee et al. (2012) found that voters tend to participate in elections that their contacts have participated in, and they find evidence that an individual's decision-making is influenced by their contacts' actions. Several network characteristics are influencing the voting decisions, such as degree, betweenness, or closeness. In their setup, ties are based on communication on users' talk pages.

Methods and Data

This paper makes use of Wikipedia election and meeting data. As the processes on Wikipedia have many degrees of freedom, the data and its collection process is described in notable detail.

Election Data

To become an administrator on Wikipedia, an eligible user must be nominated or self-nominate. Nominations will generally remain active for two weeks during which eligible users can cast their vote in the *support*, *oppose*, and *neutral* sections of an election. For a candidate to be appointed administrator, at least 50 users should have voted supportively within two weeks (this number increased across the years), with at least two thirds of the total votes cast being in favour of the candidate. All previous elections are archived on Wikipedia¹. Information on all elections was collected using a web-scraper².

Eligibility to Vote. To make meaningful comparisons, the pool of potential candidates and voters must be known; they are assumed to consist of everyone eligible. Active and passive eligibility criteria are identical on the German-language Wikipedia and currently comprise of tenure, total activity, and recent activity. Blocked users, sock puppets (fake accounts), bots and additional accounts of the same person are excluded from the election processes.

Using the Wikipedia data dump which provides information on all actions undertaken on the online platform, a list of all eligible users was created for each election date (on the basis of tenure and activity). Bots and users that were blocked at the time of the election for at least two

¹ See <https://de.wikipedia.org/wiki/Wikipedia:Adminkandidaturen/Archiv>.

² To collect the voters and their opinion, the web page was split into separate parts by the section headings. The web scraper then collected which user signed under which text part. can lead to errors when users commented in one part of the voting process which was not an expression of a vote. However, as talk pages are dedicated for discussions, it is reasonable to assume that this occurred in only very few instances (if at all).

weeks were excluded. Sock puppets are not flagged and it is thus not possible to identify them from the list of eligible users.

While a list of eligible voters can be collected for the point in time of the elections, it is not straight-forward to collect all eligible candidates as any day could be the start of a new election and can feature a different pool of potential candidates. As a daily collection of all eligible candidates is computationally not feasible, monthly collections were executed³.

Description of Election Data. Overall, 1213 elections took place in the German-language Wikipedia between its launch in 2001 and the end of March 2020. The first election recorded took place on April 9th 2003 without any recorded voters, and the last one ended on March 16th 2020 after 257 users voted. Both elections led to a new administrator. In total, 60.1 per cent of elections were successful. The number of voters per election varies between 0 (in the early days of Wikipedia) to 533 with a mean of 168.35 (standard deviation 110.91, median 165). Users that were not eligible to vote but still voted were excluded from the analysis. 22 elections were excluded completely because it appeared they did not have an eligible candidate. This was especially prevalent with elections which took place around the date of criteria changes. It might well be the case that these criteria changes were effective a few days later than recorded or that the users were negligent in enforcing the stricter rules.

Data Setups

³ A monthly collection can also be broadly justified with the Nyquist–Shannon sampling theorem from the field of signal processing. The theorem states that a sufficient sample-rate is anything larger than double the bandwidth samples per second (Shannon 1949). Applied to this context, a monthly sampling should be sufficient as new users can only join the sample after having been registered for at least two months.

The different explananda and hypotheses laid out require four different setups of the data.

1. Who runs as a candidate in elections? The data includes all eligible users, observed in each year in which they were eligible for at least one month.

Eligibility data was collected on for each first of the month and then collapsed into yearly data for easier analysis. Across the 19 years, there are 123'012 observations of users who were eligible in the corresponding year for at least one month and thus had the opportunity to run as an administrator. Candidates running twice in the same year were considered to have run and re-elections were discarded. I observe a total of 837 years in which a user ran for administrator.

2. Who is successful in, i.e. wins, elections? The data includes the candidates of all elections.

There are 1191 elections with a valid candidate where a total of 756 different users (re-)ran for administrator. Most users only ran once, others up to 9 times (mean 1.58, median 1, standard deviation 0.96). 718 of these elections were successful.

3. Who votes in elections? The data includes all eligible users observed at all elections they were eligible at.

I have 6'791'107 observations belonging to 30'004 different users who were eligible to vote in at least one of the 1191 elections. While some users were only eligible to vote in one of these elections, others were eligible for all 1191 elections taking place (mean 226.30, standard deviation 232.90, median 131). I observe 200'852 instances in which users used their right to vote.

4. Who votes supportively/opposingly in elections? The data includes all users who have voted in elections.

Lastly, I focus on those 200'852 instances in which users voted. Like most previous research, I exclude users who have given a neutral vote, so that I observe a total of 183'263 instances in

which users voted (with $n=135'230$ supporting votes). The dataset includes 5022 different users who voted; some once, others up to 807 times (median 7, mean 36.49, standard deviation 74.53).

The data at hand is rather large, particularly in setup 3. As this becomes computationally too expensive, a subset of the data is analysed.

Subsampling Data

Around 4000 different Wikipedians have attended meetups; most of these users are highly active and belong to the core of the project. The data will be subsampled to include those which have attended meetings and a comparable group most similar to them. This will lead to a subsample where meetup attendees are over-represented, but this will still allow to identify the effects of offline network features.

For setups 1 and 3, all users who have attended a meetup in the previous year are being sampled and a matched non-attendee is searched for. To find a comparable user, for each year, each eligible user having attended a meetup was matched with one not having attended a meetup (in setup 3, the focus was on each election instead of each year). For setup 4, the data identified for setup 3 was subset to only include users that have voted. The matched non-attendee was found by comparing users based on the following equally weighted, normalised features (the variables are described in more detail in the next section):

1. Days since registration
2. Previous sum of activity (number of edits, logged)
3. Recent activity (number of edits in the last two months, logged) in the article mainspace
4. Revert activity (setup 1 only):
 - a. Number of times reverted others (logged)
 - b. Number of times got reverted by others (logged)

5. Collaboration activity:
 - a. Number of users previously collaborated with (in case of setup 3: proportion of voters at an election)
 - b. Eigenvector centrality in collaboration network
6. Talk activity:
 - a. Number of users previously talked to (in case of setup 3: proportion of voters at an election)
 - b. Eigenvector centrality in talk network

For each meetup attending eligible user at elections, the most similar non-attendee was selected. Users were compared using a distance measure based on ordinary least squares between Wikipedian X who was eligible at an election and has attended meetups in the recent past and all those eligible to vote but without having attended a meetup in the past year and not already matched to another user for that specific election/year.

Variables and Data Description

Table 1 shows descriptive information on all (uncentred) variables included in the models on elections on the subsampled data (descriptive information on the complete dataset can be found in the supplementary material, Table A1).

Network Measures. Several network measures regarding the offline and online networks of Wikipedians are included. I include whether a direct tie exists between two users, particularly between candidate and voter. Further, I include measures of *centrality* which describe how central nodes are in a network. A user's *degree* describes the number of links that a node shares with others and works as a measure of popularity. Degree is used to test hypotheses R2, W2, V2, P3 and P4. If the measure refers to voters, I work with a relative definition of degree (i.e. a proportion). *Eigenvector centrality* is another popular measure of importance of

a node developed by Bonacich (1987). Eigenvector centrality scores correspond to the values of the first eigenvector of the graph adjacency matrix and assigns higher weights to links connecting a node to other central nodes.

On Wikipedia, different networks can be thought of. My main interest lies in the effect of ties stemming from *offline* meetings, however I will simultaneously control for online networks.

The Offline Network. This article makes use of the offline meetup data described in Schwitter (2023). The dataset captures offline meetings between Wikipedians and recorded who attended which meeting when. I consider the previous 12 months of meetup activity to calculate the network measures for any given point in time. I consider that meetings happening in the last year are relevant for Wikipedians as many meetings are annual events.

Online Networks: Collaboration and Communication on Wikipedia. Network measures regarding different online networks on Wikipedia are considered to isolate the effect of offline ties: collaboration and talk ties. A collaboration tie is based on the co-editing network (defined as users editing the same Wikipedia page directly after one-another). Talk ties refer to leaving messages on users' talk pages. I focus on the previous *two* months of online activity as the online space moves faster than offline activities, and because the past two months of activity are of relevance in the context of election (eligible users must have been registered for at least two months).

Further Variables. The current state of research has highlighted other determinants relevant for election participation which will be controlled for. Control variables include the previous total level of activity up to the time of the election as well as the recent activity before the election (logged number of edits in the article mainspace in the past two months). Tenure is measured as years passed since a user's first edit.

I further control for features describing the relationship between voter and candidate in setup 3 and 4. With a dummy variable, I capture whether a voter has reverted or has been reverted by the candidate in the past two months. For setup 1, I control for the logged number of times a user has reverted others and has been reverted by others; and for setup 2, I measure the proportion of voters who reverted the candidate and those who were reverted by the candidate. For setup 1 and 2, I also control for the number of previous times a user has ran as candidate. Lastly, I control for the year of election, differentiating three equally long categories (before 2009, between 2009 and 2014, 2015 and after).

Table 1: Descriptive information on all variables included in the models, restricted dataset.

Given are mean (standard deviation), minimum / maximum.

Variable	Running as candidate Setup 1	Winning elections Setup 2	Voting Setup 3	Voting sup- portively Setup 4
Number of meetups at- tended	2.26 (3.61) 0 / 40.3	1.76 (3.64) 0 / 38	1.88 (3.37) 0 / 47	2.78 (4.35) 0 / 46
Number of other users met (log)	1.61 (1.70) 0 / 5.56			
Met candidate			1.64%	5.41%
Proportion of voters met		2.52 (4.85) 0 / 41.67	1.43 (3.10) 0 / 80	2.71 (4.27) 0 / 80
Proportion of pro-voters met			1.50 (3.66) 0 / 100	2.94 (4.83) 0 / 100
Proportion of anti-voters met			1.04 (3.35) 0 / 100	1.74 (4.37) 0 / 100
Eigenvector centrality meetup network	0.069 (0.15) 0 / 1	0.098 (0.22) 0 / 1	0.080 (0.18) 0 / 1	0.14 (0.25) 0 / 1
Number of other users col- laborated with (log)	4.03 (1.41) 0 / 7.92			
Collaborated with candi- date (direct collaboration tie, undirected)			14.76%	36.91%
Proportion of voters col- laborated with		37.39 (24.41) 0 / 100	11.85 (14.97) 0 / 100	24.76 (17.35) 0 / 94.79
Proportion of pro-voters collaborated with			11.57 (15.33) 0 / 100	24.70 (17.80) 0 / 100
Proportion of anti-voters collaborated with			10.96 (15.62) 0 / 100	22.80 (18.89) 0 / 100
Eigenvector centrality col- laboration network	0.084 (0.094) 0 / 0.74	0.29 (0.19) 0 / 1	0.12 (0.13) 0 / 1	0.23 (0.15) 0.00024 / 1

Number of other users talked to (log)	1.19 (1.24)			
	0 / 6.96			
Talked to candidate (direct talk tie, undirected)			1.87%	7.74%
Proportion of voters talked to		7.63 (9.86)	1.50 (3.04)	4.02 (4.53)
		0 / 100	0 / 100	0 / 100
Proportion of pro-voters talked to			1.49 (3.56)	4.13 (5.00)
			0 / 100	0 / 100
Proportion of anti-voters talked to			1.34 (4.08)	3.62 (6.53)
			0 / 100	0 / 100
Eigenvector centrality talk network	0.023 (0.038)	0.12 (0.14)	0.041 (0.077)	0.094 (0.12)
	0 / 0.74	0 / 1	0 / 1	0 / 1
Difference candidate-voter centrality meetup network			0.027 (0.29)	0.0031 (0.35)
			-1 / 1	-1 / 1
Difference candidate-voter centrality collaboration network			0.13 (0.20)	0.025 (0.20)
			-1 / 0.90	-0.95 / 0.90
Difference candidate-voter centrality talk network			0.056 (0.13)	0.013 (0.15)
			-1 / 1	-1 / 0.99
Number of times reverted others (log)	0.76 (1.18)			
	0 / 5.22			
Number of times got reverted (log)	0.92 (1.37)			
	0 / 7.13			
Proportion of voters reverted by candidate		1.54 (3.99)		
		0 / 100		
Proportion of voters reverted candidate		1.74 (4.32)		
		0 / 100		
Reverted candidate			0.48%	1.68%
Reverted by candidate			0.49%	1.67%
Number of previous elections candidated	0.073 (0.30)	0.58 (0.99)		
	0 / 3.42	0 / 8		
Mainspace edits, two months (log)	4.46 (1.64)	5.89 (1.56)	4.47 (1.98)	5.79 (1.36)
	0 / 9.62	0 / 9.26	0 / 11.21	0 / 11.05
Total edits (log)	6.88 (2.18)	7.96 (1.55)	7.63 (1.54)	8.74 (1.14)
	0 / 12.29	1.61 / 11.43	1.10 / 12.40	2.89 / 12.11
Difference candidate-voter total edits (cube-root)			6.90 (17.45)	0.70 (20.28)
			-62.28 / 45.12	-55.69 / 45.10
Years since first edit	6.30 (3.79)	3.55 (3.42)	4.71 (3.18)	5.09 (3.41)
	0.20 / 18.61	0.047 / 16.21	0.0068 / 18.62	0.053 / 17.85
Year of meetup 03-08	14.07%	52.73%	34.70%	30.81%
Year of meetup 09-14	45.26%	32.66%	47.71%	48.28%
Year of meetup 15-20	40.67%	14.61%	17.59%	20.91%
Observations	9014	1191	996668	115608
Observations realised (dependent variable = 1)	247	718	126615	87519
Observations	3973	756	13979	2939

Statistical Approach: Multilevel Within-Between Linear Probability Models

In the following analyses, the regression framework will be extended to include network statistics as covariates; this is a popular alternative approach to network models (Cranmer and Desmarais 2011). The data further exhibits a multilevel structure as election (non-)participation is nested in users. Only in setup 2, I have a simpler data structure with fewer observations and only few instances which requires the inclusion of cluster robust standard errors.

Fixed effects (FE) models are often used in multilevel contexts and concentrate on the within differences of a cluster, excluding all between effects. This makes them unable to estimate effects of variables which do not vary between clusters (Schunck 2013). *Within-between models* (REWB) can assess the drawbacks of the FE models. The general technique was proposed by Mundlak (1978) to relax the assumption in the random effects (RE) estimator that the observed variables are uncorrelated with the unobserved variables (Schunck 2013; Wooldridge 2010). In these models, RE regression models are estimated in which group-means of variables are included. Each-time varying predictor is decomposed into two components:

- Between component: $\bar{x}_i = \frac{1}{T_i} \sum_{t=1}^{T_i} x_{it}$
- Within component: $x_{it} - \bar{x}_i$

Within each group, the mean for each independent time-varying variable is calculated (between component). The within component is the demeaned variable. Putting both components into a RE model leads to the following formula:

$$y_{it} = \alpha + \beta(x_{it} - \bar{x}_i) + \gamma\bar{x}_i + \delta z_i + \alpha_i + \epsilon_{it}$$

In this case, $\hat{\beta}$ reproduces exactly the FE (within) estimate, $\hat{\gamma}$ reproduces approximately the between estimate, and $\hat{\delta}$ is the effect of a time constant regressor. REWB models allow to disentangle both within and between effects.

Given the complex modelling structure and the large number of observations, I will employ linear probability models (LPMs) with robust standard errors. LPM effects estimates are unbiased and consistent estimates of an independent variable's average effect (Mood 2009; Wooldridge 2010: 454). Alternative model specifications can be found in the supplementary material (REWB general linear model (GLM), FE LPM, FE GLM).

Results

For all models, the following notation is used:

- cm: cluster mean (capturing the between effect).
- cwc: centred within clusters (capturing the within effect).

Running for Administrator

Who is most likely to run as a candidate in a given year and what role do offline networks play in this? On a bivariate level, the models suggest that the more meetings someone has attended (both cm and cwc), the more people they have met (both cm and cwc), and the more central they are in the meetup network (both cm and cwc), the more probable they are to run for administrator in a given year (see models in section B.1.1. in the supplementary material). This supports hypotheses R1, R2 and R3.

Multivariate model results are shown in the coefficient plot in Figure 1. Four models are run. Models 1-3 include the control variables and different measures of offline meetup behaviour separately to distinguish effects of centrality, general meetup attendance and the count of other users met. The last model includes all variables simultaneously.

There are no significant effects of offline interactions, except the within variation of the number of other users met. In model 2 and the full model, I find that the more users a voter has met in the past year, the more likely they are to run for administrator. There is no significant effect in

the mean number of other users one has met throughout (no significant cm effect), but there is a positive effect of having an increasing number of people one got to know: When there is an increase of one in the logged number of users met, the probability to run as administrator in a given month increases 0.4 (Model 2) / 0.6 (Full model) per cent

Overall, there is no evidence supporting hypotheses R1 and R3 in the multivariate models, but there is support for hypothesis R2. This coefficient is small compared to the importance of having collaborated or talked with users (these coefficients are around 5 times larger) and only significant on a five per cent level. Also, the effect are *not* robust when modelled as a multilevel GLM, FE LPM, or FE GLM (see supplementary material).

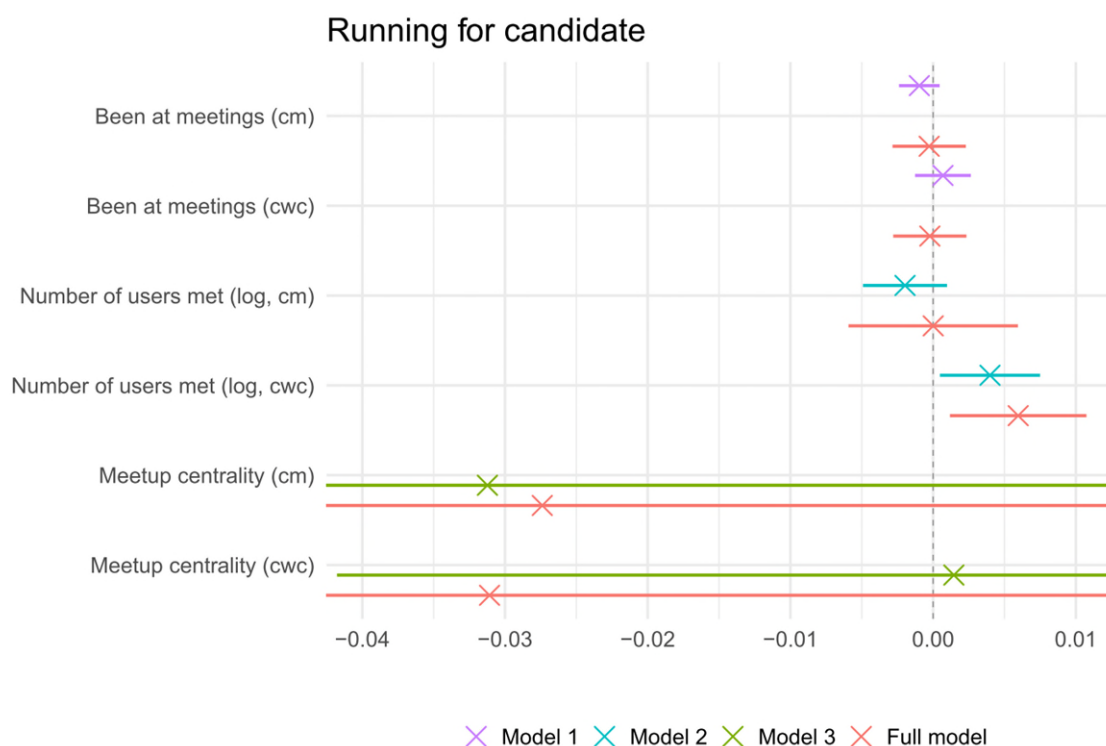


Figure 1: Modelling running for administrator (based on Table A3 in the supplementary material). Note: Horizontal line reflects 95 per cent confidence interval. The plot is cropped for better visibility of small effects. Models 1-3 refer to models which include all control variables

but only the displayed predictors of the offline network. The Full Model includes all offline network predictors simultaneously.

Winning Elections: Becoming Administrator

Who is most likely to be successful when running for administrator in an election and what role do offline networks play in this? On a bivariate level, I find that attending more meetings, meeting more eligible users personally, and being more central in the meetup network increases the probability to be successful in an election (see section B.2.1. in the supplementary material); this supports hypotheses W1, W2 and W3.

Multivariate results are shown in figure 2. Again, four models are run, with the first three models including different measures of the offline meetup network separately before presenting a full model which includes all variables simultaneously. The models reveal a positive and significant effect of the proportion of voters met. Both the effects of the bare number of meetups attended and the eigenvector centrality of a candidate are positive and significant, unless the number of voters met is included in the model simultaneously. The results suggest that attending meetups and being central in the network is helpful in winning an election, but it is particularly meeting those who then vote that plays a positive and significant role. Having met 1 per cent more of the voters leads to a 2.7 per cent increase in the probability to win the election. This lends support to hypothesis W2. While meetings are important, neither the bare number or the meetup centrality matter beyond the proportion of voters met (no support for hypotheses W1 or W3 in the full model).

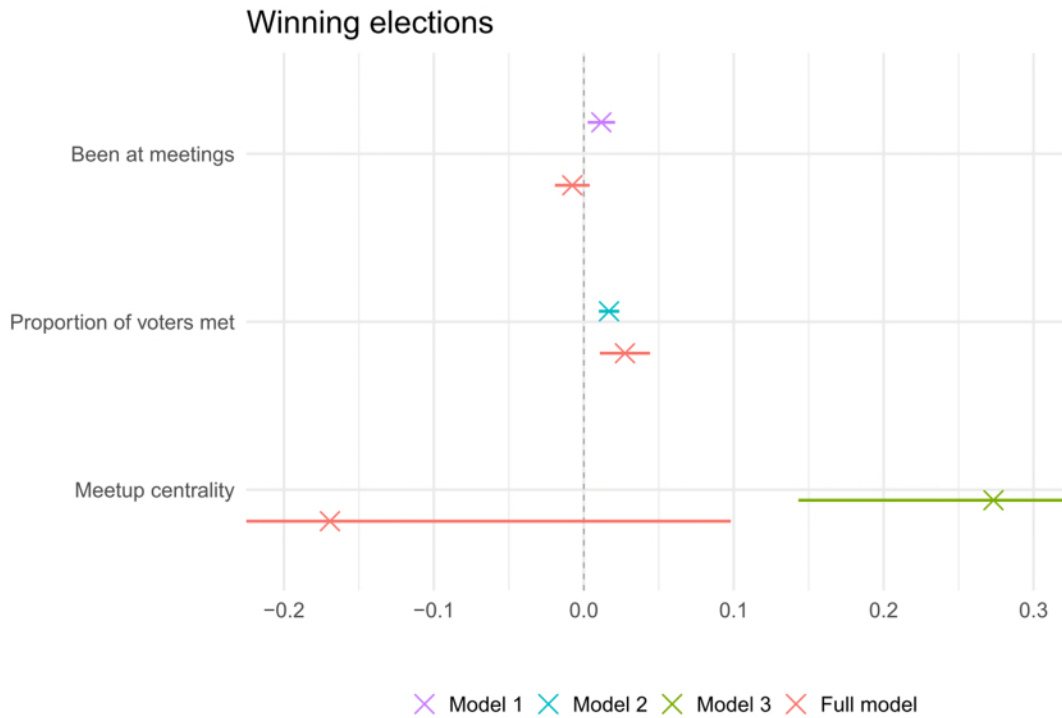


Figure 2: Modelling successful candidacy (based on Table A8 in the supplementary material). Note: Horizontal line reflects 95 per cent confidence interval. The plot is cropped for better visibility of small effects. Models 1-3 refer to models which include all control variables but only the displayed predictors of the offline network. The Full Model includes all offline network predictors simultaneously.

Voting in Elections

Are users more likely to vote if they have taken part in meetings recently? Bivariately (regression tables in section B.3.1. in the supplementary material), I find that users are more likely to vote when they have met the candidate (cm and cwc), when they have attended more meetings (cm and cwc), and the larger the proportion of other voters they have met (cm and cwc). Eligible users are also more likely to vote the more central they are in the meetup network (cm and cwc). Regarding the difference in centrality between candidate and voter, there is a negative between effect (cm), suggesting users that are less central on average than the candidates in elections are less likely to vote, and a positive within effect (cwc), suggesting that users are

more likely to vote in an election where the candidate is more central than them in the meetup network compared to other candidates less central than them. I find support for V1 and V2.

Multivariate model results regarding the offline meetup measures are shown in the coefficient plot in Figure 3. Five different models are run. Models 1-4 include the control variables and different measures of offline meetup participation separately to distinguish effects of centrality, general meetup attendance, having met the candidate and the proportion of other voters met; the last model includes all measures simultaneously.

I find significant and positive effects of having met the candidate in all model specifications: Users who have met candidates generally (cm) and also specifically the candidate of one election (cwc) are more likely to vote, while there is no effect of the number of meetings attended. Having met a larger proportion of voters (cm and cwc) in an election significantly increases a user's probability to vote as well. The effect of a voter's centrality is more difficult to understand: When not including other network measures, there is a significant positive within effect of both a voter's own centrality and the difference between the candidate's centrality and the voter's centrality. This means, voters are more likely to vote if they are generally more central, but also if the candidate in an election is more central than them. If all other network measures are included, I find a significant negative effect of both the between and within effects of a voter's meetup centrality, suggesting that comparing different users, less central ones are more likely to vote, and a user is more likely to vote the less central they are on average across time. The positive effect of the relative centrality remains stable.

Regarding the hypotheses, there is support for both V1 and V2: The probability to vote increases if the user knows the candidate and the more other voters a user knows. If a user has not met any of the candidates at elections except the candidate at one specific election (meaning a cm value of very close to 0 and a cwc value of very close to 1 for that specific election), they

are 12.3 per cent more likely to vote in that case. Also, knowing 1 per cent more of the voters of the election (cwc) leads to an increase of 1.0 per cent in the probability to vote.

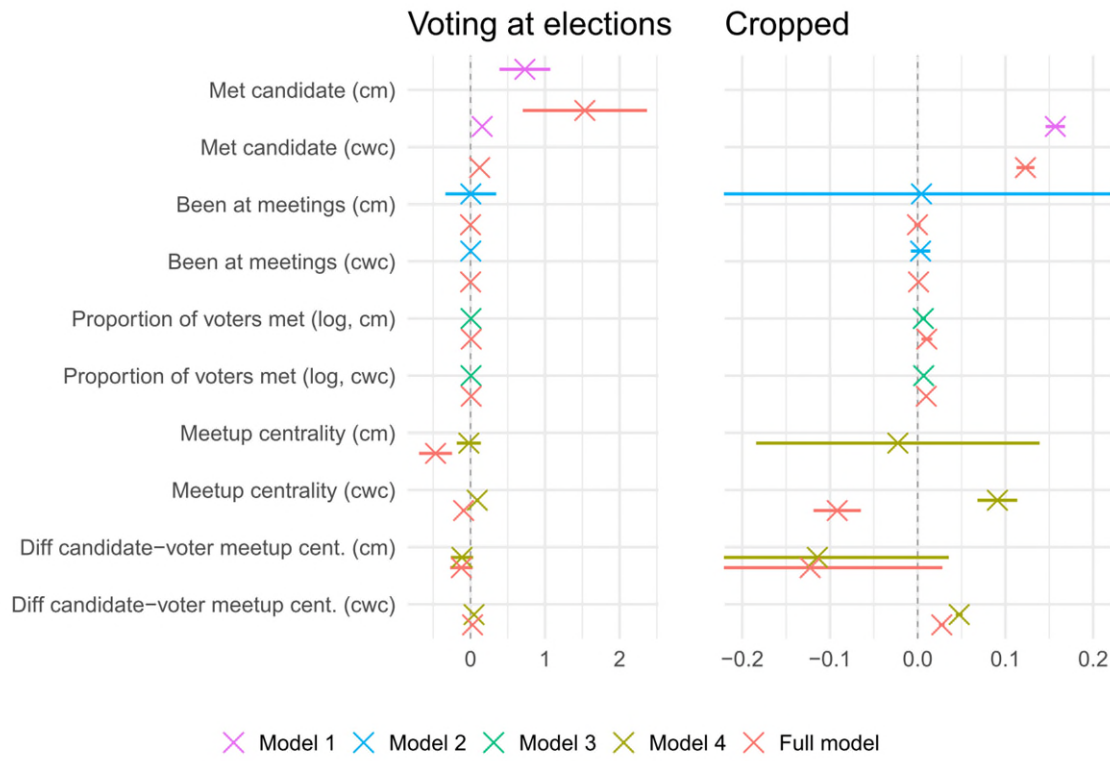


Figure 3: Modelling votes (based on Table A11 in the supplementary material). Note: Horizontal line reflects 95 per cent confidence interval. The plot on the right is cropped for better visibility of small effects. Models 1-4 refer to models which include all control variables but only the displayed predictors of the offline network. The Full Model includes all offline network predictors simultaneously.

Voting Supportively in Elections

When do voters support a candidate in contrast to voting opposingly, i.e. how can the direction of votes be explained? Bivariately, users voting in elections are more likely to vote supportively when they have met the candidate (cm and cwc), when they are generally users attending meetups or more central in the network (cm only), the larger the proportion other supporting voters they have met (cm and cwc), and they become less likely to vote supportively the higher

the proportion the anti-voters they have met (cwc only). Regarding the difference in centrality between candidate and voter, there is the same relationship like on voting generally: There is a negative between effect and a positive within effect (see section B.4.1. in the supplementary material for model results). This supports P1, P2, P3 and P4.

Figure 4 shows the five model results in a coefficient plot; the first four models include different measures of offline meetup participation separately and the last model includes all measures simultaneously. When not including any other measures of the offline network, I find significant and positive effects of having met the candidate (cm and cwc); however, the effects do not remain significant in the full model. Both, in model 2 and in the full model, I find a significant between effect of attending meetings, suggesting users that have, on average, attended more meetings, are more likely to vote supportively. In all models, I find significant and positive effects of the proportion of supporting voters met (cm and cwc) and negative and significant effects of the proportion of opposing voters met (cm and cwc). Regarding the centrality of voters, I find positive within effects of both a voter's centrality and the difference between the candidate's and the voter's centrality (model 4), but only the positive effect of the difference between candidate and voter remains significant in the full model.

Overall, these results clearly support hypotheses P2, P3 and P4: Voters are more likely to support candidates which are more central than themselves, they are more likely to vote supportively if they know a high proportion of pro-voters, and they are less likely to vote supportively if they know a high percentage of anti-voters. Knowing 1 per cent more of pro-voters in an election leads to a 1.8 per cent increase in the probability to also vote supportively and similarly, knowing 1 per cent more of anti-voters in an election leads to a 1.7 per cent decrease in the probability to vote supportively (within variation only, i.e. average level is held constant). In the full model, when controlling for other network measures, there is no support for P1.

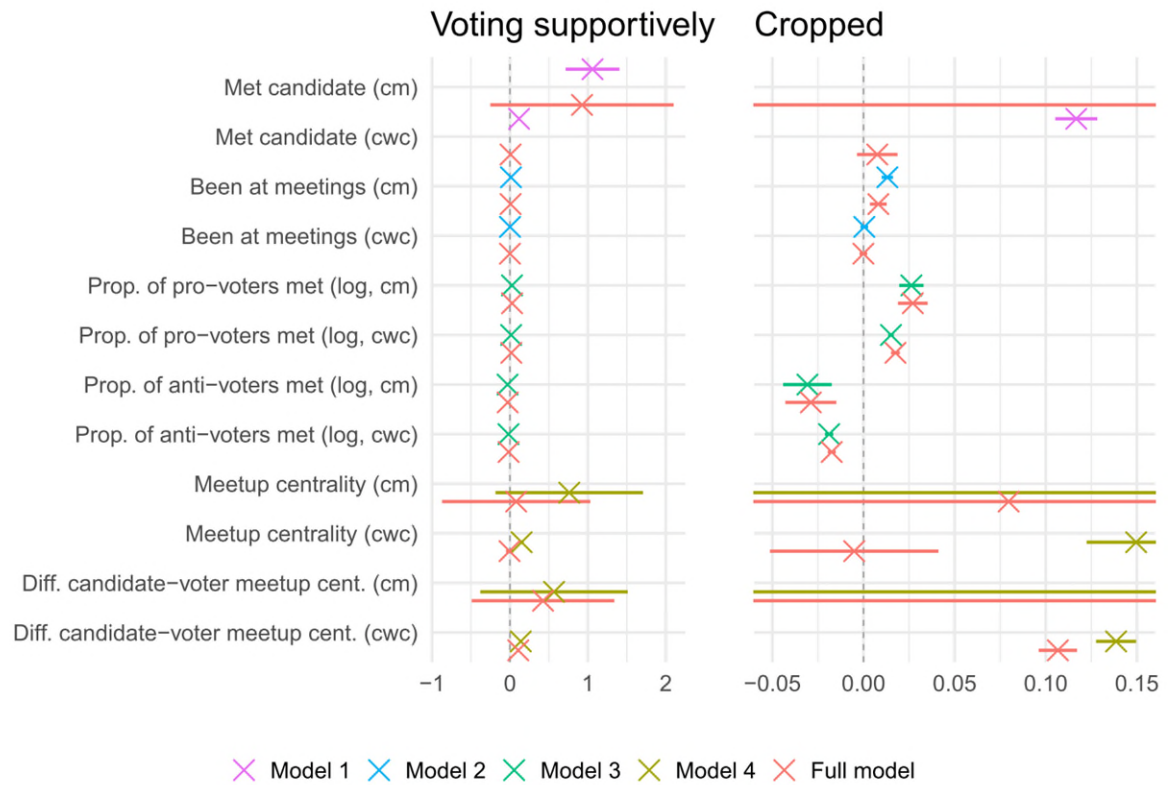


Figure 4: Modelling supportive votes (based on Table A16 in the supplementary material). Note: Horizontal line reflects 95 per cent confidence interval. The plot is cropped for better visibility of small effects (lines without effect marker thus show just part of the confidence interval). Models 1-4 refer to models which include all control variables but only the displayed predictors of the offline network. The Full Model includes all offline network predictors simultaneously.

Conclusions

Wikipedia offers unique data to investigate an (online) election in a detailed and unobtrusive way, allowing us to gain new insights into the dynamics of voting behaviour and the role of social networks in shaping political participation. This study continued in the tradition of Lazarsfeld et al. (1944) and highlighted that social contacts matter for voting decisions - even in the online space. I find significant and stable effects of the offline network of both candidates and users who vote. Offline social capital is supportive when people run for administrator: It

makes a successful candidacy more likely. Personal voting decisions are also influenced by the ties to the candidate and to other voters. Ultimately, this study emphasises the importance of considering the complex and multifaceted nature of voting behaviour in efforts to enhance the functioning of democratic governance.

An overview of the hypotheses supported is given in Table 2. On a bivariate level, all hypotheses could be supported; however, as the full models including further covariates revealed, some associations were explained away by other factors such as the general activity of Wikipedians which influences both, meetup and election participation. In the full models including all covariates and additionally all network characteristics simultaneously, some effects further disappear; this points towards mediation effects.

Table 2: Overview of supported hypotheses regarding elections.

Hypothesis: User is more likely to....		Bivariate	Multivariate (controls)	Multivariate (full model)
run as administrator if..	R1: attended more meetups	YES	NO	NO
	R2: met more users	YES	YES	YES
	R3: more central in network	YES	NO	NO
be elected as administrator if..	W1: attended more meetups	YES	YES	NO
	W2: met more voters	YES	YES	YES
	W3: more central in network	YES	YES	NO
vote if..	V1: met the candidate	YES	YES	YES
	V2: met more voters	YES	YES	YES
vote supportively if..	P1: met the candidate	YES	YES	NO
	P2: less central than candidate	YES	YES	YES
	P3: met more supportive voters	YES	YES	YES
	P4: met fewer opposing voters	YES	YES	YES

When focusing on the models including all covariates and network characteristics simultaneously, I find weak evidence for the role of offline meetups in the decision to run for administrator. While I find weak evidence that the more users someone has met, the more likely they are to run as administrator, the effect is small and not robust across different model specifications. On the other hand, offline participation matters when explaining election success: Users that have met a high proportion of the voters face-to-face are significantly more likely to

become administrator. This relationship is also reflected when taking the voter's perspective: An eligible user is much more likely to vote if they have met the candidate in the past, and they are also more likely to vote if they have met other voters and offline ties do also affect the direction of the vote. While the offline component does matter in explaining supporting votes, the results do not show that users who have met a candidate are more likely to support them.

In a next step, it is important to ask why the offline network matters and to bettering the understanding of the causal relationships behind the associations uncovered. Are users discussing upcoming or current elections at the meetups they attend and potentially come to a consensus, or are users voting like their friends or even feel pressured to vote in line with them? Are strong ties restricting a flow of information or even restricting what is considered a valid opinion within a group? Are voters selecting themselves into pro- or anti-networks when deciding to vote? These are questions that this study cannot answer but which are important to explore in future work. My findings provide evidence for the ideas that voters are fulfilling their obligations towards their friends (one aspect of social capital; Coleman 1990; Putnam 2000) or that these direct ties provide cheap information to the person voting (see also Sinclair 2012). Given that users who have met the candidate are more likely to vote but not to vote supportively (when controlling for all network characteristics), it seems less likely to expect that obligations are driving the decision but rather that it is the additional (offline) information about a user which makes one vote.

This study has several limitations. Methodologically, I employed techniques to decrease computational load: the data was subsampled which discards information. However, it is a reassuring finding that the FE models which use the complete data have led to similar results as the richer REWB which use the subsampled data. Also, this study did not model the election/voting process as a network but assigned network values to users. This has some advantages regarding simplicity and flexibility and is computationally less intensive. Future research should also aim

to model network interdependencies - for example reciprocity across time - more explicitly for example using stochastic actor-oriented models (see also Putzke and Takeda 2017). Also, other network values could also be included in future work; for example, different centrality measures could be contrasted (e.g. betweenness centrality).

Notwithstanding its limitations, this study is unique in employing classical voting theory in the context of an online election. Given that personal contacts even affect the voting behaviour in an online community, it is important to better understand how contacts affect offline (public) voting. Disadvantages in non-secret voting regarding the potential pressure and influence of one's immediate environment do not receive much attention in the Swiss towns and cantons still regularly holding public votes - in these regions, public assembly voting has a long tradition and forms an almost sacrosanct institution. Web data used in this study has shown that social capital matters.

Acknowledgments

The author wants to thank Ulf Liebe, Andreas Murr, Wojtek Przepiorka, Richard Lampard and Martina Frnka-Froidevaux for helpful feedback to previous versions of this manuscript, Achim Edelmann for technical advice regarding data preparation and the Scientific Computing Team at the University of Leipzig for computing support.

Funding

This work was supported by the Wikimedia Foundation (project grant https://meta.wikimedia.org/wiki/Grants:Project/nschwitter/The_Role_of_Offline_Ties_of_Wikipedians). The funder had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

References

- Angelopoulos, Spyros and Merali, Yasmin. 2015. "Bridging the divide between virtual and embodied spaces: Exploring the effect of offline interactions on the sociability of participants of topic-specific online communities." In *Proceedings of the 48th Hawaii International Conference on System Sciences*, 3636-3645.
- Beaman, Lori, Chattopadhyay, Raghabendra, Duflo, Esther, Pande, Rohini and Topalova, Petia. 2009. "Powerful women: does exposure reduce bias?" *The Quarterly Journal of Economics*: 124:4: 1497-1540.
- Bhatti, Yosef and Hansen, Kaspar M. 2012. "Leaving the nest and the social act of voting: Turnout among first-time voters." *Journal of Elections, Public Opinion & Parties*: 22:4: 380-406.
- Bonacich, Phillip. 1987. "Power and centrality: A family of measures." *American Journal of Sociology*: 92:5: 1170-1182.
- Brass, Daniel J. 1984. "Being in the right place: A structural analysis of individual influence in an organization." *Administrative Science Quarterly*: 29:4: 518-539.
- Brass, Daniel J. 1985. "Men's and women's networks: a study of interaction patterns and influence in an organization." *Academy of Management Journal*: 28:2: 327-343.
- Burke, Moira and Kraut, Robert. 2008. "Mopping up." In *Proceedings of the ACM 2008 Conference on Computer Supported Cooperative Work*, 27-36.

Cabunducan, Gerard, Castillo, Ralph and Lee, John B. 2011. "Voting behavior analysis in the election of Wikipedia admins." In *International Conference on Advances in Social Networks Analysis and Mining*, 376-380.

Campbell, David E. 2013. "Social networks and political participation." *Annual Review of Political Science*: 16: 33-48.

Campbell, Rosie, Cowley, Philip, Vivyan, Nick and Wagner, Markus. 2019. "Why friends and neighbors? Explaining the electoral appeal of local roots." *The Journal of Politics*: 81:3: 937-951.

Coleman, James S. 1990. *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Cranmer, Skyler J. and Desmarais, Bruce A. 2011. "Inferential network analysis with exponential random graph models." *Political Analysis*: 19:1: 66-86.

Crowston, Kevin and Fagnot, Isabelle. 2018. "Stages of motivation for contributing user-generated content: A theory and empirical test." *International Journal of Human-Computer Studies*: 109: 89-101.

Cullen, Kristin L., Gerbasi, Alexandra and Chrobot-Mason, Donna. 2015. "Thriving in central network positions: The role of political skill." *Journal of Management*: 44:2: 682-706.

De Luca, Miguel, Jones, Mark P. and Tula, María I. 2002. "Back rooms or ballot boxes? Candidate nomination in Argentina." *Comparative Political Studies*: 35:4: 413-436.

Diani, Mario and McAdam, Doug. 2003. *Social movements and networks*. Oxford: Oxford University Press.

Emerson, Richard M. 1962. "Power-dependence relations." *American Sociological Review*: 27:1: 31-41.

Friedkin, Noah E. 1993. "Structural bases of interpersonal influence in groups: A longitudinal case study." *American Sociological Review*: 58:6: 861-872.

Ganglbauer, Eva, Fitzpatrick, Geraldine, Subasi, Özge and Güldenpfennig, Florian. 2014. "Think globally, act locally." In *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing*, 117-127.

Ganz, Marshall. 2010. "Leading change: Leadership, organization, and social movements." In *Handbook of leadership theory and practice*, eds. Nitin Nohria and Rakesh Khurana. Harvard Business Press, 509-550

Gerber, Alan S. and Green, Donald P. 2000. "The effects of canvassing, telephone calls, and direct mail on voter turnout: A field experiment." *American Political Science Review*: 94:3: 653-663.

Gerber, Alan S., Green, Donald P. and Larimer, Christopher W. 2008. "Social pressure and voter turnout: Evidence from a large-scale field experiment." *American Political Science Review*: 102:1: 33-48.

Gilardi, Fabrizio. 2015. The temporary importance of role models for women's political representation." *American Journal of Political Science*: 59:4: 957-970.

Gotham, Kevin F. 1999. "Political opportunity, community identity, and the emergence of a local anti-expressway movement." *Social Problems*: 46:3: 332-354.

Hedström, Peter. 2005. *Dissecting the Social*. Cambridge: Cambridge University Press.

- Huckfeldt, Robert and Sprague, John. 1991. "Discussant effects on vote choice: Intimacy, structure, and interdependence." *The Journal of Politics*: 53:1: 122-158.
- Jankowski-Lorek, Michal, Ostrowski, Lukasz, Turek, Piotr and Wierzbicki, Adam. 2013. "Modeling Wikipedia admin elections using multidimensional behavioral social networks." *Social Network Analysis and Mining*: 3:4: 787-801.
- Johnson, Russell E., Chang, Chu-Hsiang D. and Yang, Liu-qin. 2010. "Commitment and motivation at work: The relevance of employee identity and regulatory focus." *Academy of Management Review*: 35:2: 226-245.
- Kanthak, Kristin and Woon, Jonathan. 2015. "Women don't run? Election aversion and candidate entry". *American journal of political science*: 59:3: 595-612.
- Kenny, Christopher B. 1992. "Political participation and effects from the social environment." *American Journal of Political Science*: 36:1: 259-267.
- Key, Valdimer O. and Heard, Alexander. 1949. *Southern Politics in State and Nation*. New York: AA Knopf.
- Knoke, David. 2004. *Political networks*. Cambridge: Cambridge University Press.
- Kordzadeh, Nima and Kreider, Christopher 2016. „Revisiting Request for Adminship (RfA) within Wikipedia: How do user contributions instill community trust?" *Journal of the Southern Association for Information Systems*: 4:1: 1-14.
- Lazarsfeld, Paul, Berelson, Bernard and Gaudet, Hazel. 1944. *The people's choice: how the voter makes up his mind in a presidential campaign*. New York: Columbia University Press.

Lee, John. B., Cabunducan, Gerard, Cabarle, Francis G., Castillo, Raphael and Malinao, Jasmine A. 2012. "Uncovering the social dynamics of online elections." *Journal of Universal Computer Science*: 18:4: 487-505.

Leskovec, Jure, Huttenlocher, Daniel, and Kleinberg, Jon. 2010. „Governance in Social Media: A Case Study of the Wikipedia Promotion Process.” In *Fourth International AAAI Conference on Weblogs and Social Media*.

Lin, Nan. 2001. *Social Capital*. Cambridge: Cambridge University Press.

Manin, Bernard. 2015. "Why Open Voting in General Elections Is Undesirable". In *Secrecy and Publicity in Votes and Debates*, ed. Jon Elster. New York: Cambridge University Press, 209-214.

McClurg, Scott D. 2003. "Social Networks and Political Participation: The Role of Social Interaction in Explaining Political Participation." *Political Research Quarterly*: 56:4: 449-464.

Mood, Carina. 2009. "Logistic Regression: Why We Cannot Do What We Think We Can Do, and What We Can Do About It." *European Sociological Review*: 26:1: 67-82.

Mundlak, Yair. 1978. "On the pooling of time series and cross section data". *Econometrica*, 46:1: 69-85.

Oppong-Tawiah, Divinus, Bassellier, Genevieve and Ramaprasad, Juli. 2016. "Social connectedness and leadership in online communities." In *Social Media and Digital Collaboration Conference*.

Pattie, Charles Johnston, Ron. 2001. "Talk as a political context: Conversation and electoral change in British elections 1992-1997." *Electoral Studies*: 20:1: 17-40.

Picot-Clémenté, Romain, Bothorel, Cécile and Jullien, Nicolas. 2015. “Contribution, Social Networking, and the Request for Adminship Process in Wikipedia”. In *Proceedings of the 11th International Symposium on Open Collaboration*, 1-8.

Portes, Alejandro. 1998. “Social Capital: Its Origins and Applications in Modern Sociology.” *Annual Review of Sociology*: 24:1: 1-24.

Putnam, Robert D. 2000. *Bowling Alone*. London: Simon & Schuster Ltd.

Putzke, Johannes and Takeda, Hideaki. 2017. “Explizite Neutralität in Wählernetzwerken - Eine Analyse der Requests for Adminship (RfAs) in Wikipedia.“ In *Towards Thought Leadership in Digital Transformation: 13. Internationale Tagung Wirtschaftsinformatik*, 785-798.

van de Rijt, Arnout, Kang, Soong M., Restivo Michael and Patil, Akshay. 2014. “Field Experiments of Success-Breeds-Success Dynamics.” *Proceedings of the National Academy of Sciences*: 111:19: 6934-6939.

Rosenstone, Steven J. and Hansen, John M. 1993. *Mobilization, Participation, and Democracy in America*. New York: Longman Publishing Group.

Schunck, Reinhard. 2013. “Within and Between Estimates in Random-Effects Models: Advantages and Drawbacks of Correlated Random Effects and Hybrid Models.” *The Stata Journal*: 13:1: 65-76.

Schwitter, Nicole. 2023. “Bridging the offline and the online: Twenty years of offline meeting data of the German-language Wikipedia.” *SocArXiv*. doi: 10.31235/osf.io/g96tk.

Shannon, Claude E. 1949. "Communication in the Presence of Noise." *Proceedings of the IRE*: 37:1: 10-21.

Sinclair, Betsy. 2012. *The Social Citizen: Peer Networks and Political Behavior*. Chicago: The University of Chicago Press.

Stadelmann-Steffen, Isabelle and Dermont, Clau. 2016. „How exclusive is assembly democracy? Citizens' assembly and ballot participation compared." *Swiss Political Science Review*: 22:1: 95-122.

Stegbauer, Christian. 2009. *Wikipedia*. Wiesbaden: Springer VS Verlag für Sozialwissenschaften.

Steinsson, Sverrir. 2023. "Rule Ambiguity, Institutional Clashes, and Population Loss: How Wikipedia Became the Last Good Place on the Internet." *American Political Science Review*: 1-17.

Turek, Piotr, Spychała, Justyna, Wierzbicki, Adam and Gackowski, Piotr. 2011. "Social mechanism of granting trust basing on Polish Wikipedia requests for adminship." In *Lecture Notes in Computer Science*, 212-225.

Unt, Taavi, Solvak, Mihkel and Vassil, Kristjan. 2017. "Does internet voting make elections less social? Group voting patterns in Estonian e-voting log files (2013-2015)." *PLoS ONE*: 12:5: e0177864.

Verba, Sidney, Scholzman, Kay L. and Brady, Henry. 1995. *Voice and equality*. Cambridge, MA: Harvard University Press.

Wooldridge, Jeffrey M. 2010. *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.

Supplementary Material: If I know you offline, I will vote for you online?

The role of offline ties in an online public election

5th June 2023

Contents

A	Descriptive Information	2
B	Regression Models	3
B.1	Running for Administrator	3
B.1.1	Bivariate LPMs	3
B.1.2	REWB LPM	4
B.1.3	REWB GLM	5
B.1.4	FE LPM	6
B.1.5	FE GLM	7
B.2	Winning Elections	8
B.2.1	Bivariate LPMs	8
B.2.2	LPM	9
B.2.3	GLM	10
B.3	Voting in Elections	11
B.3.1	Bivariate LPMs	11
B.3.2	REWB LPM	12
B.3.3	REWB GLM	13
B.3.4	FE LPM	14
B.3.5	FE GLM	15
B.4	Voting Supportively in Elections	16
B.4.1	Bivariate LPMs	16
B.4.2	REWB LPM	17
B.4.3	REWB GLM	18
B.4.4	FE LPM	19
B.4.5	FE GLM	20

A Descriptive Information

Table A1: Descriptive information on all variables. Given are mean (standard deviation), minimum / maximum.

Variable	Running as candidate Setup 1	Winning elections Setup 2	Voting in election Setup 3	Voting supportively Setup 4
Number of meetups attended	0.17 (1.15) 0 / 40.3	1.76 (3.64) 0 / 38	0.28 (1.45) 0 / 47	1.75 (3.71) 0 / 46
Number of other users met (log)	0.12 (0.63) 0 / 5.56			
Met candidate			0.24%	3.41%
Proportion of voters met		2.52 (4.85) 0 / 41.67	0.21 (1.29) 0 / 80	1.71 (3.63) 0 / 80
Proportion of pro-voters met			0.22 (1.50) 0 / 100	1.86 (4.13) 0 / 100
Proportion of anti-voters met			0.15 (1.33) 0 / 100	1.10 (3.57) 0 / 100
Eigenvector centrality meetup network	0.0053 (0.045) 0 / 1	0.098 (0.22) 0 / 1	0.012 (0.076) 0 / 1	0.087 (0.21) 0 / 1
Number of other users collaborated with (log)	2.56 (1.74) 0 / 8.39			
Collaborated with candidate (direct collaboration tie, undirected)			4.97%	31.92%
Proportion of voters collaborated with		37.39 (24.41) 0 / 100	3.95 (9.29) 0 / 100	21.15 (17.34) 0 / 98.82
Proportion of pro-voters collaborated with			3.86 (9.48) 0 / 100	21.09 (17.73) 0 / 100
Proportion of anti-voters collaborated with			3.54 (9.39) 0 / 100	19.29 (18.42) 0 / 100
Eigenvector centrality collaboration network	0.038 (0.067) 0 / 1	0.29 (0.19) 0 / 1	0.045 (0.085) 0 / 1	0.20 (0.15) 0 / 1
Number of other users talked to (log)	0.29 (0.75) 0 / 7.45			
Talked to candidate (direct talk tie, undirected)			0.45%	6.27%
Proportion of voters talked to		7.63 (9.86) 0 / 100	0.38 (1.70) 0 / 100	3.22 (4.46) 0 / 100
Proportion of pro-voters talked to			0.37 (1.93) 0 / 100	3.30 (4.87) 0 / 100
Proportion of anti-voters talked to			0.32 (2.14) 0 / 100	2.90 (6.15) 0 / 100
Eigenvector centrality talk network	0.0055 (0.022) 0 / 0.97	0.12 (0.14) 0 / 1	0.010 (0.037) 0 / 1	0.072 (0.11) 0 / 1
Difference candidate-voter centrality meetup network			0.093 (0.24) -1 / 1	0.052 (0.32) -1 / 1
Difference candidate-voter centrality collaboration network			0.22 (0.19) -1 / 1	0.059 (0.20) -0.99 / 0.90
Difference candidate-voter centrality talk network			0.087 (0.12) -1 / 1	0.036 (0.15) -1 / 1
Number of times reverted others (log)	0.26 (0.75) 0 / 6.41			
Number of times got reverted (log)	0.28 (0.82) 0 / 7.44			
Proportion of voters reverted by candidate		1.54 (3.99) 0 / 100		
Proportion of voters reverted candidate		1.74 (4.32) 0 / 100		
Reverted candidate			0.12%	1.36%
Reverted by candidate			0.15%	1.42%
Number of previous elections candidated	0.018 (0.15) 0 / 4	0.58 (0.99) 0 / 8		
Mainspace edits, two months (log)	3.14 (1.88) 0 / 10.23	5.89 (1.56) 0 / 9.26	2.71 (2.20) 0 / 11.94	5.48 (1.55) 0 / 11.90
Total edits (log)	4.29 (2.66) 0 / 12.29	7.96 (1.55) 1.61 / 11.43	5.38 (2.10) 0 / 12.40	8.16 (1.46) 0.69 / 12.34
Difference candidate-voter total edits (cube-root)			14.35 (11.35) - 62.28 / 45.12	5.71 (19.46) - 59.65 / 45.10
Years since first edit	4.48 (3.61) 0.00024 / 18.72	3.55 (3.42) 0.047 / 16.21	3.71 (2.80) 0.000004 / 18.73	4.62 (3.46) 0.0014 / 17.85
Year of meetup 03-08	29.73%	52.73%	40.38%	31.06%
Year of meetup 09-14	40.38%	32.66%	46.17%	45.50%
Year of meetup 15-20	29.89%	14.61%	13.45%	23.04%
Observations	123012	1191	6791107	183263
Observations realised (dependent variable = 1)	837	718	200852	135230
Number of Groups	27294	756	30004	5022

B Regression Models

B.1 Running for Administrator

B.1.1 Bivariate LPMs

Table A2: Running for administrator, bivariate LPM.

	Model 1	Model 2	Model 3
Intercept	0.0290 (0.0024)***	0.0234 (0.0024)***	0.0278 (0.0024)***
Been at meetings (cm)	0.0030 (0.0011)**		
Been at meetings (cwc)	0.0042 (0.0011)***		
Number of users met (log, cm)		0.0089 (0.0023)***	
Number of users met (log, cwc)		0.0089 (0.0021)***	
Meetup centrality (cm)			0.1784 (0.0428)***
Meetup centrality (cwc)			0.0636 (0.0234)**
AIC	-7306.6411	-7320.0866	-7331.1728
BIC	-7271.1084	-7284.5539	-7295.6401
Log Likelihood	3658.3206	3665.0433	3670.5864
Num. obs.	9014	9014	9014
Num. groups: id	3973	3973	3973
Var: id (Intercept)	0.0098	0.0098	0.0097
Var: Residual	0.0192	0.0192	0.0192

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.1.2 REWB LPM

Table A3: Running for administrator, main LPM.

	Empty model	Model 1	Model 2	Model 3	Full model
Intercept	0.0341 (0.0023)***	0.1388 (0.0100)*** -0.0010 (0.0007) 0.0007 (0.0010)	0.1376 (0.0101)***	0.1393 (0.0101)***	0.1364 (0.0100)*** -0.0003 (0.0013) -0.0002 (0.0013) 0.0000 (0.0030) 0.0060 (0.0024)* -0.0274 (0.0424) -0.0311 (0.0265) 0.0327 (0.0048)*** 0.0012 (0.0041) 0.2068 (0.0929)* 0.3170 (0.0953)*** 0.0315 (0.0060)*** 0.0089 (0.0041)* 0.4700 (0.2007)* 0.7187 (0.1943)*** -0.0021 (0.0033) -0.0116 (0.0033)*** -0.0382 (0.0024)*** 0.0106 (0.0015)*** -0.0193 (0.0074)*** 0.0017 (0.0033) -0.0016 (0.0057) 0.0010 (0.0028) -0.0007 (0.0009) 0.0026 (0.0008)*** 0.1279 (0.0195)*** -0.0400 (0.0065)*** -0.0676 (0.0082)***
Been at meetings (cm)					
Been at meetings (cwc)					
Number of users met (log, cm)					
Number of users met (log, cwc)			-0.0020 (0.0015) 0.0040 (0.0018)*		
Meetup centrality (cm)				-0.0312 (0.0257) 0.0015 (0.0221)	
Meetup centrality (cwc)					
Number of users collaborated with (log, cm)		0.0321 (0.0048)*** 0.0010 (0.0041) 0.2111 (0.0930)* 0.3200 (0.0953)*** 0.0316 (0.0061)*** 0.0082 (0.0041)* 0.4556 (0.2027)* 0.7258 (0.1942)***	0.0322 (0.0048)*** 0.0006 (0.0040) 0.2071 (0.0928)* 0.3204 (0.0954)*** 0.0317 (0.0060)*** 0.0085 (0.0041)* 0.4528 (0.2032)* 0.7169 (0.1955)***	0.0323 (0.0048)*** 0.0015 (0.0040) 0.2110 (0.0930)* 0.3171 (0.0953)*** 0.0313 (0.0060)*** 0.0084 (0.0041)* 0.4696 (0.2017)* 0.7307 (0.1947)***	
Number of users collaborated with (log, cwc)					
Collaboration centrality (cm)					
Collaboration centrality (cwc)					
Number of users talked to (log, cm)					
Number of users talked to (log, cwc)					
Talk centrality (cm)					
Talk centrality (cwc)					
Mainspace edits 2 months before (log, cm)		-0.0017 (0.0033) -0.0114 (0.0033)*** -0.0383 (0.0025)*** 0.0105 (0.0015)*** -0.0193 (0.0074)*** 0.0017 (0.0033) -0.0017 (0.0058) 0.0011 (0.0028) -0.0006 (0.0008) 0.0025 (0.0008)*** 0.1281 (0.0196)*** -0.0394 (0.0065)*** -0.0677 (0.0082)***	-0.0017 (0.0033) -0.0112 (0.0033)*** -0.0383 (0.0024)*** 0.0103 (0.0014)*** -0.0189 (0.0074)* 0.0016 (0.0033) -0.0018 (0.0058) 0.0010 (0.0028) -0.0007 (0.0009) 0.0026 (0.0008)*** 0.1277 (0.0195)*** -0.0391 (0.0065)*** -0.0671 (0.0082)***	-0.0020 (0.0033) -0.0116 (0.0033)*** -0.0383 (0.0025)*** 0.0107 (0.0014)*** -0.0193 (0.0073)*** 0.0017 (0.0033) -0.0016 (0.0058) 0.0011 (0.0028) -0.0006 (0.0009) 0.0025 (0.0008)*** 0.1283 (0.0195)*** -0.0395 (0.0065)*** -0.0677 (0.0082)***	
Mainspace edits 2 months before (log, cwc)					
Total edits up to election (log, cm)					
Total edits up to election (log, cwc)					
Number of times reverted others (log, cm)					
Number of times reverted others (log, cwc)					
Number of times got reverted (log, cm)					
Number of times got reverted (log, cwc)					
Years since first edit (cm)					
Years since first edit (cwc)					
Number of previous elections ran					
Year of election: 09-14 (Ref.: 03-08)					
Year of election: 15-20 (Ref.: 03-08)					
AIC	-7295.1333	-9888.1289	-9896.4509	-9900.8605	-9858.7617
BIC	-7273.8137	-9703.3590	-9711.6810	-9716.0906	-9645.5657
Log Likelihood	3650.5667	4970.0645	4974.2254	4976.4303	4959.3809
Num. obs.	9014	9014	9014	9014	9014
Num. groups: id	3973	3973	3973	3973	3973
Var: id (Intercept)	0.0097	0.0017	0.0017	0.0017	0.0017
Var: Residual	0.0194	0.0175	0.0175	0.0175	0.0175

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.1.3 REWB GLM

Table A4: Running for administrator, GLM.

	Empty model	Model 1	Model 2	Model 3	Full model
Intercept	-10.4815 (0.3607)***	-8.8222 (1.2227)***	-8.8366 (1.2179)***	-8.8538 (1.2189)***	-8.8339 (1.2283)***
Been at meetings (cm)		-0.0504 (0.0482)			-0.1564 (0.0871)+
Been at meetings (cwc)		0.0796 (0.0438)+			0.1081 (0.0567)+
Number of users met (log, cm)			-0.0064 (0.0894)		0.0508 (0.1695)
Number of users met (log, cwc)			0.1109 (0.0895)		0.1235 (0.1251)
Meetup centrality (cm)				1.1479 (0.9777)	2.8389 (1.4366)*
Meetup centrality (cwc)				-0.4075 (0.7603)	-2.2360 (1.0418)*
Number of users collaborated with (log, cm)		2.1141 (0.4036)***	2.0846 (0.4010)***	2.0879 (0.4005)***	2.1179 (0.4046)***
Number of users collaborated with (log, cwc)		1.6278 (0.5232)**	1.6316 (0.5216)**	1.6770 (0.5226)**	1.6121 (0.5238)**
Collaboration centrality (cm)		-10.9465 (2.4021)***	-10.8634 (2.3979)***	-10.9010 (2.4012)***	-11.1452 (2.4338)***
Collaboration centrality (cwc)		2.3266 (2.5998)	2.1137 (2.5978)	2.2417 (2.5885)	2.7412 (2.6179)
Number of users talked to (log, cm)		0.5699 (0.1776)**	0.5684 (0.1776)**	0.5483 (0.1758)**	0.5896 (0.1784)***
Number of users talked to (log, cwc)		0.8320 (0.1898)***	0.8440 (0.1900)***	0.8652 (0.1900)***	0.8522 (0.1913)***
Talk centrality (cm)		3.7183 (2.8290)	3.3027 (2.7956)	2.6317 (2.8261)	3.3587 (2.8822)
Talk centrality (cwc)		-2.2392 (2.9730)	-1.9068 (2.9546)	-1.8161 (2.9578)	-2.7272 (3.0028)
Mainspace edits 2 months before (log, cm)		-0.0845 (0.2187)	-0.0743 (0.2175)	-0.0678 (0.2174)	-0.0870 (0.2202)
Mainspace edits 2 months before (log, cwc)		-1.0269 (0.3595)**	-1.0218 (0.3584)**	-1.0487 (0.3597)**	-1.0506 (0.3645)**
Total edits up to election (log, cm)		-0.4966 (0.0845)***	-0.4923 (0.0844)***	-0.4946 (0.0839)***	-0.5044 (0.0858)***
Total edits up to election (log, cwc)		0.3807 (0.1080)***	0.3915 (0.1075)***	0.4184 (0.1087)***	0.3892 (0.1103)***
Number of times reverted others (log, cm)		-0.0495 (0.2400)	-0.0306 (0.2398)	-0.0151 (0.2409)	-0.0267 (0.2434)
Number of times reverted others (log, cwc)		0.0511 (0.1610)	0.0548 (0.1613)	0.0486 (0.1610)	0.0732 (0.1612)
Number of times got reverted (log, cm)		-0.2094 (0.1611)	-0.2224 (0.1619)	-0.2261 (0.1620)	-0.2418 (0.1649)
Number of times got reverted (log, cwc)		0.0777 (0.1417)	0.0755 (0.1420)	0.0784 (0.1422)	0.0769 (0.1412)
Years since first edit (cm)		-0.2922 (0.0683)***	-0.2940 (0.0684)***	-0.2980 (0.0682)***	-0.2980 (0.0687)***
Years since first edit (cwc)		-0.0116 (0.0716)	-0.0129 (0.0715)	-0.0116 (0.0717)	-0.0213 (0.0726)
Number of previous elections ran		1.6751 (0.1529)***	1.6744 (0.1536)***	1.6949 (0.1533)***	1.6937 (0.1535)***
Year of election: 09-14 (Ref.: 03-08)		-0.1270 (0.2522)	-0.1348 (0.2519)	-0.1179 (0.2538)	-0.1512 (0.2564)
Year of election: 15-20 (Ref.: 03-08)		-1.5122 (0.3607)***	-1.5109 (0.3613)***	-1.5156 (0.3600)***	-1.5116 (0.3601)***
AIC	1620.2350	1004.2483	1005.8203	1006.1703	1005.3134
BIC	1634.4480	1181.9117	1183.4837	1183.8337	1211.4029
Log Likelihood	-808.1175	-477.1241	-477.9102	-478.0852	-473.6567
Num. obs.	9014	9014	9014	9014	9014
Num. groups: id	3973	3973	3973	3973	3973
Var: id (Intercept)	165.7562	0.0000	0.0000	0.0000	0.0000

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

Table A5: Running for administrator, FE LPM.

	Model 1	Model 2	Model 3	Full model
Been at meetings	0.0005 (0.0011)			0.0006 (0.0013)
Number of users met (log)		0.0010 (0.0024)		0.0009 (0.0033)
Meetup centrality			-0.0004 (0.0225)	-0.0112 (0.0271)
Number of users collaborated with (log)	-0.0044 (0.0049)	-0.0041 (0.0049)	-0.0039 (0.0049)	-0.0043 (0.0049)
Collaboration centrality	0.2909 (0.1161)*	0.2894 (0.1159)*	0.2895 (0.1160)*	0.2905 (0.1159)*
Number of users talked to (log)	0.0086 (0.0048)+	0.0087 (0.0047)+	0.0087 (0.0047)+	0.0087 (0.0048)+
Talk centrality	0.4939 (0.2363)*	0.4965 (0.2382)*	0.5004 (0.2369)*	0.4941 (0.2367)*
Mainstage edits 2 months before (log)	-0.0042 (0.0040)	-0.0043 (0.0040)	-0.0045 (0.0040)	-0.0043 (0.0040)
Total edits up to election (log)	0.0062 (0.0022)**	0.0063 (0.0022)**	0.0064 (0.0022)**	0.0062 (0.0022)**
Number of times reverted others (log)	0.0004 (0.0039)	0.0004 (0.0039)	0.0004 (0.0039)	0.0004 (0.0039)
Number of times got reverted (log)	-0.0021 (0.0033)	-0.0022 (0.0033)	-0.0021 (0.0033)	-0.0022 (0.0033)
Years since first edit	-0.0019 (0.0012)	-0.0019 (0.0012)	-0.0019 (0.0012)	-0.0018 (0.0012)
Number of previous elections ran	0.0661 (0.0554)	0.0661 (0.0553)	0.0668 (0.0551)	0.0663 (0.0553)
Year of election: 09-14 (Ref.: 03-08)	0.0143 (0.0107)	0.0143 (0.0107)	0.0143 (0.0107)	0.0137 (0.0106)
Year of election: 15-20 (Ref.: 03-08)	0.0269 (0.0148)+	0.0269 (0.0148)+	0.0269 (0.0148)+	0.0265 (0.0148)+
R ²	0.03	0.03	0.03	0.03
Adj. R ²	-0.73	-0.73	-0.73	-0.73
Num. obs.	9014	9014	9014	9014

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.1.5 FE GLM

Table A6: Running for administrator, FE GLM.

	Model 1	Model 2	Model 3	Full model
Been at meetings	0.0468 (0.0403)			0.0256 (0.0608)
Number of users met (log)		0.1291 (0.0758) ⁺		0.1953 (0.1160) ⁺
Meetup centrality			0.1270 (0.6844)	-1.3588 (0.9833)
Number of users collaborated with (log)	1.9623 (0.2928) ^{***}	1.9614 (0.2927) ^{***}	1.9665 (0.2930) ^{***}	1.9774 (0.2933) ^{***}
Collaboration centrality	0.8647 (1.4808)	0.8601 (1.4797)	0.7950 (1.4822)	0.8579 (1.4805)
Number of users talked to (log)	0.5794 (0.1267) ^{***}	0.5743 (0.1268) ^{***}	0.5871 (0.1268) ^{***}	0.5793 (0.1270) ^{***}
Talk centrality	9.9339 (2.0739) ^{***}	9.8622 (2.0693) ^{***}	10.0599 (2.0856) ^{***}	9.5771 (2.0844) ^{***}
Mainspace edits 2 months before (log)	-0.2481 (0.2087)	-0.2527 (0.2086)	-0.2419 (0.2085)	-0.2617 (0.2090)
Total edits up to election (log)	0.3881 (0.0476) ^{***}	0.3817 (0.0478) ^{***}	0.3943 (0.0476) ^{***}	0.3810 (0.0479) ^{***}
Number of times reverted others (log)	-0.2508 (0.1055) [*]	-0.2477 (0.1056) [*]	-0.2522 (0.1055) [*]	-0.2446 (0.1057) [*]
Number of times got reverted (log)	0.1701 (0.0928) ⁺	0.1672 (0.0927) ⁺	0.1694 (0.0927) ⁺	0.1681 (0.0928) ⁺
Years since first edit	-0.3046 (0.0693) ^{***}	-0.3009 (0.0692) ^{***}	-0.3000 (0.0688) ^{***}	-0.3020 (0.0695) ^{***}
Number of previous elections ran	0.6350 (0.2049) ^{**}	0.6304 (0.2050) ^{**}	0.6402 (0.2048) ^{**}	0.6290 (0.2050) ^{**}
Year of election: 09-14 (Ref.: 03-08)	0.2525 (0.2769)	0.2058 (0.2787)	0.2539 (0.2764)	0.1740 (0.2811)
Year of election: 15-20 (Ref.: 03-08)	1.9051 (0.5605) ^{***}	1.8562 (0.5613) ^{***}	1.9045 (0.5590) ^{***}	1.8470 (0.5629) ^{**}
Log Likelihood	-986.8093	-986.0222	-987.4789	-985.0738
Deviance	1973.6186	1972.0445	1974.9577	1970.1475
Num. obs.	3472	3472	3472	3472

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; ⁺ $p < 0.1$.

B.2 Winning Elections

B.2.1 Bivariate LPMs

Table A7: Winning elections, bivariate linear regression model.

	Model 1	Model 2	Model 3
Intercept	0.5768 (0.0182)***	0.5579 (0.0184)***	0.5748 (0.0175)***
Been at meetings	0.0181 (0.0047)***		
Proportion of voters met		0.0202 (0.0034)***	
Meetup centrality			0.3456 (0.0590)***
R ²	0.0185	0.0406	0.0254
Adj. R ²	0.0176	0.0398	0.0246
Num. obs.	1179	1179	1179

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

Table A8: Winning elections, main LPM.

	Model 1	Model 2	Model 3	Full model
Intercept	-0.0670 (0.0997)	-0.0556 (0.0973)	-0.0738 (0.0972)	-0.0773 (0.0992)
Been at meetings	0.0117 (0.0047)*			-0.0077 (0.0059)
Proportion of voters met		0.0168 (0.0035)***		0.0274 (0.0085)**
Meetup centrality			0.2733 (0.0664)***	-0.1693 (0.1364)
Proportion of voters collaborated with	0.0013 (0.0015)	0.0011 (0.0015)	0.0011 (0.0015)	0.0010 (0.0015)
Collaboration centrality	0.2860 (0.1849)	0.3364 (0.1826)+	0.3017 (0.1842)	0.3480 (0.1831)+
Proportion of voters talked to	0.0011 (0.0019)	0.0009 (0.0018)	0.0012 (0.0019)	0.0009 (0.0018)
Talk centrality	-0.2334 (0.1356)+	-0.2386 (0.1343)+	-0.2538 (0.1349)+	-0.2094 (0.1341)
Mainspace edits 2 months before (log)	0.0417 (0.0138)**	0.0424 (0.0135)**	0.0442 (0.0135)**	0.0430 (0.0135)**
Total edits up to election (log)	0.0352 (0.0154)*	0.0279 (0.0150)+	0.0333 (0.0150)*	0.0296 (0.0151)+
Proportion of voters reverted candidate	-0.0077 (0.0055)	-0.0072 (0.0054)	-0.0076 (0.0055)	-0.0071 (0.0054)
Proportion of voters reverted by candidate	-0.0043 (0.0046)	-0.0043 (0.0046)	-0.0043 (0.0046)	-0.0044 (0.0046)
Years since first edit	0.0463 (0.0075)***	0.0471 (0.0074)***	0.0464 (0.0073)***	0.0476 (0.0074)***
Number of previous elections ran	-0.0280 (0.0271)	-0.0292 (0.0261)	-0.0314 (0.0265)	-0.0243 (0.0272)
Year of election: 09-14 (Ref.: 03-08)	-0.1735 (0.0409)***	-0.1480 (0.0406)***	-0.1572 (0.0409)***	-0.1467 (0.0404)***
Year of election: 15-20 (Ref.: 03-08)	-0.3891 (0.0575)***	-0.3631 (0.0564)***	-0.3823 (0.0561)***	-0.3572 (0.0569)***
R ²	0.13	0.15	0.14	0.15
Adj. R ²	0.12	0.14	0.13	0.14
Num. obs.	1164	1164	1164	1164

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.2.3 GLM

Table A9: Winning elections, GLM.

	Model 1	Model 2	Model 3	Full model
Intercept	-2.6266 (0.4936)***	-2.6024 (0.4900)***	-2.6977 (0.4861)***	-2.7099 (0.5040)***
Been at meetings	0.0652 (0.0298)*			-0.0566 (0.0362)
Proportion of voters met		0.1010 (0.0263)***		0.1862 (0.0682)**
Meetup centrality			1.5578 (0.4460)***	-1.1819 (0.8827)
Proportion of voters collaborated with	0.0054 (0.0071)	0.0046 (0.0071)	0.0046 (0.0072)	0.0042 (0.0072)
Collaboration centrality	1.5423 (0.9072)+	1.7846 (0.9064)*	1.6235 (0.9075)+	1.8404 (0.9180)*
Proportion of voters talked to	0.0055 (0.0097)	0.0050 (0.0094)	0.0058 (0.0096)	0.0051 (0.0094)
Talk centrality	-1.1758 (0.6511)+	-1.2645 (0.6615)+	-1.2842 (0.6608)+	-1.1507 (0.6548)+
Main space edits 2 months before (log)	0.1872 (0.0670)**	0.1940 (0.0668)**	0.2008 (0.0664)**	0.1964 (0.0669)**
Total edits up to election (log)	0.1574 (0.0742)*	0.1237 (0.0726)+	0.1528 (0.0720)*	0.1305 (0.0735)+
Proportion of voters reverted candidate	-0.0379 (0.0378)	-0.0355 (0.0366)	-0.0377 (0.0382)	-0.0353 (0.0365)
Proportion of voters reverted by candidate	-0.0196 (0.0206)	-0.0197 (0.0207)	-0.0199 (0.0212)	-0.0202 (0.0214)
Years since first edit	0.2248 (0.0411)***	0.2338 (0.0419)***	0.2260 (0.0405)***	0.2371 (0.0417)***
Number of previous elections ran	-0.1357 (0.1329)	-0.1500 (0.1303)	-0.1549 (0.1314)	-0.1264 (0.1339)
Year of election: 09-14 (Ref.: 03-08)	-0.8170 (0.1951)***	-0.7291 (0.1969)***	-0.7545 (0.1963)***	-0.7201 (0.1968)***
Year of election: 15-20 (Ref.: 03-08)	-1.8602 (0.3083)***	-1.7899 (0.3063)***	-1.8534 (0.3016)***	-1.7492 (0.3061)***
AIC	1398.94	1428.15	1416.71	1396.37
BIC	1469.77	1498.99	1487.55	1477.33
Log Likelihood	-685.47	-700.08	-694.36	-682.19
Deviance	1370.94	1400.15	1388.71	1364.37
Num. obs.	1164	1164	1164	1164

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.3 Voting in Elections

B.3.1 Bivariate LPMs

Table A10: Voting in elections, bivariate LPM.

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	0.0412 (0.0013)***	0.0422 (0.0013)***	0.0398 (0.0013)***	0.0423 (0.0013)***	0.0983 (0.0037)***
Met candidate (cm)	3.1028 (0.1908)***				
Met candidate (cwc)	0.2050 (0.0063)***				
Been at meetings (cm)		0.0209 (0.0017)***			
Been at meetings (cwc)		0.0070 (0.0009)***			
Proportion of voters met (log, cm)			0.0286 (0.0018)***		
Proportion of voters met (log, cwc)			0.0108 (0.0007)***		
Meetup centrality (cm)				0.5408 (0.0372)***	
Meetup centrality (cwc)				0.1007 (0.0128)***	
Difference candidate-voter meetup centrality (cm)					-0.5037 (0.0340)***
Difference candidate-voter meetup centrality (cwc)					0.0356 (0.0034)***
AIC	267216.4453	273549.4169	268004.9007	273900.8255	274994.6841
BIC	267275.5061	273608.4778	268063.9616	273959.8864	275053.7449
Log Likelihood	-133603.2226	-136769.7085	-133997.4504	-136945.4128	-137492.3420
Num. obs.	996668	996668	996668	996668	996668
Num. groups: id	13979	13979	13979	13979	13979
Var: id (Intercept)	0.0155	0.0160	0.0156	0.0157	0.0158
Var: Residual	0.0747	0.0752	0.0748	0.0752	0.0753

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.3.2 REWB LPM

Table A11: Voting in elections, main LPM.

	Empty model	Model 1	Model 2	Model 3	Model 4	Full model
Intercept	0.0507 (0.0013)***			0.0108 (0.0250)	0.0241 (0.0290)	0.0286 (0.0288)
Met candidate (cm)		0.0067 (0.0249)	0.0093 (0.0249)			1.5343 (0.4252)***
Met candidate (cwc)		0.7298 (0.1737)***				0.1229 (0.0052)***
Been at meetings (cm)		0.1569 (0.0057)				-0.0002 (0.0018)
Been at meetings (cwc)			0.0043 (0.1737)			0.0010 (0.0009)
Proportion of voters met (log, cm)			0.0033 (0.0057)	0.0064 (0.0015)***		0.0104 (0.0031)***
Proportion of voters met (log, cwc)				0.0068 (0.0006)		0.0097 (0.0006)***
Meetup centrality (cm)						-0.4686 (0.1130)***
Meetup centrality (cwc)						-0.0917 (0.0138)***
Difference candidate-voter meetup centrality (cm)						-0.1226 (0.0769)
Difference candidate-voter meetup centrality (cwc)						0.0274 (0.0017)***
Collaborated with the candidate (cm)						0.0806 (0.0253)**
Collaborated with the candidate (cwc)						0.0580 (0.0017)***
Proportion of voters collaborated with (log, cm)						0.0002 (0.0008)
Proportion of voters collaborated with (log, cwc)						-0.0006 (0.0002)***
Collaboration centrality (cm)						-0.0645 (0.1142)
Collaboration centrality (cwc)						0.3342 (0.0344)***
Difference candidate-voter collaboration centrality (cm)						-0.2431 (0.0517)***
Difference candidate-voter collaboration centrality (cwc)						-0.0119 (0.0033)***
Talked to candidate (log, cm)						0.2823 (0.1166)
Talked to candidate (log, cwc)						0.1295 (0.0044)***
Proportion of voters talked to (log, cm)						0.0154 (0.0042)***
Proportion of voters talked to (log, cwc)						0.0155 (0.0011)***
Talk centrality (cm)						0.4364 (0.2147)*
Talk centrality (cwc)						-0.1526 (0.0249)***
Difference candidate-voter talk centrality (cm)						-0.2672 (0.0859)***
Difference candidate-voter talk centrality (cwc)						0.0387 (0.0041)***
Mainspace edits 2 months before (log, cm)						-0.0006 (0.0015)
Mainspace edits 2 months before (log, cwc)						0.0090 (0.0010)***
Total edits up to election (log, cm)						0.0114 (0.0012)***
Total edits up to election (log, cwc)						0.0330 (0.0030)***
Difference candidate-voter in total edits (cm)						-0.0002 (0.0006)
Difference candidate-voter in total edits (cwc)						0.0016 (0.0001)***
Years since first edit (cm)						-0.0012 (0.0007)†
Years since first edit (cwc)						0.0006 (0.0009)
Was reverted by the candidate (cm)						-0.5616 (0.6977)
Was reverted by the candidate (cwc)						0.0275 (0.0061)***
Reverted the candidate (cm)						2.0016 (0.7866)*
Reverted the candidate (cwc)						0.0395 (0.0066)***
Year of election: 09-14 (Ref.: 03-08)						0.0040 (0.0039)
Year of election: 15-20 (Ref.: 03-08)						0.0173 (0.0059)**
AIC	276580.6492	196920.6263	201747.0845	199052.9392	200409.0899	193614.6842
BIC	276616.0857	197334.0524	202160.5105	199466.3652	200846.1403	194122.6077
Log Likelihood	-138287.3246	-98425.3132	-100838.5422	-99491.4696	-100167.5449	-96764.3421
Num. obs.	996668	996668	996668	996668	996668	996668
Num. groups: id	13979	13979	13979	13979	13979	13979
Var: id (Intercept)	0.0166	0.0107	0.0107	0.0107	0.0107	0.0107
Var: Residual	0.0754	0.0698	0.0701	0.0700	0.0700	0.0696

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$.

B.3.3 REWB GLM

Table A12: Voting in elections, GLM.

	Empty model	Model 1	Model 2	Model 3	Model 4	Full model
Intercept	-7.0767 (0.0748)***	-14.8572 (0.8046)***	-14.5117 (0.8008)***	-14.5775 (0.8032)***	-13.6211 (1.0207)***	-15.2654 (1.0382)***
Met candidate (cm)		21.8553 (2.6949)***				16.7941 (8.5060)*
Met candidate (cwc)		1.2388 (0.0233)***				0.9083 (0.0253)***
Been at meetings (cm)			0.1762 (0.0241)***			0.0741 (0.0377)*
Been at meetings (cwc)			0.0191 (0.0017)***			0.0024 (0.0020)
Proportion of voters met (log, cm)				0.2168 (0.0265)***		0.3142 (0.0694)***
Proportion of voters met (log, cwc)				0.0548 (0.0014)***		0.0925 (0.0024)***
Meetup centrality (cm)					0.8446 (3.8761)	-5.2343 (4.3315)
Meetup centrality (cwc)					0.9436 (0.0303)***	-0.8558 (0.0488)***
Difference candidate-voter meetup centrality (cm)					-3.3499 (3.8552)	0.5610 (3.8936)
Difference candidate-voter meetup centrality (cwc)					0.6405 (0.0170)***	0.3906 (0.0180)***
Collaborated with the candidate (cm)			2.4717 (0.6408)***	2.4319 (0.6443)***	2.5482 (0.6399)***	2.5035 (0.6473)***
Collaborated with the candidate (cwc)			0.4685 (0.0105)***	0.4693 (0.0105)***	0.4610 (0.0105)***	0.4471 (0.0106)***
Proportion of voters collaborated with (log, cm)			0.0708 (0.0125)***	0.0687 (0.0126)***	0.0847 (0.0125)***	0.0704 (0.0127)***
Proportion of voters collaborated with (log, cwc)			-0.0060 (0.0008)***	-0.0078 (0.0008)***	-0.0041 (0.0008)***	-0.0069 (0.0008)***
Proportion of voters collaborated with (log, cwc)			-7.4725 (2.2550)***	-6.9864 (2.2654)**	-8.0444 (2.3363)***	-7.3743 (2.3499)**
Collaboration centrality (cm)		-7.4189 (2.2573)**	1.4334 (0.1071)***	1.6264 (0.1076)***	1.4015 (0.1074)***	1.7424 (0.1085)***
Collaboration centrality (cwc)		1.5795 (0.1075)***	-3.8924 (1.6623)*	-4.3516 (1.6675)**	-3.4174 (1.7781)+	-3.8609 (1.7875)*
Difference candidate-voter collaboration centrality (cm)		-4.1591 (1.6619)*	-0.1629 (0.0309)***	-0.1514 (0.0310)***	-0.0340 (0.0311)	0.0148 (0.0312)
Difference candidate-voter collaboration centrality (cwc)		-1.1430 (1.4763)	0.6203 (1.4047)	-2.1138 (1.5486)	-0.3784 (1.4579)	-0.3356 (1.4490)
Talked to candidate (log, cm)		0.7413 (0.0212)***	0.8072 (0.0210)***	0.7971 (0.0211)***	0.7989 (0.0211)***	0.7536 (0.0213)***
Talked to candidate (log, cwc)		0.0598 (0.0563)	0.0586 (0.0562)	0.0720 (0.0566)	-0.0116 (0.0565)	0.0852 (0.0568)
Proportion of voters talked to (log, cm)		0.1285 (0.0021)***	0.1279 (0.0021)***	0.1232 (0.0021)***	0.1269 (0.0021)***	0.1210 (0.0021)***
Proportion of voters talked to (log, cwc)		11.2598 (3.8512)***	8.5093 (3.8492)*	7.9161 (3.8619)*	7.9941 (5.1126)	8.0436 (5.1396)
Talk centrality (cm)		-1.1805 (0.0725)***	-1.1310 (0.0722)***	-1.0596 (0.0724)**	-1.2867 (0.0725)***	-1.0771 (0.0732)***
Talk centrality (cwc)		-4.1964 (3.2587)	-6.2553 (3.2555)+	-6.7348 (3.2673)*	-9.2478 (4.6496)*	-5.3455 (4.6987)
Difference candidate-voter talk centrality (cm)		0.7549 (0.0388)***	0.8703 (0.0385)***	0.8539 (0.0386)***	0.6423 (0.0391)***	0.6736 (0.0393)***
Difference candidate-voter talk centrality (cwc)		0.1217 (0.0527)*	0.1303 (0.0526)*	0.0936 (0.0526)+	0.1408 (0.0530)**	0.1362 (0.0532)*
Mainstage edits 2 months before (log, cm)		0.3549 (0.0056)***	0.3499 (0.0056)***	0.3525 (0.0056)***	0.3525 (0.0056)***	0.3551 (0.0056)***
Mainstage edits 2 months before (log, cwc)		1.2232 (0.0080)***	1.2112 (0.0677)**	1.2383 (0.0681)***	1.1454 (0.0680)***	1.2572 (0.0691)***
Total edits up to election (log, cm)		0.4925 (0.0102)***	0.5021 (0.0105)***	0.4481 (0.0103)***	0.4785 (0.0104)***	0.4619 (0.0106)***
Total edits up to election (log, cwc)		0.0829 (0.0117)***	0.0752 (0.0117)***	0.0777 (0.0117)***	0.0700 (0.0118)***	0.0852 (0.0118)***
Difference candidate-voter in total edits (cm)		0.0193 (0.0003)***	0.0203 (0.0003)***	0.0205 (0.0003)***	0.0180 (0.0003)***	0.0184 (0.0003)***
Difference candidate-voter in total edits (cwc)		-0.0954 (0.0256)***	-0.0977 (0.0256)***	-0.0803 (0.0255)**	-0.0922 (0.0259)***	-0.0897 (0.0259)***
Years since first edit (cm)		-0.0155 (0.0039)***	-0.0162 (0.0039)***	-0.0016 (0.0039)	-0.0160 (0.0039)***	-0.0021 (0.0039)
Years since first edit (cwc)		-42.8025 (9.9219)***	-36.9079 (9.8913)***	-31.4133 (9.9161)**	-31.8035 (9.9921)**	-38.1711 (9.9768)***
Was reverted by the candidate (cm)		0.1556 (0.0401)***	0.1283 (0.0400)***	0.1529 (0.0400)***	0.1839 (0.0400)***	0.1542 (0.0403)***
Was reverted by the candidate (cwc)		43.9493 (10.1093)***	41.5774 (10.0820)***	30.2271 (10.1333)**	34.8049 (10.2191)***	38.9926 (10.1763)***
Reverted the candidate (cm)		0.1781 (0.0400)***	0.1809 (0.0399)***	0.1948 (0.0400)***	0.1894 (0.0399)***	0.2032 (0.0402)***
Reverted the candidate (cwc)		0.0311 (0.0159)+	0.0031 (0.0158)	0.0546 (0.0159)***	0.0952 (0.0160)***	0.0668 (0.0161)***
Year of election: 09-14 (Ref.: 03-08)		0.3007 (0.0303)***	0.2878 (0.0302)***	0.2940 (0.0302)***	0.3404 (0.0302)***	0.2854 (0.0304)***
Year of election: 15-20 (Ref.: 03-08)		439151.1650	437681.0211	437720.7287	437720.7287	434265.8608
AIC	48910.6091	436430.3346	439151.1650	437681.0211	437720.7287	434265.8608
BIC	48934.2334	436831.9485	439552.7789	438082.6350	438145.9669	434761.9721
Log Likelihood	-244953.3045	-218181.1673	-219541.5825	-218806.5105	-218824.3643	-217090.9304
Num. obs.	996668	996668	996668	996668	996668	996668
Num. groups: id	13979	13979	13979	13979	13979	13979
Var. id (Intercept)	18.1338	6.1644	6.1491	6.1564	6.2805	6.2045

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$.

B.3.4 FE LPM

Table A13: Voting supportively, FE LPM.

	Model 1	Model 2	Model 3	Model 4	Full model
Met candidate	0.1567 (0.0057)***				0.1228 (0.0052)***
Been at meetings		0.0032 (0.0008)***	0.0068 (0.0006)***		0.0009 (0.0009)
Proportion of voters met (log)				0.0905 (0.0116)***	0.0098 (0.0006)***
Meetup centrality				0.0473 (0.0020)***	-0.0923 (0.0138)***
Difference candidate-voter meetup centrality				0.0578 (0.0017)***	0.0273 (0.0017)***
Collaborated with the candidate		0.0578 (0.0017)***	0.0574 (0.0017)***	0.0578 (0.0017)***	0.0551 (0.0017)***
Proportion of voters collaborated with (log)		-0.0008 (0.0002)***	-0.0010 (0.0002)***	-0.0008 (0.0002)***	-0.0010 (0.0002)***
Collaboration centrality		0.3479 (0.0346)***	0.3675 (0.0347)***	0.3449 (0.0347)***	0.3753 (0.0346)***
Difference candidate-voter collaboration centrality		-0.0207 (0.0034)***	-0.0204 (0.0034)***	-0.0156 (0.0034)***	-0.0120 (0.0033)***
Talked to candidate (log)		0.1397 (0.0045)***	0.1384 (0.0045)***	0.1384 (0.0045)***	0.1293 (0.0044)***
Proportion of voters talked to (log)		0.0165 (0.0011)***	0.0158 (0.0011)***	0.0164 (0.0011)***	0.0155 (0.0011)***
Talk centrality		-0.1687 (0.0251)***	-0.1534 (0.0247)***	-0.1776 (0.0249)***	-0.1500 (0.0250)***
Difference candidate-voter talk centrality		0.0449 (0.0041)***	0.0521 (0.0042)***	0.0365 (0.0041)***	0.0390 (0.0041)***
Mainstage edits 2 months before (log)		0.0098 (0.0010)***	0.0096 (0.0010)***	0.0098 (0.0010)***	0.0095 (0.0010)***
Total edits up to election (log)		0.0376 (0.0032)***	0.0331 (0.0031)***	0.0358 (0.0031)***	0.0333 (0.0031)***
Difference candidate-voter in total edits		0.0017 (0.0001)***	0.0018 (0.0001)***	0.0016 (0.0001)***	0.0016 (0.0001)***
Years since first edit		-0.0006 (0.0010)	0.0008 (0.0009)	-0.0004 (0.0009)	0.0006 (0.0009)
Was reverted by the candidate		0.0277 (0.0061)***	0.0282 (0.0061)***	0.0276 (0.0061)***	0.0281 (0.0061)***
Reverted the candidate		0.0406 (0.0066)***	0.0401 (0.0067)***	0.0411 (0.0066)***	0.0398 (0.0066)***
Year of election: 09-14 (Ref.: 03-08)		0.0018 (0.0040)	0.0029 (0.0040)	0.0057 (0.0040)	0.0038 (0.0040)
Year of election: 15-20 (Ref.: 03-08)		0.0164 (0.0061)**	0.0154 (0.0061)*	0.0183 (0.0061)**	0.0155 (0.0061)*
R ²	0.07	0.07	0.07	0.07	0.08
Adj. R ²	0.06	0.06	0.06	0.06	0.06
Num. obs.	996668	996668	996668	996668	996668

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.3.5 FE GLM

Table A14: Voting supportively, FE GLM.

	Model 1	Model 2	Model 3	Model 4	Full model
Met candidate	1.2667 (0.0235)***				0.9364 (0.0250)***
Been at meetings		0.0212 (0.0015)***			0.0023 (0.0019)
Proportion of voters met (log)			5.1396 (0.1322)***		8.9714 (0.2428)***
Meetup centrality				0.8152 (0.0268)***	-0.8524 (0.0464)***
Difference candidate-voter meetup centrality				0.5073 (0.0126)***	0.3724 (0.0130)***
Collaborated with the candidate		0.4891 (0.0084)***	0.4884 (0.0085)***	0.4896 (0.0085)***	0.4764 (0.0085)***
Proportion of voters collaborated with (log)		0.0124 (0.0634)	-0.0785 (0.0636)	0.1509 (0.0636)*	-0.0143 (0.0642)
Collaboration centrality		0.4018 (0.0838)***	0.5056 (0.0840)***	0.3414 (0.0840)***	0.5687 (0.0845)***
Difference candidate-voter collaboration centrality		-0.0917 (0.0232)***	-0.0896 (0.0232)***	-0.0245 (0.0233)	0.0055 (0.0233)
Talked to candidate (log)		0.9433 (0.0183)***	0.9379 (0.0183)***	0.9330 (0.0183)***	0.8938 (0.0185)***
Proportion of voters talked to (log)		12.7770 (0.1644)***	12.7948 (0.1643)***	12.7353 (0.1643)***	12.3535 (0.1642)***
Talk centrality		-1.2049 (0.0628)***	-1.1521 (0.0626)***	-1.3314 (0.0628)***	-1.2047 (0.0632)***
Difference candidate-voter talk centrality		0.8789 (0.0282)***	0.9316 (0.0281)***	0.7548 (0.0285)***	0.7776 (0.0286)***
Mainstage edits 2 months before (log)		0.4845 (0.0035)***	0.4837 (0.0035)***	0.4844 (0.0035)***	0.4841 (0.0035)***
Total edits up to election (log)		0.5909 (0.0059)***	0.5609 (0.0060)***	0.5782 (0.0060)***	0.5625 (0.0061)***
Difference candidate-voter in total edits		0.0203 (0.0002)***	0.0210 (0.0002)***	0.0190 (0.0002)***	0.0190 (0.0002)***
Years since first edit		-0.0280 (0.0028)***	-0.0188 (0.0028)***	-0.0285 (0.0028)***	-0.0199 (0.0029)***
Was reverted by the candidate		0.1771 (0.0337)***	0.1773 (0.0336)***	0.1761 (0.0336)***	0.1788 (0.0338)***
Reverted the candidate		0.2182 (0.0345)***	0.2211 (0.0345)***	0.2256 (0.0344)***	0.2201 (0.0346)***
Year of election: 09-14 (Ref.: 03-08)		0.0093 (0.0120)	0.0150 (0.0119)	0.0557 (0.0120)***	0.0360 (0.0121)***
Year of election: 15-20 (Ref.: 03-08)		0.2805 (0.0229)***	0.2760 (0.0228)***	0.3065 (0.0228)***	0.2782 (0.0229)***
Log Likelihood	-389343.0627	-390687.2183	-390027.0893	-389898.2272	-388172.2940
Deviance	778686.1253	781374.4366	780054.1785	779796.4544	776344.5881
Num. obs.	2219322	2219322	2219322	2219322	2219322

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.4 Voting Supportively in Elections

B.4.1 Bivariate LPMs

Table A15: Voting supportively, bivariate LPM.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Intercept	0.7139 (0.0054)***	0.7155 (0.0054)***	0.7065 (0.0055)***	0.7340 (0.0054)***	0.7200 (0.0053)***	0.7536 (0.0046)***
Met candidate (cm)	1.5047 (0.1815)***					
Met candidate (cwc)	0.1418 (0.0065)***					
Been at meetings (cm)		0.0191 (0.0017)***				
Been at meetings (cwc)		-0.0010 (0.0011)				
Proportion of pro voters met (log, cm)			0.0168 (0.0012)***			
Proportion of pro voters met (log, cwc)			0.0123 (0.0008)***			
Proportion of anti voters met (log, cm)				0.0029 (0.0024)		
Proportion of anti voters met (log, cwc)				-0.0197 (0.0011)***		
Meetup centrality (cm)					0.3313 (0.0362)***	
Meetup centrality (cwc)					-0.0012 (0.0128)	
Difference candidate-voter meetup centrality (cm)						-0.3482 (0.0354)***
Difference candidate-voter meetup centrality (cwc)						0.1147 (0.0065)***
AIC	114945.4304	115636.8246	114220.3540	111361.8967	115654.4112	114791.0960
BIC	114993.7202	115685.1144	114268.6438	111410.1865	115702.7010	114839.3858
Log Likelihood	-57467.7152	-57813.4123	-57105.1770	-55675.9483	-57822.2056	-57390.5480
Num. obs.	115608	115608	115608	115608	115608	115608
Num. groups: id	2939	2939	2939	2939	2939	2939
Var: id (Intercept)	0.0366	0.0371	0.0365	0.0393	0.0375	0.0373
Var: Residual	0.1526	0.1535	0.1516	0.1477	0.1535	0.1523

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.4.2 REWB LPM

Table A16: Voting supportively, main LPM.

	Empty model	Model 1	Model 2	Model 3	Model 4	Full model
Intercept	0.7372 (0.0047)***	0.6668 (0.1046)***	0.6675 (0.1049)***	0.6555 (0.1019)***	0.5806 (0.1303)***	0.5615 (0.1252)***
Met candidate (cm)		1.0594 (0.1761)***				0.9248 (0.6002)
Met candidate (cwc)		0.1168 (0.0059)***				0.0076 (0.0057)
Been at meetings (cm)			0.0131 (0.0016)***			0.0081 (0.0023)***
Been at meetings (cwc)			0.0005 (0.0011)			-0.0001 (0.0011)
Proportion of pro voters met (log, cm)				0.0263 (0.0034)***		0.0271 (0.0042)***
Proportion of pro voters met (log, cwc)				0.0151 (0.0008)***		0.0175 (0.0012)***
Proportion of anti voters met (log, cm)				-0.0308 (0.0068)***		-0.0289 (0.0071)***
Proportion of anti voters met (log, cwc)				-0.0189 (0.0012)***		-0.0174 (0.0011)***
Meetup centrality (cm)					0.7615 (0.4830)	0.0796 (0.4853)
Meetup centrality (cwc)					0.1496 (0.0139)***	-0.0051 (0.0236)
Difference candidate-voter meetup centrality (cm)					0.5660 (0.4828)	0.4246 (0.4671)
Difference candidate-voter meetup centrality (cwc)					0.1386 (0.0056)***	0.1067 (0.0054)***
Collaborated with the candidate (cm)					0.0769 (0.0247)***	0.0570 (0.0249)**
Collaborated with the candidate (cwc)					0.0151 (0.0035)***	0.0126 (0.0033)***
Proportion of pro voters collaborated with (log, cm)				0.0584 (0.0248)**		0.0035 (0.0011)**
Proportion of pro voters collaborated with (log, cwc)				0.0138 (0.0033)***		0.0023 (0.0003)***
Proportion of anti voters collaborated with (log, cm)				0.0032 (0.0012)**		0.0009 (0.0012)
Proportion of anti voters collaborated with (log, cwc)				0.0027 (0.0003)***		-0.0004 (0.0001)**
Proportion of anti voters collaborated with (log, cm)				0.0006 (0.0012)		-0.0004 (0.0001)**
Proportion of anti voters collaborated with (log, cwc)				-0.0005 (0.0001)**		-0.0004 (0.0001)**
Collaboration centrality (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Collaboration centrality (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter collaboration centrality (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter collaboration centrality (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Talked to candidate (log, cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Talked to candidate (log, cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Proportion of pro voters talked to (log, cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Proportion of pro voters talked to (log, cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Proportion of anti voters talked to (log, cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Proportion of anti voters talked to (log, cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Talk centrality (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Talk centrality (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter talk centrality (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter talk centrality (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Mainstage edits 2 months before (log, cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Mainstage edits 2 months before (log, cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Total edits up to election (log, cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Total edits up to election (log, cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter in total edits (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Difference candidate-voter in total edits (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Years since first edit (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Years since first edit (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Was reverted by the candidate (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Was reverted by the candidate (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Reverted the candidate (cm)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Reverted the candidate (cwc)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Year of election: 09-14 (Ref.: 03-08)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
Year of election: 15-20 (Ref.: 03-08)				-0.0001 (0.0001)**		-0.0004 (0.0001)**
AIC	115694.0121	105477.1492	105985.3539	100912.0739	105076.1827	100244.0317
BIC	115722.9860	105853.8097	106362.0144	101308.0503	105472.1591	100717.2718
Log Likelihood	-57844.0060	-52699.5746	-52953.6770	-50415.0369	-52497.0913	-50073.0159
Num. obs.	115608	115608	115608	115608	115608	115608
Num. groups: id	2939	2939	2939	2939	2939	2939
Var: id (Intercept)	0.0387	0.0253	0.0255	0.0241	0.0255	0.0241
Var: Residual	0.1535	0.1408	0.1414	0.1353	0.1402	0.1344

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.4.3 REWB GLM

Table A17: Voting supportively, GLM.

	Empty model	Model 1	Model 2	Model 3	Model 4	Full model
Intercept	1.3300 (0.0298)***	0.7012 (0.6346)*** 6.0007 (1.3511)*** 1.2998 (0.0566)***	0.8258 (0.6337)	0.6618 (0.6257)	-0.0068 (0.8070)	0.0534 (0.7890) -5.0574 (4.6770) 0.5249 (0.0659)*** 0.0716 (0.0204)*** -0.0081 (0.0046) + 0.4125 (0.0279)*** 0.2236 (0.0058)*** -0.3658 (0.0304)*** -0.1637 (0.0032)*** 1.7113 (3.3018) -0.3833 (0.1172)** 3.9711 (3.1420) 0.9065 (0.0397)***
Net candidate (cm)						
Met candidate (cwc)						
Been at meetings (cwc)			0.0871 (0.0127)*** -0.0021 (0.0036)			
Proportion of pro voters met (log, cm)				0.3328 (0.0194)*** 0.1834 (0.0038)*** -0.3770 (0.0298)*** -0.1803 (0.0030)***		
Proportion of anti voters met (log, cm)						
Proportion of anti voters met (log, cwc)						
Meetup centrality (cm)						
Meetup centrality (cwc)					6.1543 (3.2076) + 1.1767 (0.0650)***	
Difference candidate-voter meetup centrality (cm)						
Difference candidate-voter meetup centrality (cwc)						
Collaborated with the candidate (cm)					1.1268 (0.0375)***	
Collaborated with the candidate (cwc)						
Proportion of pro voters collaborated with (log, cm)				0.4092 (0.1794)* 0.0846 (0.0215)*** 0.0256 (0.0080)*** 0.0111 (0.0014)***	0.5180 (0.1817)*** 0.0864 (0.0208)*** 0.0305 (0.0082)*** 0.0159 (0.0014)***	0.3128 (0.1790) + 0.0755 (0.0216)*** 0.0301 (0.0080)*** 0.0122 (0.0014)***
Proportion of anti voters collaborated with (log, cm)				-0.0065 (0.0072)	-0.0093 (0.0073)	-0.0083 (0.0072)
Proportion of anti voters collaborated with (log, cwc)				-0.0000 (0.0009)	-0.0036 (0.0008)***	0.0004 (0.0009)
Collaboration centrality (cm)				-0.4209 (1.5199)	-2.0014 (1.6404)	-1.2582 (1.6048)
Collaboration centrality (cwc)				-0.5707 (0.2187)**	-0.6528 (0.2103)**	-0.5380 (0.2198)*
Difference candidate-voter collaboration centrality (cm)				1.4641 (1.2803)	0.2305 (1.4165)	0.4873 (1.3931)
Difference candidate-voter collaboration centrality (cwc)				1.3790 (0.0693)***	1.3525 (0.0672)***	1.5740 (0.0700)***
Talked to candidate (log, cm)				-0.2174 (0.2798)	-0.2334 (0.2820)	-0.1674 (0.2796)
Talked to candidate (log, cwc)				0.3262 (0.0386)***	0.3208 (0.0372)***	0.2986 (0.0390)***
Proportion of pro voters talked to (log, cm)				0.3883 (0.0206)***	0.4302 (0.0209)***	0.3847 (0.0207)***
Proportion of pro voters talked to (log, cwc)				0.1851 (0.0041)***	0.2094 (0.0041)***	0.1839 (0.0042)***
Proportion of anti voters talked to (log, cm)				-0.3908 (0.0162)***	-0.4366 (0.0163)***	-0.3888 (0.0162)***
Proportion of anti voters talked to (log, cwc)				-0.0823 (0.0018)***	-0.0924 (0.0018)***	-0.0828 (0.0018)***
Talk centrality (cm)				0.3331 (2.5083)	3.5463 (3.7144)	3.2965 (3.6248)
Talk centrality (cwc)				-1.9560 (0.1470)***	-2.8236 (0.1409)***	-2.1834 (0.1484)***
Difference candidate-voter talk centrality (cm)				-1.2114 (2.4837)	2.4224 (3.6802)	1.6418 (3.5972)
Difference candidate-voter talk centrality (cwc)				-0.9860 (0.0798)***	-1.4147 (0.0783)***	-1.3707 (0.0814)***
Mainstage edits 2 months before (log, cm)				0.0650 (0.0394) +	0.0649 (0.0407)	0.0416 (0.0396)
Mainstage edits 2 months before (log, cwc)				0.0280 (0.0137)*	0.0221 (0.0134) +	0.0300 (0.0138)*
Total edits up to election (log, cm)				-0.0269 (0.0542)	-0.0248 (0.0556)	-0.0114 (0.0545)
Total edits up to election (log, cwc)				-0.0891 (0.0237)***	-0.1062 (0.0232)***	-0.0864 (0.0242)***
Difference candidate-voter in total edits (cm)				0.0024 (0.0071)	0.0025 (0.0074)	0.0032 (0.0071)
Difference candidate-voter in total edits (cwc)				0.0202 (0.0006)***	0.0166 (0.0006)***	0.0171 (0.0006)***
Years since first edit (cm)				0.0371 (0.0180)*	0.0562 (0.0187)*	0.0401 (0.0182)*
Years since first edit (cwc)				0.0650 (0.0086)***	0.0718 (0.0084)***	0.0631 (0.0086)***
Was reverted by the candidate (cm)				-11.9436 (5.5131)*	-12.6243 (5.7333)*	-12.5869 (5.5049)*
Was reverted by the candidate (cwc)				-0.2945 (0.0688)***	-0.3120 (0.0664)***	-0.3005 (0.0692)***
Reverted the candidate (cm)				-16.4889 (5.4501)**	-15.8118 (5.6771)**	-14.3451 (5.4479)**
Reverted the candidate (cwc)				-0.4476 (0.0657)***	-0.4490 (0.0659)***	-0.4304 (0.0691)***
Year of election: 09-14 (Ref.: 03-08)				-0.0359 (0.0335)	0.0571 (0.0345) +	0.0143 (0.0360)
Year of election: 15-20 (Ref.: 03-08)				-0.3081 (0.0639)***	-0.2872 (0.0623)***	-0.3187 (0.0643)***
AIC	112868.2278	101330.2195	101996.6550	95887.8268	101024.3145	94915.8615
BIC	112887.5437	101697.2220	102363.6575	96274.1452	101410.6329	95379.4436
Log Likelihood	-56432.1139	-50627.1097	-50960.3275	-47903.9134	-50472.1572	-47409.9308
Num. obs.	115608	115608	115608	115608	115608	115608
Num. groups: id	2939	2939	2939	2939	2939	2939
Var. id (Intercept)	1.4764	0.9936	0.9961	0.9140	1.0138	0.9034

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

B.4.4 FE LPM

Table A18: Voting supportively, FE LPM.

	Model 1	Model 2	Model 3	Model 4	Full model
Met candidate	0.1144 (0.0060)***				0.0069 (0.0057)
Been at meetings		0.0003 (0.0011)			-0.0001 (0.0011)
Proportion of pro voters met (log)			1.5075 (0.0793)***		1.7596 (0.1240)***
Proportion of anti voters met (log)			-1.8861 (0.1164)***		-1.7410 (0.1120)***
Meetup centrality				0.1472 (0.0141)***	-0.0067 (0.0240)
Difference candidate-voter meetup centrality				0.1376 (0.0057)***	0.1060 (0.0054)***
Collaborated with the candidate			0.0141 (0.0033)***	0.0154 (0.0035)***	0.0129 (0.0033)***
Proportion of pro voters collaborated with (log)			0.2138 (0.0341)***	0.2888 (0.0348)***	0.2281 (0.0342)***
Proportion of anti voters collaborated with (log)			-0.0056 (0.0129)	-0.0381 (0.0135)**	-0.0381 (0.0127)
Collaboration centrality			-0.1376 (0.0482)**	-0.1764 (0.0497)***	-0.0015 (0.0481)**
Difference candidate-voter collaboration centrality			0.1912 (0.0160)***	0.1937 (0.0170)***	0.2119 (0.0160)***
Talked to candidate (log)			0.0377 (0.0050)***	0.0386 (0.0051)***	0.0347 (0.0050)***
Proportion of pro voters talked to (log)			1.5899 (0.1061)***	1.9009 (0.1149)***	1.5701 (0.1066)***
Proportion of anti voters talked to (log)			-0.9511 (0.0666)***	-1.2017 (0.0710)***	-0.9603 (0.0669)***
Talk centrality			-0.2049 (0.0309)***	-0.2918 (0.0307)***	-0.2222 (0.0305)***
Difference candidate-voter talk centrality			-0.1255 (0.0124)***	-0.1910 (0.0126)***	-0.1638 (0.0123)***
Mainspace edits 2 months before (log)			0.0068 (0.0030)*	0.0065 (0.0031)*	0.0068 (0.0030)*
Total edits up to election (log)			-0.0021 (0.0067)	-0.0042 (0.0071)	-0.0017 (0.0068)
Difference candidate-voter in total edits			0.0029 (0.0002)***	0.0025 (0.0002)***	0.0025 (0.0002)***
Years since first edit			0.0083 (0.0018)***	0.0090 (0.0019)***	0.0078 (0.0018)***
Was reverted by the candidate			-0.0366 (0.0092)***	-0.0387 (0.0094)***	-0.0358 (0.0091)***
Reverted the candidate			-0.0568 (0.0098)***	-0.0621 (0.0097)***	-0.0559 (0.0097)***
Year of election: 09-14 (Ref.: 03-08)			-0.0006 (0.0078)	0.0055 (0.0081)	0.0068 (0.0078)
Year of election: 15-20 (Ref.: 03-08)			-0.0384 (0.0119)**	-0.0427 (0.0123)**	-0.0365 (0.0119)**
R ²	0.08	0.08	0.12	0.09	0.12
Adj. R ²	0.06	0.05	0.10	0.06	0.10
Num. obs.	115608	115608	115608	115608	115608

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.

Table A19: Voting supportively, FE GLM.

	Model 1	Model 2	Model 3	Model 4	Full model
Met candidate	1.2851 (0.0576)***				0.5808 (0.0668)***
Been at meetings		0.0002 (0.0034)	18.2678 (0.3789)***		-0.0065 (0.0045)
Proportion of pro voters met (log)			-18.4963 (0.3055)***		21.8222 (0.5873)***
Proportion of anti voters met (log)					-16.9158 (0.3324)***
Meetup centrality				0.9927 (0.0594)***	-0.3849 (0.1150)***
Difference candidate-voter meetup centrality				0.9159 (0.0291)***	0.7750 (0.0302)***
Collaborated with the candidate			0.0895 (0.0179)***	0.0917 (0.0175)***	0.0852 (0.0180)***
Proportion of pro voters collaborated with (log)			1.0747 (0.1219)***	1.4215 (0.1180)***	1.1795 (0.1227)***
Proportion of anti voters collaborated with (log)			0.1909 (0.0741)***	-0.0590 (0.0706)***	0.2305 (0.0743)***
Collaboration centrality			-0.7418 (0.1842)***	-0.7903 (0.1792)***	-0.7332 (0.1850)***
Difference candidate-voter collaboration centrality			1.3475 (0.0552)***	1.3621 (0.0542)***	1.4864 (0.0556)***
Talked to candidate (log)			0.2852 (0.0342)***	0.2859 (0.0333)***	0.2544 (0.0345)***
Proportion of pro voters talked to (log)			24.6583 (0.3962)***	26.4973 (0.3884)***	24.6869 (0.3972)***
Proportion of anti voters talked to (log)			-11.2599 (0.1733)***	-11.9898 (0.1697)***	-11.3295 (0.1739)***
Talk centrality			-2.6531 (0.1387)***	-3.3545 (0.1339)***	-2.8431 (0.1399)***
Difference candidate-voter talk centrality			-1.0319 (0.0627)***	-1.3791 (0.0625)***	-1.3340 (0.0640)***
Mainstage edits 2 months before (log)			0.0343 (0.0095)***	0.0323 (0.0094)***	0.0345 (0.0095)***
Total edits up to election (log)			-0.0241 (0.0152)***	-0.0465 (0.0150)***	-0.0341 (0.0154)***
Difference candidate-voter in total edits			0.0234 (0.0005)***	0.0202 (0.0005)***	0.0207 (0.0005)***
Years since first edit			0.0548 (0.0067)***	0.0603 (0.0066)***	0.0536 (0.0068)***
Was reverted by the candidate			-0.3912 (0.0606)***	-0.3891 (0.0590)***	-0.3909 (0.0608)***
Reverted the candidate			-0.5284 (0.0621)***	-0.5200 (0.0602)***	-0.5142 (0.0624)***
Year of election: 09-14 (Ref.: 03-08)			-0.0511 (0.0296)***	0.0429 (0.0291)***	0.0076 (0.0300)***
Year of election: 15-20 (Ref.: 03-08)			-0.3247 (0.0524)***	-0.2888 (0.0514)***	-0.3141 (0.0526)***
Log Likelihood	-76196.2081	-76512.0505	-73616.6600	-75982.3908	-73092.1527
Deviance	152392.4161	153024.1011	147233.3199	151964.7815	146184.3054
Num. obs.	175765	175765	175765	175765	175765

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; + $p < 0.1$.