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Advanced Seminar: Web data collection with R

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Back to the roots? New significance of traditional tools

A field experiment during the state level elections of Baden-Württemberg 2021

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1. Introduction

In recent years the process of developing campaigning tools gained continuously more attention in the ongoing media and scientific discourse about politics. Considering many European election campaigns, the use of data for strategic communication, apart from polling or election data, might seem to be a relatively new approach. However, looking "over the pond" to the United States, the use of data for politics itself is definitely a more established practice. Already in 2008 for the famous "Yes we can" campaign of Obama various data sources were used for the election campaigns, whose methods ultimately resulted in expansive databases for campaigning purposes, which also informed the re-election campaign of 2012 (Gallagher 2012; Kreiss and Jasinski 2016). Furthermore, the infamous tools developed by Cambridge Analytica employed during different campaigns have shown to be of significant public interest. The scandals surrounding the psychological and analytical methods of microtargeting voters were shocking, misleading and nonetheless interesting to a scientific and public audience (Gibney 2018). While most of these methods focus on digital data collected through social network accounts or digital trace data to localize specific target groups, a rather simple and old-fashioned way of data supported campaigning gained significance once more: Canvassing ("Tür-zu-Tür Wahlkampf" in German) seems to be of increased importance in recent years in German election campaigns. The use of Apps in the federal election 2017, like Connect17 from the CDU, centred around the same idea. Geographical areas are analysed with the help of available data and which deliver relevant information about declared units. Voting-, turnout- or street-data is normally available online without restriction. Some tools of recent years also bought data from external service providers. Since more attention is directed to data-driven campaigning tools in diverse environments (Kruschinski and Haller 2018), they are also deployed in smaller voting districts or regional elections, such as mayor elections. Nonetheless, in comparison to the United States the German parties lack clean and reliable data, since geographical areas only possess relatively imprecise assignments of voter potential, which is mainly rooted in the strict data regulation of Germany and the European Union. Furthermore, the changes in voting behavior and rising proportions of swing-voters are increasingly confronting parties in the election campaign with the difficulty to reach strategically important target groups. It is just now, that due to the higher number of cases and tightened contact restrictions originating from the Covid-pandemic, regional level campaigners are unable to carry out events with physical contact to voters. That's why contactless organized canvassing campaigns might attain a key role compared to other ways of campaigning on a regional level. In the light of these developments this paper examines the following research question:

Which influence do canvass treatments have on the voting district level on the vote share of the Greens in the district 62 in Tübingen?

An experiment is seeking to analyze a potential relationship. It focuses on the Green party vote share in the most recent state-level election in Baden Württemberg on the 14th of March 2021 in the voting district 62 in Tübingen.

After a short overview of the canvassing related literature, the paper proceeds with the theoretical arguments of political canvassing and its effects on voting prepositions. Then the experiment itself and the central scraping method for data collection are illustrated. Ultimately an analysis is conducted to examine the research question.

2. Literature review

The research in the area of canvassing and systematic voter mobilisation can be traced back to the early 20th century. In 1927, a fundamental experimental analysis of a "Get-out-the-Vote" (GOTV) approach was conducted (Gosnell 1927). The question was whether it was possible to push election turnout rates with the help of a simple treatment. He distributed notes with a call to cast one's vote in some districts of Chicago and left out other districts as a control group. Small effects were measured in the treated areas. Different research designs followed in the upcoming fifty years (Eldersveld 1956; Adams and Smith 1980; Miller et al. 1981). Especially noteworthy is the early work of Eldersveld. He was first to find empirical support for the advantage of personal communication versus postal communication in boosting voting turnout rates. Following these results, Gerber and Green were able to lead to a ground-breaking field-experiment, which not only boosted turnout rates as a result but also the research in the area (Gerber and Green 2000; Faas and Hohmann 2015). They were able to support the effect originally postulated by Eldersveld; Personal stimulus is more effective than stimulus via other channels like telephone or print-media. After this starting point in the canvassing-literature, they have been able to reproduce their findings with a large experiment more recently (Gerber and Green 2017). When observing the literature about GOTV approaches, one can immediately realize the imbalance between research conducted in the United States and Europe. This imbalance becomes even more dramatic when strictly checking for partisan focused approaches (John 2017; Nyman 2017; Bhatti et al. 2018).

In the recent years European scholars have tried to tackle this imbalance through various studies focusing on the effects of canvassing, while simultaneously still lacking partisan-centred findings most of the time (Ramiro, Luis, Laura Morales, and Maria Jiménez-Buedo 2012; Pons 2014; Townsley 2018; Pons 2018). German field experiments and research are still in their infancy, since field experiments are scarce (Falter and Winkler 2014b; Faas and Hohmann 2015; Huber 2016). Different meta studies showed, that effects in the US context cannot be directly transmitted to the European context. First, data and privacy regulations as well as available data is fundamentally different to the German or European context. Additionally the

effect sizes of canvassing for vote share or turnout rates in the United States and Europe differ significantly on average (Jungherr 2016; Bhatti et al. 2019).

To sum up, existing research shows a clear tendency towards the effectiveness of canvassing as a campaigning tool. Personal contact to eligible voters seems to be a strong driver of persuasion whether it is of partisan or turnout nature. Still specifically bearing the German and even more the partisan research setting in mind, more research is needed to fill the gap between expected effects and empirical support.

3. Theory

Finding a clear and isolated mechanism with underlying explanations when writing about canvassing or GOTV approaches is not as clear as it may seem. As Batthi et al. stated, "there could be numerous potential explanations of the difference between the general positive effects of door-to-door canvassing in the United States and the smaller effects in Europe" (Bhatti et al. 2019, p. 288). This quote highlights the general perception of explaining canvassing effects in political campaigning. Altogether there are two different lines of argumentation. The first one revolves around overall trends like turnout decrease and persuasion of the voter on the individual level. In contrast, the second explanation focuses on practical advantages for campaigners when targeting voters geographically.

3.1 Election campaign communication

The systemic change of the campaigning environment in recent years put campaigners and party communicators in an increasingly challenging environment. On the one hand, turnout rates across various educational levels are decreasing drastically, on the other hand party identities are decreasing almost for all parties, except for example for the Greens in Germany (Wilhelm and Rothmund 2018). Furthermore, voting decisions are increasingly decided later in election campaigns. Almost a third of voters are setting their final preference just in the week or even days before the election itself (Buckow 2017). For instance, in the last federal election in Germany in 2017, on average four out of ten green voters were ultimately making up their minds immediately before or even on the election day. Additionally, an ongoing and increasing media diversification challenges the traditional channel structure of communication. More and more channels of possible information need to be digested by the voter, hence make it harder for campaigners to address their specifically targeted audience (Faas and Hohmann 2015). . This empirical support shows that traditional target groups are inherently difficult to access with mounting insecurity regarding their voting behaviour.

Another key factor in explaining canvassing effects is the personal contact to the voter. Following the previously mentioned literature, the effect of boosting turnout rates or vote shares of parties can be significantly stronger compared to different types of mediated methods. One

potential explanation of this consequence is the effect of social examination. The canvasser generates a social situation, and this affects the person in a way that is not possible for mediated communication (John and Brannan 2008). Hence either undecided voters are persuaded, or existing convinced voters are activated. These are central concerns for campaigners (Jungherr 2016; Foos and Rooij 2017).

3.2 Ressource management in election campaigns

If a party wants to achieve approval, it makes efforts of persuasion. As consent is active, voters that want to cast their vote, have to go purposefully to the polling station. Thus, strategic positioning follows the approach of not spreading messages widely and do not use resources arbitrarily, but precisely where they have the greatest effect. The goal should be to use as little resources as possible. Especially in smaller voting districts or during second-level elections, campaigning and organizational structures are often not as professionalized as in larger districts or chapters. With the help of geographical canvassing, this can be easily implemented with low cost, which is also feasible for small scale campaigns or districts. Hence even tight financial budgets or human resources can be utilized in a more target-oriented way. While German campaign managers are, compared to their European counterparts, equipped with higher financial support (Poguntke et al. 2016), they overall need to spend their inherently tight election campaign budgets on areas with high electoral potential (Falter and Winkler 2014a). Canvassers also profit from data-backed campaigns. Even though canvassers are still having a high quota of low potential contacts at the door, they might expect to have more positive situations than campaigners without information. This could result in a motivational boost for the individual canvassing teams, such as the simple effect of belonging to a "modern campaign" (Jungherr 2016, p. 7). This becomes even more important when looking at lower-level organizational structures like local party committees, where financial and labour resources are scarce. Due to the fact that most of the party-members on this level do not have their main occupation in politics, time is another sparse resource in campaigning. Volunteers supporting canvassing or other campaign activities are often hard to recruit, or work is distributed among a smaller number of staff. Therefore, it seems helpful to focus on financial and workforce related factors, as well as on the often-forgotten time management.

Summing up, the three central resources to a successful campaign are money, human resources, and time. Overall, all these components can be reasonably well organized in a cost-efficient way, which might also boost vote-share or turnout rates in areas with concentrated campaign activities.

4. Methodology

In line with the literature presented above, a randomized field experiment with the Green party at the 2021 state-level election in Baden-Württemberg was conducted. The field experiment focused on the district 62 in Tübingen. Tübingen is a university town in the centre of Baden-Württemberg with around 90.0000 citizens. According to the statistic agency of Baden-Württemberg there are about 130.000 voters listed in the district, in which the Greens play a major political role (Baden-Württemberg 2011). The mayor of Tübingen, Boris Palmer, is in office since 2007 and enjoys great popularity in Tübingen. Also, during state-level or federal elections the Greens perform clearly above average in Tübingen. This can be illustrated by one specific voting-district in Tübingen, which is known beyond the city. German journalists shaped the term "Green Hell" for the French Quarter in Tübingen, since the Greens gain incomparably high approval in this voting district (Feldenkirchen 2011).

Henceforth the field experiment was conducted in an environment with rather strong favourability of parties or candidates. In figure 1, the general results of the 2021 state level election in the district 62 Tübingen are displayed, underlining the clear partisan perception.
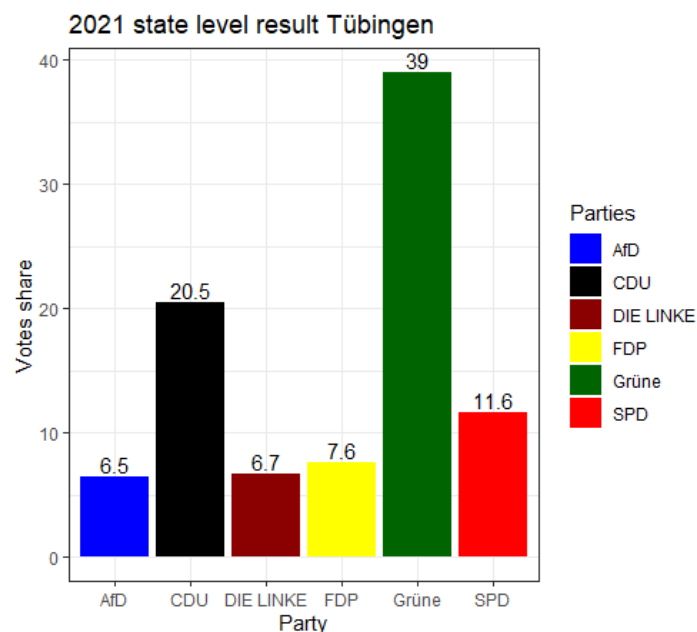

Figure 1: 2021 state level election results in Tübingen

For the experiment, two groups of interest have been drawn out of a group of high potential districts for the Green party. Therefore, the unit of randomization is the voting-district level. Removing the postal voters is necessary because they cannot be connected geographically to specific areas. This leads to an absolute number of 58 possible districts. These 58 districts are reduced to 29 districts, that show a high Green voter potential based on my potential score. The potential score is derived from the Green vote share of the 2016 state-level election and

the overall turnout rates in each voting district. In contrast to the federal election, voters only have one vote in the Baden-Württemberg state election. Obviously the higher the vote-share of the Greens and the better the turnout rates are, the higher the potential score will rank this district. To avoid systematic contortion of the score due to sample size, the score was corrected to range from 25-100, since 1-100 scale would stretch the districts out too far and make them artificially more distinct than they might be.

Next a simple random sample (n = 14) was drawn from this high potential group. These simple random sampled districts are the ones receiving treatment, while unsampled districts remain in a control group. Due to the Covid pandemic voting districts changed drastically between the state level elections of 2016 and 2021. This results in an obvious sample size reduction in both groups. Only 9 districts out of 29 possible districts remained the same. Group sizes changed from n=14 to n=4, which significantly decreases the experiment's explanatory power. More details are described in the limitations and discussion section of this work. Nonetheless, almost 17.000 citizen are eligible to vote in the sampled areas, which is almost 15% of the total population entitled to vote.

After a visual comparison of treatment effects, the group differences are evaluated with the help of a simple Independent T-Test (Gosset 1958). While the research design is limited in performing various calculations or derive a meaningful model due to the sample size, the T-Test "can detect differences in samples as small as two for paired differences and three for two groups or detect correlations in samples of three." (Bland and Altman 2009, p. 1). Finally, it is important to note that this design cannot estimate effects on the individual level. Instead, it focuses on voting district level differences.

4.1 Treatment

After setting the basic framework of the field experiment, I now turn to the stimulus deployed in the treatment groups. Since the treatment was strictly partisan, all the treatments were conducted through Green volunteers and campaigners that were part of the 2021 Green campaign in Tübingen. The campaigners responsible for canvassing had been informed about the experiment already in January 2021. They received a text to learn in order to keep comparability high, as well as authenticity of the treatment. However, it was highlighted that they should not appear unnatural, for instance by sticking to the text too strictly. The script for the treatment at to door was as follows:

Hello, my name is INPUT NAME

I support the Green candidate Daniel Lede Abal and would like to draw your attention to the state elections in Baden Württemberg. These will take place on March 14th, 2021. Take your chance and cast your vote.

If you will allow me, I would like to leave you some material and a small piece of chocolate.

Thank you for your time and stay healthy.

Election campaigners were instructed to avoid discussions in general and instead focus on the number of contacts. They should not enter a casual conversation, because time and labor are very sensitive factors. The treatment is not designed to persuade voters argumentatively at the doorstep, but to create a short social situation, that might impact the voter's party preference. If they did not open the door and do not refuse advertisement at their postbox, a small flyer with information is left. Treatments have been executed between the first and the 14th of March 2021[1], bearing in mind the increasingly late vote-decision of a significant voter population (Buckow 2017).

To recap, the treatment group received a short verbal stimulus and dependent on the specific situation some print material concerning the candidate. The control group on the other side was not visited. Ultimately the difference of change of vote share between the two groups was assessed to evaluate effectiveness of the treatment.

4.2 Web scraping of data sources

As political campaigners start to gather various information for political communication tasks, it is always important to keep in mind where the information is derived from. As higher-level political campaigns are funded differently, they have several options to generate data driven insights. When relying on data, smaller scale campaigns are in contrast often dependent low-cost solutions. In this case, publicly available data like election data can be an option. Overall election data is published by most administrative levels. The data quality and accessibility across different levels and community sizes varies considerably. While cities like Heidelberg for instance offer interactive election data visualizations, other communities do not offer any electoral data on their specific community (Heidelberg 2021). Obviously, Heidelberg is an extreme example, still it is indicative of the overall situation. Data quality is still a modern problem in the German administration, despite numerous efforts and small-scale innovations, the effect of improving digital as well as data quality standards can hardly be seen (Müller 2018, 286). Besides the problems of funding and data quality, another aspect influencing the method of choice for data collection can be strategic concerns. Especially in low level mayor campaigns, the administration is centred around the incumbent. Therefore, information might flow from the administration to the political competitor which could be a strategic disadvantage. Therefore,

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[1] The field time during weekdays was between 5pm and 8pm. On weekends campaigners already started visiting at 11am.

web scraping data available online can be a valid and low-cost option for campaigners to gather information independently.

The web scraping pipeline used in this experiment basically follows the framework of Munzert (2015). The election data resources have been manually checked before[2]. Both pages represent a static HTML page, with various tables storing information about election-, turnout- and voter-data. HTML tables are contained within <table> tags. After manual assessment, the HTML is assigned and downloaded. The document is parsed with the help of the xml2 package. Parsing is crucial to extract information from HTMLs correctly, because the internal structure does not transfer naturally into R (Munzert 2015, 38). Due to the document structure and its numerous tables the author based the applied scraping approach on the html_table() function of R's "rvest" package. In a situation where multiple tables exist; The data frames will be stored in a list. Afterwards, the list is scanned for the data frames needed and directly retrieved from the list by its index. Then these data frames are ultimately joined into a large data frame containing the information on the voting district level. Before starting to analyse the data, it must be reduced and cleaned to the relevant information. In account of the amount of information for each table cell, the author used regex and the base R function "gsub" to isolate the desired vote-share of the voting district. Finally, the data is pre-processed and disposed to analysis in the next section.

5. Analysis

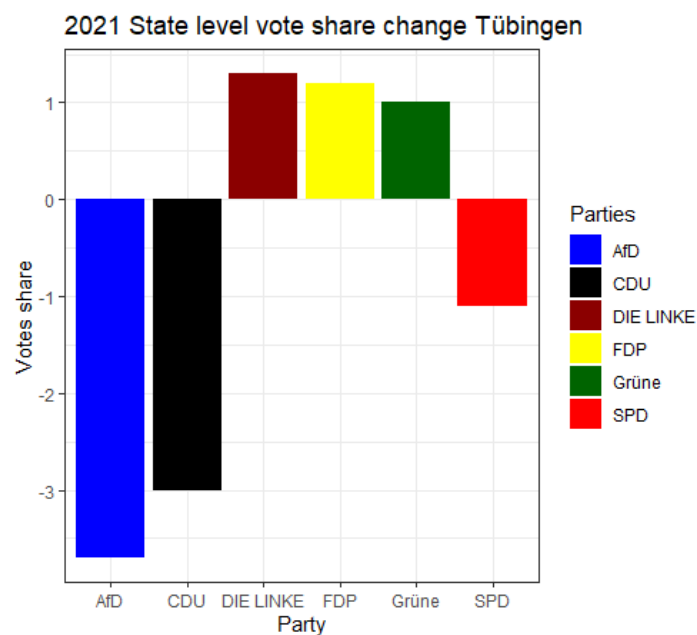As the paper examined the field experiment's methodology in the section before, it is now

Figure 2: 2021 state level election change of vote share

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time to take a closer look at the results of the Experiment[3] In *Figure 2* the overall change of vote-share by different parties is displayed. In line with state-wide trends in Baden-Württemberg, the CDU and the SPD suffered losses, while most of the minor parties as well as the Green party improved their performance. The AfD lost votes very significantly which suits to the overall trend across the state of Baden-Württemberg.

When conducting the field experiment the focus was put into boosting vote share of the Greens. Due to the large amount of literature (Adams and Smith 1980; Miller et al. 1981; Gerber and Green 2000; Green and Gerber 2019) concerning turnout-change through stimuli, the author also took turnout change into account. In Figure 3 the vote-share change of the Greens in the given district can be observed. As one can immediately observe, the treated districts do not differ in any way from the untreated districts. Interestingly a treated district is the only district in the sample in which the Greens in fact lost -1.05 percent of votes. This is contradictory to the expectations when looking at the literature.
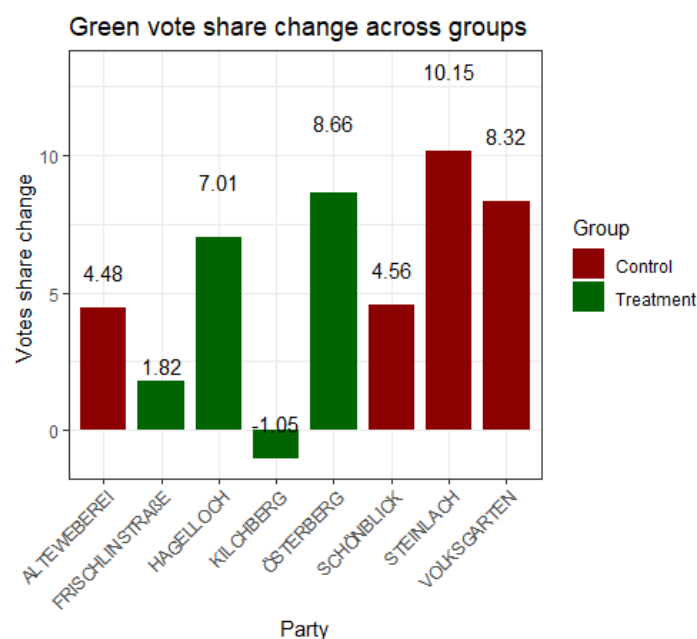

Figure 3: Vote share change across experimental groups

Also the results of the independent T-test confirm the expectation, that was gained visually. The four voting districts who received treatment (M =4.11, SD = 4.5) compared to the four voting districts that still could be used as control group (M=6.8, SD = 2.8) did not demonstrate convincing effect changes between the groups, t(5.03) = 1.04, p= .34. Hence the null effect has to be accepted, that the group means do not differ significantly. This perception also holds when looking at the turnout rates in figure 4. Overall turnout was historically low. An average

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[3] Descriptive data can be found in the appendix.

turnout decrease of -26 percent in the sampled group can be found. As well as treatment did not push vote-share rates, treated areas also do not incorporate higher turnout-rates. This can have various implications, but first and foremost the Covid pandemic might be the main driver of lower turnout rates. High numbers of postal voters coined this election, which is logical when voters take possible infection risks in the voting offices into account.
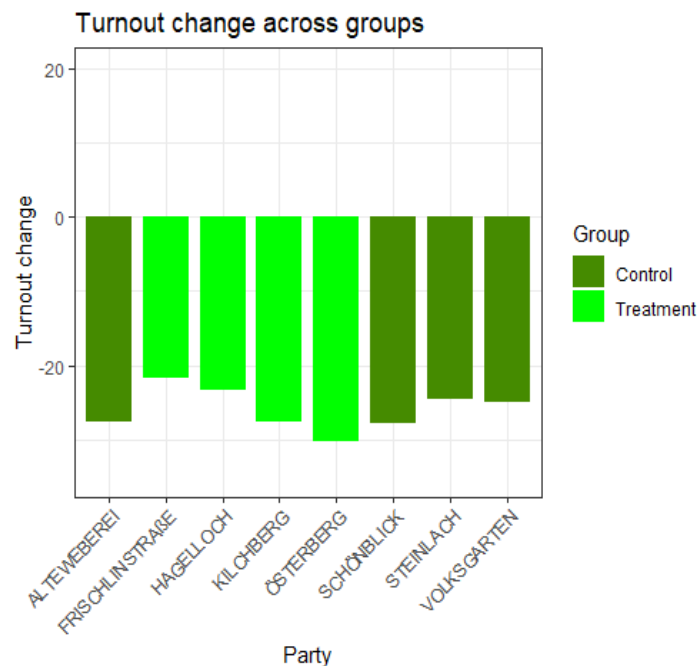

Figure 4: Turnout change across experimental groups

Concluding from the facts stated above, the sample failed to show a significant relationship between treatment and higher vote-share for the Greens. Additionally, an important change in turnout rates was not observed either.

6. Discussion and Limitations

Overall, the results do paint a clear picture. The treatment neither boosted the vote share nor did it push the turnout. As research urges for more empirical field experiments and support in the European context, this study was designed to address that necessity. However, no findings are still findings, as the experiment failed to show any significant effects. Hence the research question cannot be answered affirmatively. Still the experiment provides empirical evidence of no effects, which is also in line with some of the literature. For the German perspective it proves to be valuable empiric information, especially considering the scarcity of field experiments focussing on GOTV approaches in Germany. There could be numerous reasons for no-effects. Needless to say, the sample size might be one of the main problems in the research design of the paper. While originally a sample of n=14 per group was planned, restructuration of voting districts and the focus on larger postal voter emergence

clearly reduced the power of the random sample. A loss of more than 70% of the original sample undermines the whole design in general. Connected to this is the overwhelming amount of postal voters in this election. Incorporating this enormous numbers of voters in future studies should show better results. Furthermore, the very low response rates at the doorstep need to be kept in mind, because they might also impact the result significantly. For this experiment, response rates have not been collected systematically, because this would have gone beyond the scope of the paper. Another possible factor in explaining the results obtained might be the strong partisan focus of the voting district 62 in Tübingen. Variation between districts might be clearer due to higher competition for voters by parties.

Finally, the problem of data precision needs to be mentioned too. The German parties lack clean and reliable data, since geographical areas do only possess relatively imprecise assignments of voter potential, which is mainly rooted in the strict data regulation of Germany. Hence, approaches basing solely on districts are comparably imprecise. Last but not least the Covid-pandemic itself might be the central limitation of this experiment. During preparation of the experiment, it was hoped for a change of situation until the election, but these hopes have been disappointed. Traditional methods of empirical research might fail to cope with this exceptional election setting.

More sophisticated and much larger, while also more comparable approaches should be introduced to guarantee for higher reliability and comparability across different settings. From a political science perspective research can be also conducted in smaller or regional elections such as Mayor elections, to create insights and offer support for campaigners as well as to check for variation across a smaller electorate. Different sample methods as well as various treatments shall be addressed in future research. This could path the way to paint a clearer picture of the European canvassing situation.

7. Appendix

VARIABLES	Mean	Standard Deviation	Min.	Max
Change (vote share)	5.49	3.78	-1.05	10.15
Change(turnout)	-25.98	2.8	-30.75	-21.75

Figure 5: QQ plot of Change of vote share

Figure 6: Potential score across all districts in Tübingen

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