

Gaining The Competitive Edge

Analyzing Candidate-Party Congruence and Issue Salience of Campaign
Winners in the 2021 German Federal Elections

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Management Summary

This research highlights and dissects the importance of social media for electoral campaigns in the US and western European countries (Hoegg & Lewis, 2011; Silva & Proksch, 2021; Williams, 2017). The results of this research present empirical evidence for a correlation between a higher candidate-party congruence in candidate tweets and the campaign winners (SPD & FDP) of the 2021 German Federal Elections. The candidates of campaign winners conveyed the most congruent messaging on social media, thus creating a more consistent public image to potential voters. This is in line with current research, as more consistent advertising messages are correlated with increases in online WOM and voter preference (Fossen et al., 2022).

We collect two large sets of data. First, we collect all electoral candidate tweets of the six major political parties in Germany during the entire campaign period. Second, we collect the party manifestos of the six major political parties for the 2017 and 2021 Federal Elections. We deploy advanced text analysis methods for this research. The wordscore procedure allows us to map texts on a left-to-right wing scale based on the occurrence of words in the texts and expert evaluations on political ideology (Laver et al., 2003). We adjust this method with a transformation that converts the raw scores into more robust estimates (Martin & Vanberg, 2007). Using this methodology, we can map all collected party manifestos and candidate tweets on a left-to-right wing scale for our analysis. To account for potentially latent heterogeneity of topics in the tweets, we also examine issue salience regarding central election topics (Corona, Environment) individually in addition to the overall tweet positioning.

Our results present novel implications for academic research and emphasize the need to further study and build robust measures of candidate-party congruence. Our findings have implications beyond the 2021 German Federal Elections. They apply to other German federal and state elections because they have the same political system and at least partially the same voters. Outside of German politics, the importance of candidate-party congruence applies to other countries with a multi-party system and electoral systems with proportional representation such as Belgium, Denmark, Sweden, and the Netherlands.

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1. Introduction

In few areas, the distinction between winning and losing is as essential and decisive as in politics. On the one side, the election winners gain governmental power get to set policies in favor of their electorate and their stakeholders. On the other side, the election losers enter the opposition and have few means to appeal to their electorate. This divisive nature is also pivotal for marketing spending. In the immediate context of the election, only the winners are awarded a profitable return on investment. In the worst-case scenario, the losers are left empty-handed regarding their campaign spending. Hillary Clinton is the most prominent, recent example of this scenario. During her 2016 presidential campaign, Clinton spent 768 million dollars on her marketing activities. She was eventually beat by her advisory Donald Trump – with no involvement in the new government (Moorthy, 2019).

Yet despite this nature, the importance of political marketing expressed in marketing spending has never been evaluated higher. Political scientists have been documenting a near-exponential rise in marketing spending over the last 30 years (Hoegg & Lewis, 2011). On a national level, marketing spending for presidential races in the US has doubled from 2004 to 2016. On a regional level, campaign spending for House and Senate races have increased by 675% between 1990 and 2016 (Lovett, 2019; Geer, 2012). According to Forbes, in the 2019-2020 election cycle alone, total spending for political advertising was estimated at 8.5 billion dollars for television, radio, and digital media. This exceeds the spending of the last election cycle by 108% (Homonoff, 2020).

Academic evidence highlights the importance of political marketing in winning votes and therefore directly influencing election outcomes. First, political marketing increases the probability that more voters of the party's target group exercise their voting right. Thus, the activities shape the partisan composition of the electorate in its favor (Spenkuch & Toniatti, 2018). Second, appearance-based inferences about candidates induce changes in election results. Candidates with an appearance of competence attain more electoral success (Hoegg & Lewis, 2011; Todorov et al., 2005). Third, a substantial amount of voters are not certain of their voting decision shortly before the elections. They are subsequently susceptible to persuasion. A recent example of this is the 2021 German Federal Elections. According to a media agency survey, 23% of polled voters were uncertain of their voting decision two weeks before the election (Spiegel, 2021).

Elections can subsequently be viewed as marketing contests, contended by the efforts of candidates and associated parties (Hoegg & Lewis, 2011). Increasingly frequently, these contests are fought out on social media platforms. Particularly Twitter as a text-centric platform has gained popularity among politicians. This rise in importance can be attributed to two key advantages over other means of political communication. First, social media platforms enable politicians to directly communicate with their audiences without the necessity of physical presence and the dependency of other media players (e.g., television channels, radio platforms & publishers). This nature allows political communication efforts to be much more scalable, which is particularly favorable considering this type of communication usually requires personal interactions to be successful (Silva & Proksch, 2021). Second, social media marketing opens up a large reach to address audiences. This is critical because a large proportion of voters utilizes social media to derive information about elections. In the 2016 US presidential elections, 44% of voters drew information about the elections from Twitter (Williams, 2017; Pew, 2016). Subsequently, most candidates that run for office utilize social media for their campaigning nowadays. Donald Trump even famously stated that he would not have won the 2016 presidential elections without the usage of social media (Fujiwara et al., 2020). In the US, almost all members of congress are active on Twitter (98%). In Germany, 72% of the current parliament members utilize the platform to connect with their electorate and colleagues. In other western European countries, the degree varies between 70% and 95% (Haman & Skolnik, 2021).

Given the presented importance of political marketing for elections, this thesis directly investigates how dispersion in political positions expressed on Twitter among candidates within a party correlates with electoral success. Building on recent empirical findings, consistent messaging is important because more consistent advertising messages are correlated with increases in online word-of-mouth and voter preference (Fossen et al., 2022).

The wordscore procedure allows us to map texts on a left-to-right wing scale based on the occurrence of words in the texts and expert evaluations on political ideology. Besides the collection of yet unscored texts, this procedure requires the selection of an appropriate set of reference texts. Assigning expert evaluations on political ideology on these reference texts, we can predict the score for text with unknown score positionings (Laver et al., 2003; Benoit et al., 2022). We adjust this method with a transformation that converts the raw scores into more robust estimates (Martin

& Vanberg, 2007). Using this methodology, we are able to map candidate tweets on a left-to-right wing scale for our analysis. To account for potentially latent heterogeneity of topics in the tweets, we also examine issue salience regarding central election topics (Corona, Environment) individually in addition to the overall tweet positioning. This research utilizes this mapping to construct a measure of how far the expressed ideology in candidate tweets is away from the overall party positioning. This measure then feeds into a correlational research design, that utilizes ANOVA tests and Tukey post-hoc tests to examine the relationship of candidate-party congruence and issue salience with campaign success.

Our analysis examines the 2021 German Federal Elections. The data collection for this research follows two general steps.

First, candidate tweets of the six major political parties within the campaign period are obtained (Dec. 2020 – Sep. 2021). The official candidate list for the 2021 German Federal Elections serves as the seed for this data set (bpb, 2021a). Only verified Twitter accounts are included in the data set. Second, reference texts and reference scores are collected for the analysis. On one side, the party manifestos for the six major political parties are collected for the 2017 and 2021 German Federal Elections. On the other side, the 2019 Chapel Hill Expert Survey is obtained. The 2017 party manifestos are utilized as reference texts. The overall ideological scores of the expert survey are used as the reference scores and assigned to the respective 2017 party manifestos. The overall ideological score refers to the known left-to-right positioning of the parties according to the expert evaluations. Subsequently, the 2017 party manifestos with their respective scores are utilized to predict the scores for the 2021 party manifestos and 2021 tweets.

Our results present novel implications for academic research and emphasize the need to further study and build robust measures of candidate-party congruence. We find support for a correlation between a higher level of candidate-party congruence for the campaign winners compared to the campaign losers. We conclude that parties and candidates should closely work together to ensure congruent messaging on social media. Our findings have implications beyond the 2021 German Federal Elections. The importance of candidate-party congruence applies to other German elections, as well as other countries with a multi-party system and electoral systems with proportional representation.

2. Literature Review

Democratic representation can be understood as the preference congruence between voters, candidates, and parties. However, the relationship between candidates, parties, and voters varies depending on the voting system. In countries with plurality voting (e.g., USA), the proportions of the parliament are constituted by the results of direct candidate mandates. Subsequently, marketing campaigns are more candidate-centric, and subsequently less alignment with the party positions is required. Conversely, in countries with proportional voting systems (e.g., Germany), the proportions of the parliament are constituted by the results of the proportional party votings. Subsequently, marketing campaigns are more party-centric, causing the electoral success of candidates and parties to be more dependent on each other (Pedrazzani & Segatti, 2022). In line with this, empirical findings suggest that the voter-candidate congruence is best explained at the party level in European voting systems (Belchior, 2012). Therefore, the dispersion between candidate and party messaging becomes important.

Advances in text analytics allow us to measure congruence between two entities such as candidates and parties (see group C in table 1). The wordscore procedure enables the computational text scaling on a left-to-right scale based on word frequencies and expert evaluations on party ideology as initial reference scores (Benoit et al., 2022; Martin & Vanberg, 2007; Laver et al., 2003). Applying a similar approach, Slapin & Proksch (2008) developed the wordfish model that enables the computational text scaling of policy positions for time-series data (Slapin & Proksch, 2008). Even though both techniques are applicable for all kinds of political texts, so far they have been predominantly used for party manifesto data. However, these text analysis techniques could also be used to examine the political discussions on social media. Compared to party manifestos, social media is arguably the more frequent point of display for policy positions by candidates and parties towards voters. Addressing this vacancy, this research intends to contribute to current political marketing by applying the wordscore procedure to score candidate tweets. At this time, there is only one pertinent study that implemented a similar research objective. Using a linguistic similarity approach, Giavazzi et al. (2020) examined the changes in tweet texts of parties in the immediate aftermath of exogenous events. Their results suggest that following exogenous events that are perceived as threats, the language in tweet texts on average assimilates over time to the language of the right-wing party AfD (Giavazzi et al., 2020).

Political marketing research with text analytics approaches has been mostly focusing on voter-party congruence instead of candidate-party congruence. Most notably, the congruence between voters and parties is highest for issues that are emphasized during the campaigns (Costello et al., 2022). However, achieving candidate-party congruence is also an important factor for the success of electoral political marketing campaigns (see group A in table 1). More consistent advertising messages are correlated with increases in online word-of-mouth and voter preference. Yet, the type and timing of advertising messages should be considered. Even though they have been implemented increasingly often, extremist messages are generally perceived worse than centrist messages in regards to online word-of-mouth and voter preference (Fossen et al., 2022). This phenomenon is also reflected in electoral debates between lead candidates. During electoral debates, attention is divided and success is found in succinct and detail-oriented tweets. However, after debates, attention is undivided and success is found in abstract tweets rich in visuals and emotions (Berman et al., 2019).

Two other focal concepts of political marketing campaigns should also be considered. First, voter behavior, through the decision to vote or not and whom they vote for, is an important component as the equivalent to consumption in political marketing (Moorthy 2019). Voter behavior is generally modeled based on notions first presented by Newman (1999) that propose five cognitive domains that influence voter behavior: political issues, social imagery, candidate personality, situational contingency, and epistemic value.

Political issues refer to the policies the candidate indicates to introduce once elected. Social imagery and candidate personality reflect the usage of stereotypes to induce specific associations (e.g., with archetypes) to establish the desired image in the voter's mind. Situational contingency utilizes the presentation of hypothetical events to illustrate why the opposing candidate is not fit for the office that he is in contention for. Epistemic value is a concept that is supposed to induce curiosity in choosing a particular candidate. In election campaigns, smaller parties usually utilize epistemic value to compensate for the discrepancy in credibility compared to bigger parties resulting from the lower levels of awareness of and knowledge about smaller parties (Newman, 1999; Newman & Perloff, 2004).

Second, political marketing should be considerate of disseminating political brands (see group B in table 1). The question of whether positive or negative messages are more effective is primarily dependent on the incumbent status of the party. Incumbent government parties use more positive sentiment to make their introduced policies over the last legislature period more palatable to voters. Conversely, incumbent opposition parties tend to use more negative sentiment to criticize the current government and emphasize the difference towards their own proposed policies (Crabtree et al., 2020). The power of using polarity regarding political brands is especially apparent in advertising. Negative advertising by opposing candidates has a stronger negative effect on politicians with strong brands, compared to politicians with weaker brands (Fossen et al., 2019).

Recent empirical studies display that appearance-based inferences about candidates induce changes in election results. These inferences specifically include traits like competence and morals. Their impact is partially driven by trait associations at the party brand level (Hoegg & Lewis, 2011; Cwalina & Falkowski, 2016). However, voters evaluate candidate weaknesses with more weight than candidate strengths (Klein & Ahluwalia, 2005). Particularly populists exploit this, as their campaigns are more negatively oriented, contain more personal attacks and fear messages than campaigns of non-populist candidates (Nai, 2018).

This paper intends to contribute to current political marketing research in three dimensions. First, we utilize the wordscore procedure to measure the political ideology of parties and candidates in the 2021 German Federal Elections. Second, the wordscore outputs are used to construct a measure of candidate-party congruence. Finally, we test whether differences in candidate-party congruence among the political parties in Germany are associated with their relative electoral success in 2021 German Federal Elections.

Table 1. Synopsis of prior work analyzing media and panel study data in political contexts (own rep.).

This table presents an overview for the most relevant, previous scientific findings for the purpose of this research. The findings are categorized in three groups to gain an easier understanding for similarities between the presented studies.

Author(s)	Area	Methods	Sample Size	Source	Key Findings and Contributions
Group A: Political Advertising					
Berger & Milkman (2012)	USA	quantitative	6,956	Journal of Marketing Research	Ad virality is partially propelled by physiological arousal. Content that evokes high-arousal emotions is more viral.
Berman et al. (2019)	USA	quantitative	9,5 million	Journal of Marketing Research	During debates, attention is divided and success is found in succinct and detail-oriented tweets. After debates, attention is undivided and success is found in abstract tweets rich in visuals and emotions.
Clarke et al. (2021)	USA	qualitative	4,361	Journal of Political Marketing	In the 2010 US House and Senate elections, the Democrats displayed themselves as more ideologically liberal in areas where the support for their president Barack Obama was strongest.
Nai (2018)	worldwide	quantitative	195	Journal of Political Marketing	Populist campaigns are 15% more negative, contain 11% more personal attacks and 8% more fear messages than campaigns of non-populist candidates.
Group B: Political Brands					
Cwalina & Falkowski (2016)	Poland	qualitative	132	Journal of Political Marketing	Voters recognize moral and competence in candidates. Candidates that are perceived as moral and competent are more liked than those without these traits.
Hoegg & Lewis (2011)	USA	qualitative	153	Journal of Marketing Research	Appearance-based inferences about candidates induce changes in election results. Their impact is partially driven by trait associations at the party brand level.
Klein & Ahluwalia (2005)	USA	qualitative	2,485	Journal of Marketing	Voters evaluate candidate weaknesses with more weight than candidate strengths. This effect is robust for voters who dislike the candidate.
Slothuus & Bisgaard (2020)	Denmark	quantitative	2,902	American Journal of Political Science	If a party switches its policy positions, its partisans change their policy opinions instantly and substantially. This effect also applies when the new positioning goes against the partisans' previous beliefs.
Group C: Linguistic Similarity & Wordscore Methods					
Giavazzi et al. (2020)	Germany	quantitative	178,271	NBER Working Paper Series	Following exogenous events that are perceived as threats, the language in tweet texts on average assimilates to the language of the right-wing party AfD.
Laver et al. (2003)	England, Germany, Ireland	quantitative	22	American Political Science Review	Development of the wordscore procedure. Reference texts with known a priori scores can be used to score new texts based on wordscores.

3. German Political System

The following sections provide a brief introduction structure of the German Political System and a summary of the 2021 electoral race in Germany. These sections provide the necessary background to digest the empirical aspects and marketing implications in later chapters.

3.1 Electoral System

The *Bundestag* is the parliament and subsequently major legislative body of the Federal Republic of Germany. Its members are regularly elected every four years by the German people as their representatives through the means of general elections. The German Federal Elections are organized with proportional representation voting. Each eligible voter has two votes. With the first vote, the voter determines which candidate is supposed to directly represent the electoral constituency the voter is registered. The candidate with the highest number of votes wins this direct mandate. With the second vote, the voter determines which party is supposed to represent him or her in the parliament. The results of the second vote are operationalized with hierarchical candidate lists, made by each party respectively. Subsequently, if a party receives 30% of the second votes in the federal elections, this party earns 30% of the seats in the parliament for the upcoming legislative period. Additionally, the first 30% of the people in the party's candidate list are elected to be part of the parliament. Hence, the second vote is usually regarded as the more impactful vote (bpb, 2021b). Because of the resulting candidate-party dependency regarding election results, the second vote establishes the necessity to aggregate candidate level data to party level to appropriately account for their relationship.

There are a couple of noteworthy peculiarities in the electoral system of Germany. First, if a party wins more direct mandates with the first votes than they technically earned seats with the second votes, the winning direct candidates are still allowed to be members of the new parliament (*Überhangmandate*). In this event, these mandates are balanced with additional mandates to the other parties according to the proportions of the second vote results (*Ausgleichsmandate*). Thus, the additional mandates restore the actual proportions of the second votes, while also accounting for the first vote results. Second, a party only receives their seats in the parliaments if at least one of two conditions are satisfied. They either need to account for at least five percent of the second

votes (*Sperrklausel*) or win at least three direct mandates (*Grundmandatsklausel*) (Federal Returning Officer, 2021b; bpb, 2021b). Parties that represent minority populations are explicitly excluded from the necessary regulations to be part of the parliament. In 2021, this rule solely applies to the Southern Schleswig Voters' Association (SSW), representing the Danish minority in the state Schleswig-Holstein (SSW, 2021).

3.2 Institutional Environment

For the 2021 German Federal Elections, 53 parties were deemed eligible for voting by the responsible government institution, the federal returning officer (Federal Returning Officer, 2021a). At the start of this research, six parties were projected to satisfy the necessary conditions of being included in the new parliament. This projection was confirmed by the election results. Subsequently, these six parties will be referred to as the "major" parties in the following and introduced briefly (Forsa 2022). The party introductions are based on the dossiers of the impartial state institution German Federal Agency for Civic Education to exclude potential biases.

Alternative for Germany (AfD)

Founded in response to measures to combat the European currency crisis, the Alternative has most notably fought for a restrictive immigration policy, a conservative social policy, and an anti-establishment orientation. Now typically identified as a right-wing populist party, the Alternative has been successful in all elections since 2014. The Alternative became the first right-wing party in post-war Germany to earn representatives in each of the 16 state parliaments and the Bundestag (Decker, 2020a; Lewandowsky, 2018; Decker, 2016).

Christian Democrats (CDU/CSU)

The Christian Democrats (CDU/CSU) represent a conservatively oriented party of the Christian-bourgeois camp in Germany. Typically associated with anti-socialist orientation, its program is characterized by conservative, liberal and Christian-social positions. As the only major twin party in Germany, the union consists of technically two different parties, as the CDU acts as its representative in 15 of 16 German states. At the same time, the CSU only exists in Bavaria instead of the CDU (Decker, 2021c; Bösch, 2018; Zolleis & Schmid, 2013).

Liberal Democrats (FDP)

The Liberal Democrats (FDP) were the only minor party formed at the beginning of the Federal Republic to permanently secure its parliamentary existence aside from the big parties of CDU/CSU and SPD. Occupying a pivotal role in forming coalitions, they have been the favorite partner in coalitions by both CDU/CSU and SPD. With their liberal economic positions and restrictive stance on refugee and European policy, they have an above-average reach among higher-income voters (Decker, 2021a; Treibel, 2018).

The Greens (Bündnis 90 / Die Grünen)

The Greens were the most successful newly founded party in the history of the Germany until the emergence of the Alternative (AfD). They were founded in protest against environmental destruction, the use of nuclear energy, and nuclear armament. Since the 1980s, they have established themselves permanently as the fourth force in the party system alongside the CDU/CSU, SPD, and FDP (Decker, 2020b; Probst, 2015; Probst, 2013).

The Left (Die Linke)

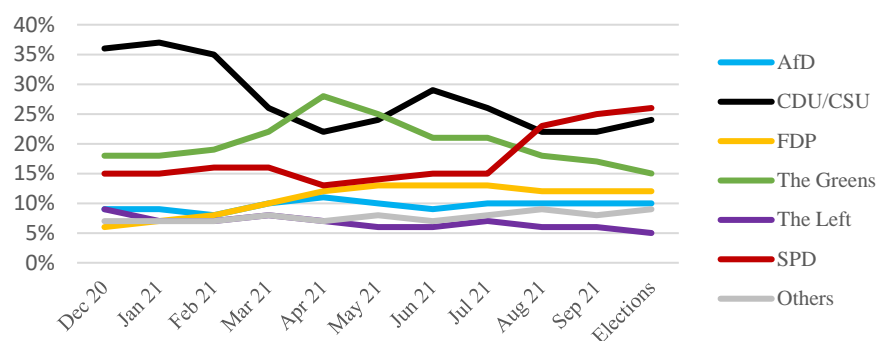
The Left Party assembles the remnants of the East German Socialist Union Party (*SED*), previously organized in its immediate successor organizations Party of Democratic Socialism (*PDS*) and later also the Labor and Social Justice Party (*WASG*) since the German reunification in 1990. It thus has its roots both in the pro-labor-union environment and the protest against the social policies of the 2000s (Decker, 2021b; Neu, 2018; Pfahl-Traugher, 2013).

Social Democrats (SPD)

The Social Democrats (SPD) embody the oldest German party. Giving up its adherence to Marxism with the Godesberg Program in 1959, the SPD began to open up as a party of the people in the late 1950s, becoming the typical representation of its traditional clientele of industrial workers, as well as a large proportion of middle-class voters. Its program can be characterized by the values of freedom, justice, and solidarity (Decker, 2021c; Krell & Woyke, 2015).

3.3 2021 Federal Elections

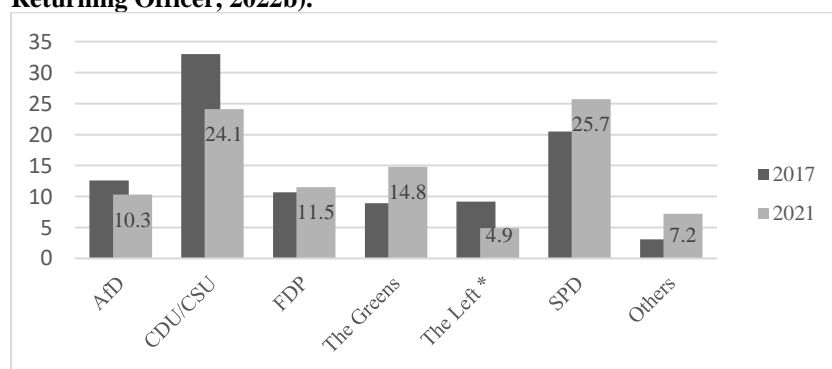
Figure 1. Poll data for the 2021 German Federal Elections (own rep.; based on Forsa 2022).



Note: Each monthly estimate represents the last poll of each month. The used estimates are derived from weekly conducted polls by the German opinion research institute Forsa.

As figure 1 displays, three parties in the Conservatives (CDU/CSU), Greens, and Social Democrats (SPD) were leading the weekly polls during the last year before the elections. Over the last two months before the election, the Social Democrats managed to attain roughly 10% of additional voter support. Three parties (SPD, Greens, and FDP) were able to win votes compared to the previous elections (see figure 2). Particularly in regards to the second votes, the Social Democrats (+2.41 million) and Greens (+2.69 million) were able to gain the support of over two million voters respectively (table 2). In contrast, the Conservatives (-4.14 million) and the Left Party (-2.03 million) lost several million voters. In the aftermath of the elections, the three parties of Social Democrats (SPD), Greens, and Liberal Democrats (FDP) formed a government coalition (Forsa, 2022; Federal Returning Officer, 2018; Federal Returning Officer, 2022b). A more elaborative summary of the elections and the campaigning can be found in Appendix C.

Figure 2. Comparison of results for the 2017 and 2021 German Federal Elections. Percentual shares are based on the second vote proportions (own rep.; based on Federal Returning Officer, 2018; Federal Returning Officer, 2022b).



4. Model

The following sections expounds the framework (chapter 4.1) and conceptual model (4.2) of this research. The framework elaborates the necessary definitions and assumptions for the model construction. Lastly, the hypotheses (chapter 4.3) illustrate the proposed relationships.

4.1 Framework

4.1.1 Campaign Period

There is no legal regulation that determines election campaigns' beginning. The prevailing opinion is that the determination of the election date can be viewed as the starting point for the election campaigns of parties and candidates (Federal Returning Officer, 2021a). Hence, this research defines the campaign period as the interval between December 8th, 2020, and September 26th, 2021. This research utilizes the campaign period as the time limit for the data collection process.

4.1.2 Campaign Success (Winners and Losers)

As table 2 displays, the framework conceptualizes campaign success with a distinction in three campaign groups. The group *Winners* refers to parties that won voter support both in regards to the previous election and the campaign period started. Parties that match these criteria can be characterized to have had a universally successful electoral campaign. Conversely, the group *Losers* refers to parties that lost voter support in regards to both reference points. A possible alternative criterion for the distinction between winners and losers is the status of either government or opposition. However, this criterion does not directly apply to the election results. The strongest parties do not necessarily form a government coalition. This is evident in the results of the 2021 German Federal Elections: the Conservatives (CDU/CSU) represent the second strongest faction in the new parliament. Yet, the new government coalition consists of the first, third, and fourth strongest factions (SPD, Greens & FDP) (Federal Returning Officer, 2022b).

The group *Inconclusive* refers to parties that won voter support regarding one of the reference points but lost voter support regarding the other reference point. This group is created for the two parties Alternative (AfD) and the Greens, as their campaigns cannot be definitively assessed as either wins or losses. The Alternative (AfD) lost parliament seats compared to the previous

elections but won voter support during the campaign term and more direct mandates compared to the previous elections. Conversely, the Greens achieved their best electoral result in history. However, during the campaign period, the Greens lost considerable voter support (Forsa, 2022; Federal Returning Officer, 2022b).

Table 2. Categorization of six major political parties in three groups. The categorization is based on their change in voter support compared to the previous federal elections and the campaign period start (own rep.).

Winners (SPD & FDP)	won voter support in comparison to both pre-measures.
Inconclusive (AfD & Greens)	won voter support in comparison to only one of two pre-measures.
Losers (CDU/CSU & The Left)	lost voter support in comparison to both pre-measures.
Incumbent Status	status resulting from the 2017 German Federal Elections
Elective Status	status resulting from the 2021 German Federal Elections

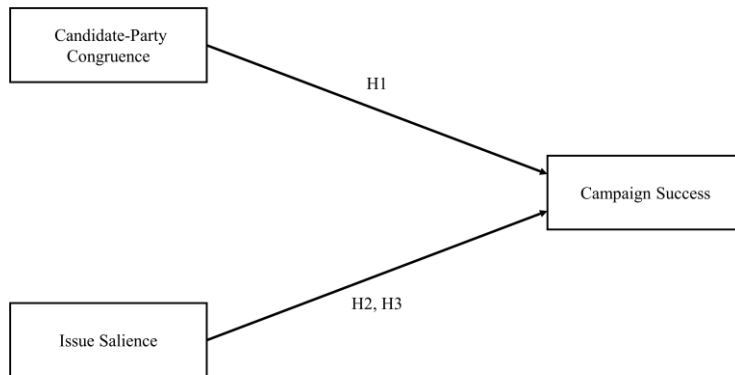
Party	Pre-Measures			Post-Measures		Deltas		Campaign Success
	<i>Election I</i>	<i>Incumbent Status</i>	<i>Campaign Start</i>	<i>Election II</i>	<i>Elective Status</i>	<i>Legislature Period</i>	<i>Campaign Period</i>	
Alternative (AfD)	12.6%	opposition	9.0%	10.3%	opposition	-2.3%	+1.3%	Inconclusive
Conservatives (CDU/CSU)	33.0%	government	36.0%	24.1%	opposition	-8.9%	-11.9%	Losers
Liberal Democrats (FDP)	10.8%	opposition	6.0%	11.5%	government	+0.7%	+5.5%	Winners
Alliance 90 / The Greens (Greens)	8.9%	opposition	19.0%	14.8%	government	+5.9%	-4.2%	Inconclusive
The Left Party (Left)	9.2%	opposition	7.0%	4.9%	opposition	-4.3%	-2.1%	Losers
Social Democrats (SPD)	20.5%	government	16.0%	25.7%	government	+5.2%	+9.7%	Winners

4.2 Conceptual Model and Hypotheses

We want to test whether differences in candidate-party congruence and issue ownership among the political parties in Germany are associated with their relative electoral success in the 2021 German Federal Elections. Figure 3 displays an overview of the variables of interest with their proposed relationship. Based on the literature review, the motivation and academic reasoning for these variables are elaborated in the following. Additionally, specific hypotheses are formalized.

Figure 3. Conceptual Model (own rep.)

This conceptual model is used for the analysis of this research. The variables of interest are defined below. Their proposed relationship are elaborated in the hypotheses.



Candidate-Party Congruence (CPC) expresses the fit or alignment of candidates with the positioning of their party. Achieving a high level of candidate-party congruence is beneficial to candidates for two reasons. First, it enables the transfer of election-relevant trait associations about the party brand to the candidate by voters. These inferences include traits like competence, morals, and leadership (Hoegg & Lewis, 2011; Cwalina & Falkowski, 2016; Schneider & Bos, 2016). Second, more consistent advertising messages are correlated with increases in online word-of-mouth and voter preference (Fossen et al., 2022). Acquiring both of these benefits would give a candidate an enhanced brand value in the voter's mind and therefore arguably a competitive edge over his adversaries. Subsequently, this research proposes that candidate-party congruence may be correlated with electoral campaign success. In this research, the variable candidate-party congruence is expressed by the deviation of candidate tweets within each party from the overall party position based on their left-to-right wing positioning. Based on this reasoning, we formalize hypothesis 1. We expect a higher level of candidate-party congruence displayed in the candidate tweets for the campaign winners compared to the campaign losers.

H1. The deviation between the 2021 party and candidate tweet left-to-right positioning differs between campaign winners and losers.

Issue Salience (IS) refers to the emphasis of specific topics by parties or candidates. Issue salience concepts operate with the assumption that political parties position themselves by emphasizing certain topics more than others (Budge, 2015). First introduced in 1996, Issue Ownership Theory expects this salience to occur for issues where candidates are positioned favorably over their adversaries in the public eye (Petrocik, 1996). Recent adaptations for western European politics propose that parties emphasize issues that they have ownership over and that are currently highly relevant for voters (Wagner & Meyer, 2014; Costello et al., 2022). Applying these theoretic models to our object of study, we can examine the latent heterogeneity of topics in the overall tweet textscore for each candidate. In line with Wagner & Meyer (2014), we examine the topics Corona and Environment because they were arguably the most frequently discussed topics during the campaigning (Feld, 2021; Giehle, 2021).

Because we study tweet texts, we can define issue salience in multiple ways. We could derive it from the proportion of topic-specific tweets to all tweets. However, this would be arguably biased. Parties could purposefully disregard topics in certain time frames, thereby distorting the relative estimates. Instead, we can apply a different approach based on the conceptual idea of wordscores. If we assume that the left-to-right positioning of most topics is near the mean score, a topic that considerably differs from this position can be considered emphasized, because it has significantly different word usage as most other topics. In this research, the variable issue ownership is expressed by the deviation of topic-specific candidate tweets from their overall candidate tweet position based on their left-to-right wing positioning. Based on this reasoning, we formalize hypotheses 2 and 3. We expect a higher deviation from the overall positioning towards the topic-specific positioning in candidate tweets for the campaign winners compared to the campaign losers.

H2. The deviation between the overall candidate tweet and corona-specific candidate tweet left-to-right positioning differs between campaign winners and losers.

H3. The deviation between the overall candidate tweet and environment-specific candidate tweet left-to-right positioning differs between campaign winners and losers.

5. Data

In this chapter, a summarizing overview of the utilized data sets of this research shall be presented. To gain an easier understanding, the explanations for Twitter and Party Program Data are displayed separately because they differ from each other considerably.

5.1 Data Collection and Transformation

5.1.1 Raw Data Collection

Twitter Data

First, the official candidate list for the 2021 German Federal Elections is obtained (bpb, 2021a). This candidate list serves as the seed for the first data set. Subsequently, the first data set represents the posts of candidate accounts from the six major parties within the campaign period (Dec. 2020 – Sep. 2021). Only verified Twitter accounts are included for the final data set. The Twitter data is collected using the Twitter Search API and an R download script. In this download script, several data partitions are scraped. Each data partition represents the collected candidate tweets within one party. All data partitions are merged during the cleaning stage. Every scraped data set is exported as a CSV file in UTF-8 encoding.

Party Program Data

The texts of the party programs for 2017 and 2021 were collected directly from the official websites of the major political parties as PDF files. Unfortunately, the 2017 SPD program was not available for download anymore. Instead, the text was obtained from the ManifestoR database (Burst et al., 2021). Lastly, the downloaded PDF files were converted into TXT files.

5.1.2 Data Cleaning

Twitter Data

First, the data is adjusted by dropping irrelevant columns for this analysis. Only the variables ‘date’ (time of each tweet), ‘screen_name’ (Twitter handle of each candidate), and ‘text’ (tweet text) are kept. Second, a time adjustment is made by excluding tweets outside the campaign term between December 8th, 2020, and September 26th, 2021. Subsequently, the ‘time’ variable is also dropped. Third, the ‘text’ variable is cleaned by removing unwanted special characters, smilies, numbers, HTML codes, URLs, and excess white spaces using regular expressions and the dplyr

manipulation language. Lastly, NA values are handled by replacing them with ‘None’ for character variables and ‘0’ for numeric variables. After the time subset for the campaign period and the cleaning of tweet texts, the final tweet data set contains 218,256 observations.

Party Program Data

To make the text data amenable to natural processing tools, punctuations, numbers, symbols, URLs, and German and English stopwords are removed. To avoid the unwanted dropping of German words that contain special characters (e.g., ä, ö, ü, ß), an additional regular expression is implemented.

5.1.3 Data Preparation & Variable Operationalization

First, an id variable for parties is created to identify each tweet's party allegiance quickly. The resulting categorical variable has six levels representing the respective party: ‘AfD’, ‘CDU’, ‘FDP’, ‘Gruene’, ‘Linke’, and ‘SPD’. Second, a campaign group variable is created. Based on the classification in the model, it displays the levels ‘winners’ (SPD & FDP), ‘losers’ (CDU & Linke), and ‘inconclusive’ (AfD & Gruene). Third, the tweet texts are extracted from the data and converted into documents. This is operationalized by aggregating all tweet texts of each candidate into one document. The aggregation is accomplished by the collapsing of rows of each candidate and subsuming the contents of the text column into one object with the delimiter of a space. Subsequently, all tweet texts of one candidate are treated as one document. Analogous to the tweets, each manifesto is saved as a document.

5.2 Data Overview and Model-Free Evidence

Figure 4. Total volume of candidate tweets. Grouped per party (own rep.).

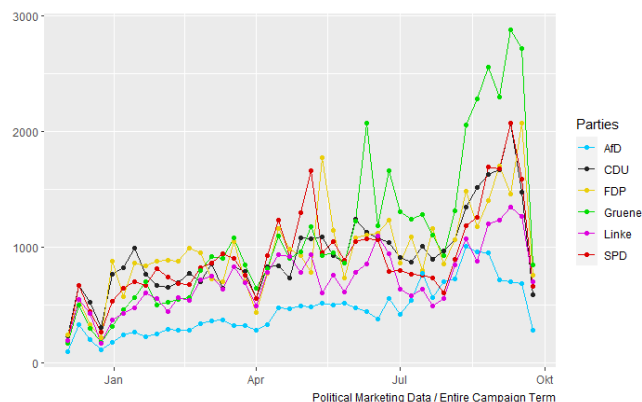
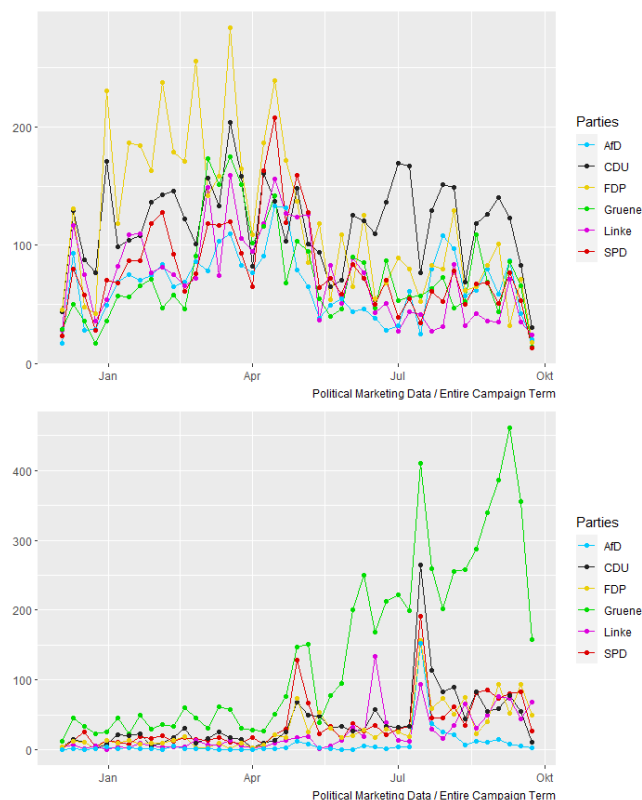


Figure 4 displays the total volume of tweets by each party during the campaign term. The tweet volumes of all parties steadily increased until the election date on September 26th, 2021. In the closing months of the campaign period, the Greens released substantially more tweets than their advisories. Figures 5 and 6 display topic-specific tweet volumes for the topics Corona and Environment. They indicate a responsive relationship between tweet volumes and campaign-relevant events. Figure 4 exhibits roughly two different phases, as there is a visible low point in tweet volumes of all parties at the end of April 2021. The first phase (Dec. 2020 – Apr. 2021) roughly matches the period of existent, corona-related lockdown measures and restrictions in Germany. The second phase (May 2021 – Sep. 2021) is characterized by considerably reduced corona-specific tweet volumes by all parties. Conversely, the importance of the topic Environment expressed in tweet volumes drastically increased in late April 2021 (figure 5). Additionally, a spike in tweet volumes of environment-specific tweets around the time of the floods in western Europe is visible (July 13th – July 15th, 2021).

Figure 5-6. Comparison of tweet volumes for topic-specific tweets.

Corona (upper) vs. Environment tweets (lower) (own rep).



6. Methodology

6.1 Wordscore Procedure

A key component of this thesis is to measure political candidates' ideology as expressed on Twitter and compare them to their political party's ideology. To implement this, I utilize a text analytic procedure, known as wordscores. The following sections outline the wordscore procedure and how it is applied in this thesis.

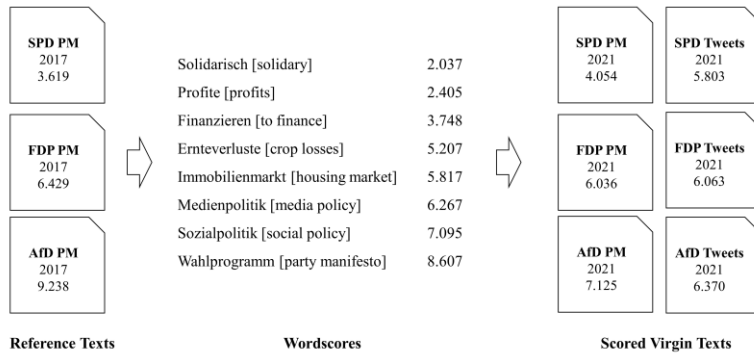
The wordscore procedure was first introduced by Laver et al. (2003) and is designed to map words and texts based on their ideological position. To construct this mapping, the procedure first needs to learn how individual words correspond to ideological positions. First, I use political manifestos from the 2017 German Federal Elections for each party that contain their political ideology. These ideologies are then mapped to a left-to-right positioning index using expert evaluations from the 2019 Chapel Hill Expert Survey. Thus, each manifesto is scored in its ideological position. Second, scores for each unique word and subsequently each of the manifesto texts is computed. Third, with this mapping between words and positions now learned by the statistical model, I can use it to predict the ideological positions of new, as yet unscored texts. These first three steps are analogous to the original procedure proposed by Laver et al. (2003). However, because our virgin texts are tweets rather than manifestos, an additional rescaling step is needed to account for the inaccuracies induced by the change in the platform (manifestos vs tweets). I adopt two rescaling procedures proposed by Laver et al. (2003) and Martin & Vanberg (2007) who argue this transformation leads to more robust predictions. These four steps are shown in table 3, and the following sections provide further details on the implementation of each.

Table 3. Overview of the Wordscore Procedure (own rep.)

	Methodological Procedure	Application of this Research
Step 1.	A Priori Model Calibration <ul style="list-style-type: none"> collecting reference texts assigning reference scores to reference texts collecting virgin texts 	<ul style="list-style-type: none"> 2017 party manifestos 2019 Chapel Hill Expert Survey 2021 party manifestos and 2021 campaign period tweets
Step 2.	Computing Wordscores & Reference Textscores	
Step 3.	Computing Virgin Textscores	
Step 4.	Robust Transformation of Scores	

Figure 7. Exemplary excerpt of the application of the wordscore procedure in this research (own rep.)

The main computational operation in this thesis is the application of the wordscore procedure. To illustrate the conceptual idea of wordscores, this is an exemplary excerpt of the procedure in its general steps. Each step is explained in details in the following (Note: PM refers to party manifesto).



The wordscore procedure estimates policy positions by comparing two sets of political texts with scores in a numerical positional scale. The dimensions of the positional scores need to be well-delineated and defined before the start of the analysis. Like Laver et al. (2003), this research utilizes a positional scale that indicates left-wing to right-wing positioning. On the left-hand side, reference texts refer to a set of texts whose positions can be assigned a priori based on reliable independent sources or expert evaluations. On the right-hand side, virgin texts refer to a set of texts whose scores are not yet known and are to be examined in the analysis. It is important to distinguish between the terms wordscores and textscores. Wordscores refer to the expected policy position of any text, given that we only look at a particular word. Textscores refer to the expected policy position of texts based on the computation of wordscores (Laver et al., 2003).

Selection of Reference Texts & Reference Textscores

The selection of an appropriate set of reference texts is essential for the validity of the wordscore procedure. Laver et al. (2003) propose a guideline in choosing suitable reference texts. The “hard-and-fast rule” requires reliable estimates of, or assumptions about, the respective positions in the examined policy dimensions. In Germany, the proposed policies of each party are regularly expressed in party manifestos approaching the elections. The 2019 Chapel Hill Expert Survey contains left-wing-to-right-wing evaluations of party manifestos (1999-2019) of 277 European parties on political ideology. The 2019 Chapel Hill Expert Survey is chosen because it is the most

comprehensive expert survey on political parties in Europe. The 2019 Chapel Hill Expert Survey operationalizes with a scale of 0 to 10. On this scale, the score 0 represents holistically left, and the score 10 represents holistically right (Jolly et al., 2019). As displayed in table 4, the left-wing-to-right-wing scores of the 2019 Chapel Hill Expert Survey are applied as reference scores for the party manifestos. These party manifestos are utilized as reference texts.

Table 4. Reference Scores (own rep.)

Scores are derived from the overall ideological score of the 2019 Chapel Hill Expert Survey. On this scale, the score 0 represents holistically left, and the score 10 represents holistically right. Subsequently, all scores below 5 are more left-wing oriented and conversely all scores higher than 5 are more right-wing oriented (own rep.; based on Jolly et al., 2019).

The Left	The Greens	SPD	FDP	CDU/CSU	AfD
1.429	3.238	3.619	6.429	6.524	9.238

This research conducts the selection of reference texts and reference textscores in R. This approach requires the usage of corpora and document-feature matrices. A corpus represents the storage library for the text derived from the original documents. It is the data source for a document-feature matrix (DFM), in which the documents represent the rows and the features (e.g., words, syntactic dependencies etc.) are displayed by the columns. The texts in document-feature matrices must be prepared by tokenization, lower-casing texts, and removing punctuation and stopwords. Tokenization refers to the extraction of singular, unique words as ‘tokens’ (Benoit et al., 2022).

Generating Wordscores from Reference Texts

The set of reference texts is represented by R in this research. The textscores A_{rd} express the estimated a priori position of each reference text r on the scoring dimension d . First, we observe the relative frequencies of tokens F_{wr} in the reference texts. This variable expresses the proportion of the total number of occurrences for each token w to the total number of words in texts. Computed for all reference texts, the results are stored in a matrix of relative word frequencies.

Second, we compute the conditional probability matrix P_{wr} based on the matrix of relative word frequencies. For each peculiarity of w and r , this matrix expresses the probability that we are reading reference text r , given the occurrence of word w (Laver et al., 2003):

$$(1) \quad P_{wr} = \frac{F_{wr}}{\sum_r F_{wr}}$$

Given this probability matrix, the wordscores for the reference texts can be generated. With this measure at hand, we attain a left-to-right score for each unique word. The wordscores S_{wd} are computed as the mean of textscores A_{rd} , weighted by the probabilities P_{wr} :

$$(2) \quad S_{wd} = \sum_r (P_{wr} \cdot A_{rd})$$

Scoring Virgin Texts with Textscores

With the individual words now scored using the party manifestos, the next step is to predict the ideological positions of unseen texts. These unseen texts are called virgin texts. The set of virgin texts is represented by V in this research. Analogous to the wordscores of reference texts, we first observe the relative frequencies of tokens F_{wv} in the virgin texts. Second, the textscores S_{vd} are computed as the mean dimension score of all the scored words S_{wd} , weighted by the relative frequencies of the scored words F_{wv} (Laver et al., 2003):

$$(3) \quad S_{vd} = \sum_w (F_{wv} \cdot S_{wd})$$

This score infers the expected position of the virgin text on the chosen left-to-right scale. This inference operates with the necessary assumption that the relative frequencies of words are related to policy positions uniformly in reference and virgin texts. This assumption only holds, if the reference texts are chosen appropriately.

6.2 Robustness Check of Estimates

Uncertainty of Estimates

The wordscore procedure calculates wordscores and textscores as precise point estimates. Taking the uncertainty of point estimates into account, a variance and standard error for each estimate can be calculated additionally. The variance V_{vd} expresses the deviation of each wordscore from the virgin textscore, weighted by the frequency of the given word in the virgin text. Given this variance, a standard deviation for each estimate can be computed with the square root of the variance. The term N^v refers to the total number of scored virgin words.

$$(4) \quad V_{vd} = \sum_w F_{wv} (S_{wd} - S_{vd})^2$$

$$(5) \quad SD_{vd} = \frac{\sqrt{V_{vd}}}{\sqrt{N^v}}$$

Robustness Check 1 – LBG Transformation (Laver et al., 2003)

Words that occur in all or most of reference texts tend to be scored near the mean overall score of all reference texts. Subsequently, raw virgin textscores are often situated more clustered than the reference textscores and the dispersion of the virgin text scores is scored on a smaller scale. The LBG transformation is one alternative to adjust for this (see formula 6). This transformation maintains the relative position of the virgin textscores and adjusts their variance to the reference text variance. Subsequently, reference textscores and virgin textscores are directly comparable.

$S_{\bar{vd}}$ refers to the average textscore of the virgin texts. SD_{rd} and SD_{vd} are sample standard deviations of reference and virgin textscores respectively (Laver et al., 2003):

$$(6) \quad S_{vd}^* = (S_{vd} - S_{\bar{vd}}) \left(\frac{SD_{rd}}{SD_{vd}} \right) + S_{\bar{vd}}$$

Robustness Check 2 – MV Transformation (Martin & Vanberg, 2007)

Instead of using standard deviations, the authors rescale by utilizing the extreme points of reference scores (A_{max} , A_{min}) and raw textscores (P_{max} , P_{min}). Given any raw textscore P_t , the robust textscore is:

$$(7) \quad \hat{P}_t = \left((P_t - P_{min}) \frac{A_{max} - A_{min}}{P_{max} - P_{min}} \right) + A_{min}$$

Comparing both approaches, the MV transformation has a key advantage. The LBG transformation utilizes standard deviations to rescale the raw textscores of virgin texts. This approach is highly sensitive to the selection of virgin texts. However, the MV transformation rescales all raw textscores – both reference and virgin texts – according to the original reference scores. This approach is insensitive to the selection of virgin texts and produces more reliable estimates than the LBG transformation. Hence, we use the MV transformation (Martin & Vanberg, 2007).

6.3 Measurements for Difference Testing

We construct two measures of difference for the candidate tweets. The candidate-party congruence CPG_c is captured as the deviation of robust candidate tweet textscores MV_{cp} from the measure for overall party positioning MV_p for each candidate c in party p . With an analogous approach, the measure IS_{ct} expresses the deviation of topic-specific tweets MV_{cpt} from the overall position MV_{cpo} for topic t :

$$(8) \quad CPG_c = (MV_{cp} - MV_p)^2$$

$$(9) \quad IS_{ct} = (MV_{cpt} - MV_{cpo})^2$$

With this measure at hand, we implement an ANOVA test to formally examine differences. An ANOVA test requires roughly normally distributed, independent samples with homogeneity of variances. Thus, we implement a Levene test. It operates with the null hypothesis that the variances can be considered equal. If the null hypothesis is rejected, the standard ANOVA results are not directly applicable. We can instead use the Welch ANOVA, which provides robust results, if the assumption of variance homogeneity is violated. Because ANOVA tests are omnibus procedures, they only identify general differences between groups – not between which particular groups. Hence, we deploy the Tukey post-hoc test, which precisely determines the nature of differences between specific groups (Montgomery, 2013).

7. Results

7.1 Study 1 – Candidate-Party Congruence

The goal of study 1 is to compute the candidate-party congruence displayed in the tweet texts and examine it for differences between campaign winners and losers. To implement this, the wordscores and textscores for all manifesto and candidate tweet documents are computed. Then, the raw textscores are rescaled using the MV transformation to attain robust point estimates for all documents.

Table 5. Comparison of 2021 Party Manifesto and Average Tweet Positioning (own rep.).

With the usage of the wordscore procedure, the raw textscore estimates for the 2021 party manifesto and candidate tweets are computed. To operationalize this, the aggregated tweet texts by each singular candidate are treated as one document. Therefore, each candidate attains one textscore. For the final estimates, each raw textscore is rescaled according to the MV transformation (Martin & Vanberg, 2007). Lastly, the overall party position is computed as the unweighted average of all candidate textscores within each party. The delta expresses the difference between the MV estimates of the 2021 manifesto and tweet textscores.

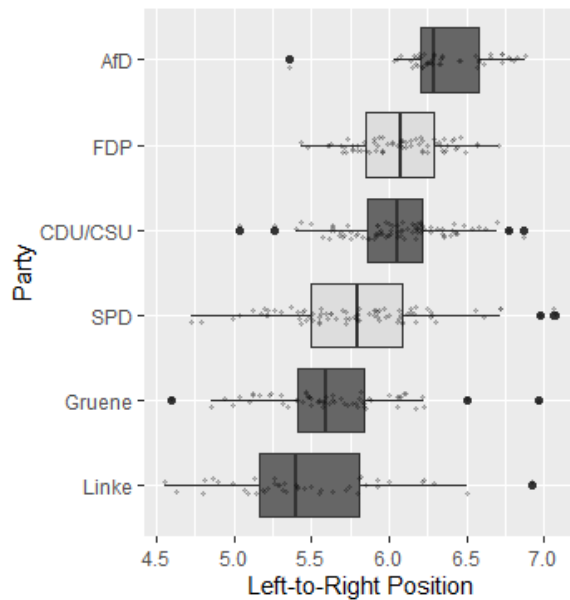
Party	Reference Texts <i>R</i>		Virgin Texts <i>V</i>		Delta
	2017 party manifesto reference scores	2017 party manifesto MV estimates [standard errors]	2021 party manifesto MV estimates [standard errors]	2021 campaign tweets MV estimates [standard errors]	
The Left	1.429	1.429 [0.030]	2.811 [0.030]	5.472 [0.065]	+2.611
The Greens	3.238	3.148 [0.022]	4.137 [0.023]	5.626 [0.056]	+1.489
Social Democrats (SPD)	3.619	3.915 [0.028]	4.054 [0.039]	5.803 [0.098]	+1.749
Liberal Democrats (FDP)	6.429	6.535 [0.032]	6.036 [0.033]	6.063 [0.068]	+0.027
Conservatives (CDU/CSU)	6.524	5.797 [0.043]	5.086 [0.028]	6.044 [0.104]	+0.958
Alternative (AfD)	9.238	9.238 [0.067]	7.125 [0.048]	6.370 [0.117]	-0.755

Note: MV is an abbreviation for the authors Martin & Vanberg.

Table 5 displays the robust textscores for the 2021 party manifestos and the unweighted average of all candidate tweet textscores within each party. We can observe multiple interesting peculiarities here. As expected, the virgin texts are scored more clustered than the reference texts. Additionally, the Conservatives (CDU/CSU) and Liberal Democrats (FDP) have a switched relative positioning in the virgin texts. Whereas the Conservatives are scored as the second most right-wing positioned party based on their 2017 party manifesto, the Liberal Democrats occupy this role for both 2021 party manifestos and the campaign tweets. Comparing the MV estimates of 2021 party manifestos and campaign tweets, it is salient that, except for the Alternative (AfD), all other five parties are scored with a more right-wing oriented textscore. The candidates of the Left Party (+2.611) deviate the most from their 2021 party manifesto positioning, while the Liberal Democrats (+0.027) have the most aligning manifesto and candidate tweet positionings.

Figure 8. Boxplot of candidate tweet textscores in ascending median order. Grouped by party. Winners (SPD & FDP) are depicted in grey. Other parties are depicted in black (own rep.).

The boxplot displays the median value and IQR range for the candidate textscores in each party. The individual candidate textscores are depicted by the grey jitter dots across the boxplot. Outliers in the party distributions are displayed by the round dots outside the boxplot rectangle. We operationalize with a scale of 0 to 10. On this scale, the score 0 represents holistically left, and the score 10 represents holistically right (Jolly et al., 2019). Subsequently, all scores below 5 are more left-wing oriented and conversely all scores higher than 5 are more right-wing oriented.



Color Legend: Winners (grey), other parties (black)

Figure 9 examines the distribution of candidate tweet textscores within each party. There are no visible differences in the sample distributions of the winner parties (SPD & FDP) compared to the other parties. However, based on the range of candidate tweet positionings, the more right-wing oriented parties (AfD, FDP & CDU/CSU) have denser candidate tweet textscore distributions than the more left-wing oriented parties (SPD, Greens & The Left).

Table 6. Results for difference testing of candidate-party congruence (own rep.).

For the pre-test, the candidate tweet textscores are grouped based on their party affiliation (six political parties). For the testing of hypothesis 1, the candidate tweet textscores are grouped based on their campaign group affiliation (winners, losers & inconclusive). Analogous to the computation of the estimates in table 6, the raw textscores are rescaled according to the MV transformation to attain robust estimates (Martin & Vanberg, 2007).

Two different measures of spread are utilized in the difference testing. M1 implements the 2021 party manifesto textscore as reference point estimate. Therefore, the measure of spread in the M1 iteration refers to the squared difference between the 2021 party manifesto textscore and the candidate tweet textscore. M2 implements the mean of all candidate textscores within each party as reference point estimate. Therefore, the measure of spread in the M2 iteration refers to the squared difference between the mean candidate textscore per party and the candidate tweet textscore.

	Pre-Test		H1: Candidate-Party Congruence	
	Differences between all six parties (AfD, CDU/CSU, FDP, Greens, Left, SPD)		Differences between campaign groups (winners vs. losers vs. inconclusive)	
	M1	M2	M1	M2
Levene Test				
df	5	5	2	2
F value	30.795	4.410	13.452	0.476
p value	<0.001 (***)	<0.001 (***)	<0.001 (***)	0.622
ANOVA				
df	5	5	2	2
Sum Sq	1761.8	1.627	169.7	0.077
Mean Sq	352.4	0.325	84.87	0.039
F value	178.4	4.872	13.83	0.549
p value	<0.001 (***)	<0.001 (***)	<0.001 (***)	0.578
Welch ANOVA				
df	5	5	2	2
F value	183.44	153.82	10.503	0.603
p value	<0.001 (***)	<0.001 (***)	<0.001 (***)	0.548

A formal test of the above notion utilizes an ANOVA test. The null hypothesis states that the deviation from the overall party positioning to the candidate tweet positioning does not differ among parties (pre-test) or campaign groups (H1). Conversely, the alternative hypothesis states that there are significant differences. To implement this test, we need to formalize a measure of spread between party positioning and candidate tweet positionings. One alternative is to utilize the 2021 party manifesto as reference textscore for the individual candidate tweet textscores. This research refers to this measure of spread as M1. However, comparing manifesto and tweet texts directly can be viewed as biased, as the language in a document for political ideology does not necessarily correspond with the language candidates use to address voters on social media. Hence, this research constructs an alternative measure of spread called M2, that instead uses the mean candidate tweet textscore as the reference point. This way, tweets are directly compared to tweets instead of manifestos. The results of the ANOVA tests are displayed in table 6.

Pre-Test.

As an initial step, we test whether the deviation between the 2021 party and candidate tweet left-to-right positioning differs between all parties. This may appear self-explanatory at first sight. However, if differences among all parties individually cannot be substantiated, it is unlikely that our analysis regarding campaign groups can yield any significant results. The Levene test results indicate that the variances of candidate tweet textscores are significantly unequal among all six parties ($F(5)=30.795$, $p<0.001$). Hence, the assumption of variance homogeneity does not hold and we need to interpret the Welch ANOVA. As expected, we observe significant differences for the candidate-party differences among parties for both measures of spread (M1: $F(5)=183.44$, $p<0.001$; M2: $F(5)=153.82$, $p<0.001$). This result indicates that the congruence between the party positioning and candidate tweet positioning significantly differs among parties, regardless of the deployed measure of spread. Therefore, we find support for the pre-test.

Hypothesis 1.

The Levene test results indicate that the variances of candidate tweet textscores are significantly unequal between the three campaign groups (winners, losers & inconclusive) for the M1 measure of spread ($F(2)=13.452$, $p<0.001$). However, the assumption of variance homogeneity does hold for the M2 measure of spread ($F(2)=0.476$, $p=0.622$). Subsequently, we need to interpret the Welch

ANOVA for M1 and can directly interpret the standard ANOVA results for the M2 measure of spread. As expected, we observe significant differences for the candidate-party differences among campaign groups for the M1 measure of spread ($F(2)=10.503$, $p<0.001$). However, these significant differences cannot be substantiated for the M2 measure of spread ($F(2)=0.549$, $p=0.578$). These results enable two inferences. First, the differences between the 2021 party manifesto and candidate tweet textscores significantly differ among campaign groups. Second, the differences between mean candidate tweet textscore and candidate tweet textscores do not significantly differ between campaign groups. Therefore, we find partial support for hypothesis 1. Based on the results for the hypothesis 1 variance analysis, we can deploy a Tukey HSD post-hoc test to analyze the size and orientation of the significant differences between the 2021 party manifesto and candidate tweet textscores among campaign groups. The results of the Tukey HSD test are presented in table 7.

Table 7. Tukey post-hoc test results for oriented hypotheses 1 testing based on the previous ANOVA results. M1 measure of spread is deployed (own rep.).

Based on the model specifications, the following three campaign groups are applied:

Winners . Social Democrats (SPD) & Liberal Democrats (FDP)

Inconclusive. Alternative (AfD) & Greens

Losers. Conservatives (CDU/CSU) & The Left

	Difference	95% Confidence Interval	p value
loser-inconclusive	1.510	[0.752; 2.269]	<0.001
winner-inconclusive	0.197	[-0.541; 0.935]	0.806
winner-loser	-1.314	[-2.018;-0.609]	<0.001

We observe two highly significant between-group differences. First, the candidates of the winner parties deviate significantly less (-1.314) from the 2021 party manifesto positioning than the loser parties ($p<0.001$). Second, the candidates of the loser parties deviate significantly more (+1.510) from the 2021 party manifesto positioning than the inconclusive parties ($p<0.001$). These results enable two inferences. First, the candidates of winner parties display a significantly higher level of congruence towards the language used in the 2021 party manifestos. Second, the candidates of the loser parties showcase low amounts of congruence towards the language utilized in their 2021 party manifestos.

7.2 Study 2 – Issue Salience

The goal of study 2 is to compute the issue salience of candidate tweets and then examine whether these deviations significantly differ between campaign groups (winners, losers & inconclusive). We conduct this analysis to examine the potential, latent heterogeneity of textscores regarding different topics. To implement this, we first generate the topic-specific candidate tweet textscores for the central election topics Corona and Environment.

Table 8. Comparison of Average Overall Tweet Positioning and Topic-Specific Tweet Positioning (Corona, Environment) (own rep.).

Analogous to the computation of table 6, the wordscores and textscores are computed and subsequently rescaled according to the MV transformation (Martin & Vanberg, 2007). The overall party position is computed as the unweighted average of all candidate textscores within each party. The deltas express the differences between the overall candidate tweet positioning and the topic-specific candidate tweet positionings for corona and environment respectively.

Party	Overall Tweet Positioning MV estimates [standard errors]	Corona Tweet Positioning MV estimates [standard errors]	Env. Tweet Positioning MV estimates [standard errors]	Corona Delta	Environment Delta
The Left	5.472 [0.065]	5.679 [0.543]	4.639 [0.827]	+0.207	-0.833
The Greens	5.626 [0.056]	5.812 [0.573]	4.580 [0.549]	+0.186	-1.046
Social Democrats (SPD)	5.803 [0.098]	5.901 [0.558]	4.810 [0.768]	+0.098	-0.993
Liberal Democrats (FDP)	6.063 [0.068]	5.950 [0.467]	5.628 [0.775]	-0.113	-0.435
Conservatives (CDU/CSU)	6.044 [0.104]	5.988 [0.459]	5.049 [0.643]	-0.056	-0.995
Alternative (AfD)	6.370 [0.117]	5.901 [0.464]	5.729 [0.936]	-0.469	-0.641

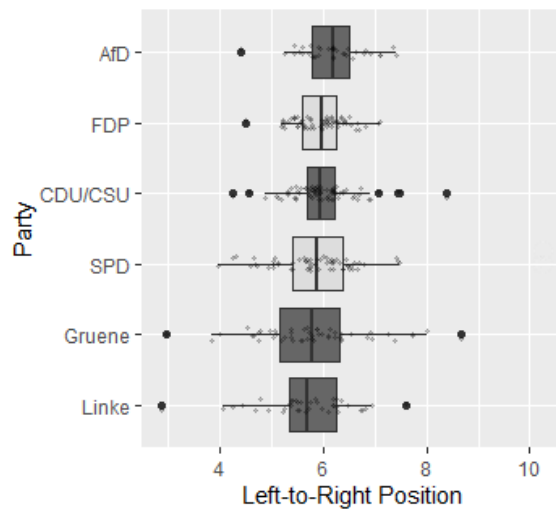
Note: MV is an abbreviation for the authors Martin & Vanberg.

Table 8 displays the unweighted average candidate tweet textscores per party, itemized for the overall, corona-specific, and environment-specific positioning. The deltas express the differences between the overall and topic-specific positioning for each party. We observe that the topic Corona is discussed with very similar word usages of all parties, as the topic-specific positionings are scored much more condensed than the overall tweet positioning. The topic Environment is discussed coherently with more left-wing oriented word usages by all parties. The Greens (-1.046) deviate the most from their overall positioning, whereas the Alternative (-0.641) deviates the least from their overall positioning.

Figures 7 and 8 displays the distribution of topic-specific candidate tweet textscores within each party. We observe that the median candidate tweet textscore for Corona is almost identical across all parties. A similar observation can be made about the three more left-wing oriented parties (SPD, Greens, Left Party) for the topic Environment.

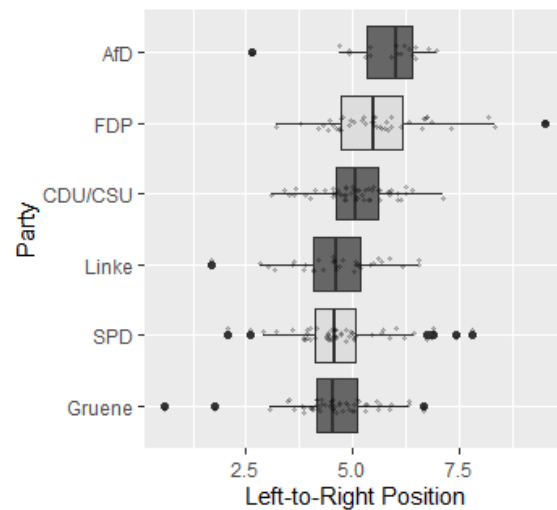
Figures 9-10. Boxplots of topic-specific candidate tweet textscores in ascending median order. Grouped by party. Winners (SPD & FDP) are depicted in grey. Other parties are depicted in black (own rep.).

The boxplot displays the median value and IQR range for the candidate textscores in each party. The individual candidate textscores are depicted by the grey jitter dots across the boxplot. Outliers in the party distributions are displayed by the round dots outside the boxplot rectangle. We operationalize with a scale of 0 to 10. On this scale, the score 0 represents holistically left, and the score 10 represents holistically right (Jolly et al., 2019). Subsequently, all scores below 5 are more left-wing oriented and conversely all scores higher than 5 are more right-wing oriented.



Corona Tweets

Color Legend: Winners (grey), other parties (black)



Environment Tweets

Table 9. Results for difference testing of issue salience (own rep.).

For the testing of hypothesis 2 and 3, the candidate tweet textscores are grouped based on their campaign group affiliation (winners, losers & inconclusive). Analogous to the computation of the estimates in table 6, the raw textscores are rescaled according to the MV transformation to attain robust estimates (Martin & Vanberg, 2007). The deviations between overall and topic-specific positioning are computed for each candidate.

	H2: Corona	H3: Environment
Levene Test		
df	2	2
F value	0.281	0.290
p value	0.972	0.749
ANOVA		
df	2	2
Sum Sq	0.100	5.700
Mean Sq	0.075	2.870
F value	0.040	0.355
p value	0.961	0.702

For the hypothesis tests, we deploy an ANOVA test that applies a similar setup as study 1. The null hypothesis states that the deviation from the overall candidate tweet positioning to the topic-specific candidate tweet positioning does not differ among campaign groups. Conversely, the alternative hypothesis states that there are significant differences among campaign groups. The results of the ANOVA test are displayed in table 9.

Hypothesis 2

The Levene test confirms the homogeneity of variances, so the output of the ANOVA is directly interpretable ($F(2)=0.281$, $p=0.972$). We do not observe any significant differences in the corona-specific deviations among campaign groups ($F(2)=0.040$, $p=0.961$). Therefore, we do not find support for hypothesis 2.

Hypothesis 3

The Levene test confirms the homogeneity of variances, so the output of the ANOVA is directly interpretable ($F(2)=0.290$, $p=0.749$). We do not observe any significant differences in the corona-specific deviations among campaign groups ($F(2)=0.355$, $p=0.702$). Therefore, we do not find support for hypothesis 3.

8. Discussion

8.1 Summary

The goal of this research is to identify differences in social media marketing activities between electoral campaign winners and losers in the context of the 2021 German Federal Elections. For this goal, we collect two large sets of data. First, we collect all electoral candidate tweets of the six major political parties in Germany during the entire campaign period. Second, we collect the party manifestos of the six major political parties for the 2017 and 2021 Federal Elections. We deploy advanced text analysis methods for this research. The wordscore procedure allows us to map texts on a left-to-right wing scale based on the occurrence of words in the texts and expert evaluations on political ideology (Laver et al., 2003). We adjust this method with a transformation that converts the raw scores into more robust estimates (Martin & Vanberg, 2007). Using this methodology, we can map all collected party manifestos and candidate tweets on a left-to-right wing scale for our analysis. To account for potentially latent heterogeneity of topics in the tweets, we also examine issue salience regarding central election topics (Corona, Environment) individually in addition to the overall tweet positioning.

We observe several interesting results. First, we find support for a correlation between a higher level of candidate-party congruence for the campaign winners compared to the campaign losers. Second, we observe that the topic Corona is discussed with very similar word usages of all parties, as the topic-specific positionings are scored much more condensed than the overall tweet positioning. Third, the topic Environment is discussed coherently with more left-wing oriented word usages by all parties. However, for both topics, we cannot substantiate support for differences between campaign groups in the topic-specific deviations from the overall positioning.

Our results present novel implications for academic research and emphasize the need to further study and build robust measures of candidate-party congruence. An interesting outline for this would be to link these measures to actual voter behavior. Recent examples for empirical studies like this focused on the inclusion of voter preferences and survey data (Fossen et al., 2022; Costello et al., 2022).

Our findings have implications beyond the 2021 German Federal Elections. They apply to other German federal and state elections because they have the same political system and at least partially the same voters. Outside of German politics, the importance of candidate-party congruence applies to other countries with a multi-party system and electoral systems with proportional representation such as Belgium, Denmark, Sweden, and the Netherlands.

8.2 Marketing Implications

This research highlights and dissects the importance of social media for electoral campaigns in the US and western European countries (Hoegg & Lewis, 2011; Silva & Proksch, 2021; Williams, 2017). The results of this research present empirical evidence for a correlation between a higher candidate-party congruence in candidate tweets and the campaign winners (SPD & FDP) of the 2021 German Federal Elections. The candidates of campaign winners conveyed the most congruent messaging on social media, thus creating a more consistent public image to potential voters. This is in line with current research, as more consistent advertising messages are correlated with increases in online WOM and voter preference (Fossen et al., 2022).

Because we utilize the wordscore procedure to attain these results, we can derive multiple conclusions from this. Parties and candidates should closely work together to ensure a congruent messaging on social media. This can be accomplished by utilizing common social media managers and agencies for timely coordination, as well as consistency in style and content dimensions. Additionally, parties can deploy focus group studies in which they identify which slogans or common phrases are best received by their electorate and target groups of potential voters. Using these slogans and common phrases consistently across candidates would also achieve a high level of candidate-party congruence.

8.3 Limitations and Future Research

This research utilizes ANOVA tests for its hypothesis testing. Therefore, the research design only enables inferences for correlations as a statistical indicator of the relationship between variables. However, it does not allow to make any inferences for cause-and-effect relationships between variables. In line with this, the omitted variable bias should be considered. There might be other variables that influence campaign success and candidate-party congruence, that are not explicitly

modeled or accounted for. Campaign and electoral success depend on voter behavior, yet the influences on this variable are difficult to be directly measured and isolated from other influences. Additionally, the dissemination of information on social media likely does not reflect the entirety of information dissemination in the political discourse, as not every piece of information or opinion is directly shared on social media by voters.

While the wordscore procedure is a powerful tool, its inherent inefficiencies in measurements have also been covered in political marketing research. First, if party manifestos are analyzed with word scores, the inherent assumption is made that each mentioned topic or policy has the same importance for the parties' stakeholders. However, this is arguably not true: some policies are more dispensable than others, as the results of coalition negotiations display. Second, words that occur in all or most reference texts tend to be scored near the mean overall score of all reference texts. Subsequently, raw virgin textscores are often situated more clustered than the reference textscores and the dispersion of the virgin text scores is scored on a smaller scale. However, this inaccuracy is accounted for as best as possible with the utilized transformation methods in this research (Laver et al., 2003; Martin & Vanberg, 2007). Additionally, the degree of condensation differs considerably across countries, party types, and party manifestos that they are based on, which reaffirms the validity of the wordscore procedure (Bräuninger et al., 2013).

Three outlines for future research can be derived from the results of this research. First, the conceptual idea of wordscores can be extended with recent advances in text analysis. A possible approach for this is the concept of topical word embeddings, which takes context and word orders into account. This technique iteratively assigns latent associations for words as topics. An example of this would be the association of the topics 'food' and 'information technology' to the word 'apple' due to its nature as fruit and brand name for the IT company Apple (Liu et al., 2015; Kusner et al., 2015). Building on this, word embeddings could also be connected to sentiments and emotions (Rudkowsky et al., 2018). Second, an algorithm to filter the tweets for their content could be applied in the data cleaning process. As social media accounts of politicians are not exclusively aligned to electoral campaign activities, some tweets might not be necessarily relevant for analysis, thus causing a bias of estimates. Third, the results of this research can be validated with similar research designs in European countries with similar political and voting systems.

References

- Belchior, A. M. (2012). Explaining Left–Right Party Congruence Across European Party Systems. *Comparative Political Studies*, 46(3), 352–386.
<https://doi.org/10.1177/0010414012453695>
- Benoit, K., Watanabe, K., Wang, H., Nulty, P., Obeng, A., Müller, S., Matsuo, A., Lowe, W., & European Research Council. (2022, March 1). *Quick Start Guide*. Quanteda. Retrieved March 9, 2022, from
<https://quanteda.io/articles/quickstart.html>
- Berger, J., & Milkman, K. L. (2012). What Makes Online Content Viral? *Journal of Marketing Research*, 49(2), 192–205.
<https://doi.org/10.1509/jmr.10.0353>
- Berman, R., Melumad, S., Humphrey, C., & Meyer, R. (2019). A Tale of Two Twitterspheres: Political Microblogging During and After the 2016 Primary and Presidential Debates. *Journal of Marketing Research*, 56(6), 895–917.
<https://doi.org/10.1177/0022243719861923>
- Bräuninger, T., Debus, M. & Müller, J. (2013). Estimating Policy Positions of Political Actors Across Countries and Time, Mannheim : 2013, Arbeitspapiere – Mannheimer Zentrum für Europäische Sozialforschung, 153, 1-28.
- Budge, I. (2015). Issue Emphases, Saliency Theory and Issue Ownership: A Historical and Conceptual Analysis. *West European Politics*, 38(4), 761–777.
<https://doi.org/10.1080/01402382.2015.1039374>
- Bundeszentrale für politische Bildung (bpb) (2021a). Kandidatinnen und Kandidaten [Candidates]. Bundeszentrale für politische Bildung [Federal Agency for Civic Education]. Retrieved on September 15, 2021, from
<https://www.bpb.de/nachschlagen/zahlen-und-fakten/bundestagswahlen/339917/kandidierende>
- Bundeszentrale für politische Bildung (bpb) (2021b). Bundestag. Bundeszentrale für politische Bildung [Federal Agency for Civic Education]. Retrieved on September 15, 2021, from
<https://www.bpb.de/nachschlagen/lexika/pocket-politik/16362/bundestag>
- Burst, T., Krause, W., Lehmann, P., Lewandowski, J., Matthieß, T., Merz, N., Regel, S. & Zehnter, L. (2021). Manifesto Corpus. Version 2021-1. Berlin: WZB Berlin Social Science Center. Retrieved on September 15, 2021, from
<https://manifesto-project.wzb.eu/information/documents/corpus>

- Bösch, F. (2018). *Christlich Demokratische Union Deutschland (CDU)* [Christian Democratic Union of Germany (CDU)], in: Frank Decker / Viola Neu: Handbuch der deutschen Parteien, Vol. 3, Wiesbaden, 242-261.
- Clarke, A. J., Gray, T. R., & Hughes, A. G. (2018). Advertising Ideology: Using Crowd-Sourced Measurement to Understand Campaigns. *Journal of Political Marketing*, 20(2), 198–218. <https://doi.org/10.1080/15377857.2018.1486771>
- Costello, R., Toshkov, D., Bos, B., & Krouwel, A. (2022). Congruence between Voters and Parties: The Role of Party-Level Issue Salience, p.1-27.
- Crabtree, C., Golder, M., Gschwend, T. & Indridason, I.H. (2020). It Is Not Only What You Say, It Is Also How You Say It: The Strategic Use of Campaign Sentiment. *The Journal of Politics*, 82(3), 1-17.
- Cwalina, W., & Falkowski, A. (2016). Morality and Competence in Shaping the Images of Political Leaders. *Journal of Political Marketing*, 15(2–3), 220–239. <https://doi.org/10.1080/15377857.2016.1151121>
- Decker, F. (2016). *Die "Alternative für Deutschland" aus der vergleichenden Sicht der Parteienforschung* [The "Alternative for Germany" from the Comparative Perspective of Party Research], in: Alexander Häusler, Die Alternative für Deutschland, Wiesbaden, 7-23.
- Decker, F. (2020a). *Kurz und bündig: Die AfD* [In a nutshell: The AfD], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/afd/211108/kurz-und-buendig>
- Decker, F. (2020b). *Kurz und bündig: Die Grünen* [In a nutshell: The Greens], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/gruene/42149/kurz-und-buendig>
- Decker, F. (2020c). *Kurz und bündig: Die SPD* [In a nutshell: The SPD], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/spd/42080/kurz-und-buendig>

- Decker, F. (2021a). *Kurz und bündig: Die FDP* [In a nutshell: The FDP], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/fdp/42106/kurz-und-buendig>
- Decker, F. (2021b). *Kurz und bündig: Die Linke* [In a nutshell: The Left], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/die-linke/42128/kurz-und-buendig>
- Decker, F. (2021c). *Kurz und bündig: Die CDU* [In a nutshell: The CDU], in: Dossier. Parteien in Deutschland, Bundeszentrale für politische Bildung. Universität Bonn, Institut für Politische Wissenschaft und Soziologie. Retrieved on October 18, 2021, from <https://www.bpb.de/politik/grundfragen/parteien-in-deutschland/cdu/42058/kurz-und-buendig>
- Federal Returning Officer. (2018). *Results Germany 2017 - The Federal Returning Officer*. Bundeswahlleiter [Federal Returning Officer]. Retrieved March 3, 2022, from <https://www.bundeswahlleiter.de/en/bundestagswahlen/2017/ergebnisse/bund-99.html>
- Federal Returning Officer. (2021a): Wahlkampfphase [Campaign period]. Bundeswahlleiter [Federal Returning Officer]. Retrieved October 7, 2021, from <https://www.bundeswahlleiter.de/service/glossar/w/wahlkampfphase.html>
- Federal Returning Officer. (2021b): Wahltermin zum 20. Deutschen Bundestag ist der 26. September 2021. [The election date for the 20th German Bundestag is September 26th, 2021]. Bundeswahlleiter [Federal Returning Officer]. Retrieved October 7, 2021, from <https://www.bundeswahlleiter.de/mitteilungen/bundestagswahlen/2021/20201214-wahltermin.html>
- Federal Returning Officer. (2022a). *2021 Bundestag Election: greater turnout of young voters - The Federal Returning Officer*. Bundeswahlleiter [Federal Returning Officer]. Retrieved March 3, 2022, from https://www.bundeswahlleiter.de/en/info/presse/mitteilungen/bundestagswahl-2021/01_22_ergebnis-rws.html
- Federal Returning Officer. (2022b). *Results Germany 2021 - The Federal Returning Officer*. Bundeswahlleiter [Federal Returning Officer]. Retrieved March 3, 2022, from <https://www.bundeswahlleiter.de/en/bundestagswahlen/2021/ergebnisse/bund-99.html>
- Feld, C. (2021). Ein Wahlkampf in ungewöhnlichen Zeiten [Campaigning in unusual times]. Tagesschau. ARD-Hauptstadtstudio. Retrieved February 28, 2022, from <https://www.tagesschau.de/inland/btw21/bilanz-wahlkampf-101.html>

- Forsa. (2022). Sonntagsfrage – Forsa (Wahlumfragen zur Bundestagswahl) [Sunday Surveys - Forsa (electoral surveys regarding the German Federal Elections)]. Wahlrecht.de / Forsa Institute. Retrieved March 3, 2022, from <https://www.wahlrecht.de/umfragen/forsa.htm>
- Fossen, B. L., Schweidel, D. A., & Lewis, M. (2019). Examining Brand Strength of Political Candidates: a Performance Premium Approach. *Customer Needs and Solutions*, 6(3–4), 63–75. <https://doi.org/10.1007/s40547-019-0092-z>
- Fossen, B. L., Kim, D., Schweidel, D. A., & Thomadsen, R. (2022). The role of slant and message consistency in political advertising effectiveness: evidence from the 2016 presidential election. *Quantitative Marketing and Economics*. <https://doi.org/10.1007/s11129-021-09246-x>
- Fujiwara, T., Müller, K., & Schwarz, C. (2020). How Twitter affected the 2016 presidential election. *VOX EU. Research-Based Policy Analysis and Commentary from Leading Economists*. <https://voxeu.org/article/how-twitter-affected-2016-presidential-election>
- Geer, J. G. (2012). The News Media and the Rise of Negativity in Presidential Campaigns. *PS: Political Science & Politics*, 45(03), 422–427. <https://doi.org/10.1017/s1049096512000492>
- Giavazzi, F. (2020). Terrorist Attacks, Cultural Incidents and the Vote for Radical Parties: Analyzing Text from Twitter. National Bureau of Economic Research (NBER) Working Paper 26825. Retrieved February 14, 2022, from <https://www.nber.org/papers/w26825>
- Giehle, S. (2021). Bundestagswahl 2021. Die wichtigsten Fakten. [2021 German Federal Elections. The most important facts]. Retrieved February 28, 2022, from <https://www.alumniportal-deutschland.org/deutschland/land-leute/bundestagswahl-2021>
- Hager, A., & Hilbig, H. (2020). Does Public Opinion Affect Political Speech? *American Journal of Political Science*, 64(4), 921–937. <https://doi.org/10.1111/ajps.12516>
- Haman, M., & Skolnik, M. (2021). Politicians on Social Media. The online database of members of national parliaments on Twitter. *Profesional de La Información*, 30(2), 1–14. <https://doi.org/10.3145/epi.2021.mar.17>
- Hoegg, J., & Lewis, M. V. (2011). The Impact of Candidate Appearance and Advertising Strategies on Election Results. *Journal of Marketing Research*, 48(5), 895–909. <https://doi.org/10.1509/jmkr.48.5.895>

- Homonoff, H. (2021, December 10). *2020 Political Ad Spending Exploded: Did It Work?* Forbes.
<https://www.forbes.com/sites/howardhomonoff/2020/12/08/2020-political-ad-spending-exploded-did-it-work/>
- Jolly, S., Bakker, R., Hooghe, L., Marks, G., Polk, J., Rovny, J., Steenbergen, M. & Vachudova, M.A. (2019). Chapel Hill Expert Survey Trend File, 1999-2019. Electoral Studies. Retrieved February 14, 2022, from
<https://www.chesdata.eu/2019-chapel-hill-expert-survey>
- Klein, J. G., & Ahluwalia, R. (2005). Negativity in the Evaluation of Political Candidates. *Journal of Marketing*, 69(1), 131–142.
<https://doi.org/10.1509/jmkg.69.1.131.55509>
- Krell, C. & Woyke, M. (2015). *Die Grundwerte der Sozialdemokratie. Historische Ursprünge und politische Bedeutung* [The fundamental values of social democracy. Historical origins and political significance], in: Christian Krell / Tobias Mörschel, Werte und Politik, Wiesbaden, 93-137.
- Kusner, M., Sun, Y., Kolkin, N. & Weinberger, K. (2015). From Word Embeddings To Document Distances. Proceedings of the 32nd International Conference on Machine Learning, in Proceedings of Machine Learning Research 37, 957-966.
- Laver, M., Benoit, K., & Garry, J. (2003). Extracting Policy Positions from Political Texts Using Words as Data. *American Political Science Review*, 97(02).
<https://doi.org/10.1017/s0003055403000698>
- Lewandowsky, M. (2018). *Alternative für Deutschland (AfD)* [Alternative for Germany (AfD)], in: Frank Decker / Viola Neu, Handbuch der deutschen Parteien, Vol. 3, 161-170.
- Liu, Y., Liu, Z., Chua, T. S., & Sun, N. (2015). *Topical Word Embeddings*. AAAI Conference on Artificial Intelligence. Twenty-Ninth AAAI Conference on Artificial Intelligence. Retrieved February 14, 2022, from
<https://www.aaai.org/ocs/index.php/AAAI/AAAI15/paper/view/9314/0>
- Lovett, M. J. (2019). Empirical Research on Political Marketing: a Selected Review. *Customer Needs and Solutions*, 6(3–4), 49–56.
<https://doi.org/10.1007/s40547-019-00100-6>
- Martin, L. W., & Vanberg, G. (2007). A Robust Transformation Procedure for Interpreting Political Text. *Political Analysis*, 16(1), 93–100.
<https://doi.org/10.1093/pan/mpm010>
- Montgomery, D.C (2013). *Experiments with a Single Factor: The Analysis of Variance*, in: Design and Analysis of Experiments. 10th Edition. 55-79.

- Moorthy, S. (2019). On Marketing Strategy in Electoral Politics. *Customer Needs and Solutions*, 6(3–4), 57–62.
<https://doi.org/10.1007/s40547-019-00102-4>
- Nai, A. (2018). Fear and Loathing in Populist Campaigns? Comparing the Communication Style of Populists and Non-populists in Elections Worldwide. *Journal of Political Marketing*, 20(2), 219–250.
<https://doi.org/10.1080/15377857.2018.1491439>
- Neu, V. (2018). *Die Linke* [The Left Party], in: Frank Decker / Viola Neu, Handbuch der deutschen Parteien, Vol. 22, Wiesbaden, 384–401.
- Newman, B.I. (1999): *A predictive model of voter behavior*, in: B.I. Newman, Handbook of political marketing. Thousand Oaks, CA: Sage.
- Newman, B.I. & Perloff, R.M. (2004): *Political Marketing: Theory, Research, and Applications*, in: Lawrence Erlbaum Associates, Handbook of Political Communication Research / edited by Lynda Lee Kaid, Mahwah, New Jersey, London, 17–45.
- Pedrazzani, A., & Segatti, P. (2022). Responsiveness When Parties Are “Weak”: A Candidate-Based Analysis of Voter-Party Congruence in Europe. *Party Politics*, 28(1), 149–162.
<https://doi.org/10.1177/1354068820968091>
- Petrocik, J. R. (1996). Issue Ownership in Presidential Elections, with a 1980 Case Study. *American Journal of Political Science*, 40(3), 825.
<https://doi.org/10.2307/2111797>
- Pew Research Center (Pew). (2016). Election 2016: Campaigns as a Direct Source of News. Retrieved March 14, 2022, from <http://www.journalism.org/2016/07/18/election-2016-campaigns-as-a-direct-source-of-news/>
- Pfahl-Traughber, A. (2013). *Die Partei des Demokratischen Sozialismus (PDS), DIE LINKE* [The Party of Democratic Socialism (PDS), DIE LINKE], in: Oskar Niedermayer, Handbuch Parteienforschung, Wiesbaden, 541–562.
- Probst, L. (2013). *Bündnis 90/Die Grünen (GRÜNE)* [Alliance 90/The Greens (GRÜNE)], in: Oskar Niedermayer, Handbuch Parteienforschung, Wiesbaden, 509–540.
- Probst, L. (2015). *Bündnis 90/Die Grünen: Absturz nach dem Höhenflug* [Bündnis 90/Die Grünen: Crash after soaring high], in: Oskar Niedermayer, Die Parteien nach der Bundestagswahl 2013, 135–158.

- Rudkowsky, E., Haselmayer, M., Wastian, M., Jenny, M., Emrich, S., & Sedlmair, M. (2018). More than Bags of Words: Sentiment Analysis with Word Embeddings. *Communication Methods and Measures*, 12(2–3), 140–157.
<https://doi.org/10.1080/19312458.2018.1455817>
- Schneider, M. C., & Bos, A. L. (2016). The Interplay of Candidate Party and Gender in Evaluations of Political Candidates. *Journal of Women, Politics & Policy*, 37(3), 274–294. <https://doi.org/10.1080/1554477x.2016.1188598>
- Silva, B. C., & Proksch, S. O. (2021). Politicians unleashed? Political communication on Twitter and in parliament in Western Europe. *Political Science Research and Methods*, 1–17.
<https://doi.org/10.1017/psrm.2021.36>
- Slapin, J. B., & Proksch, S. O. (2008). A Scaling Model for Estimating Time-Series Party Positions from Texts. *American Journal of Political Science*, 52(3), 705–722.
<https://doi.org/10.1111/j.1540-5907.2008.00338.x>
- Slothuus, R., & Bisgaard, M. (2020). How Political Parties Shape Public Opinion in the Real World. *American Journal of Political Science*, 65(4), 896–911.
<https://doi.org/10.1111/ajps.12550>
- Spiegel (2021). Große Mehrheit hat Wahlentscheidung schon getroffen [Large majority has already made election decision]. Spiegel Umfrage. Retrieved November 16, 2021, from <https://www.spiegel.de/politik/deutschland/umfrage-vor-bundestagswahl-ein-fuenftel-der-waehler-noch-unentschieden-a-05550973-9407-4435-83d1-b4505bb130e7>
- Spenkuch, J. L., & Toniatti, D. (2018). Political Advertising and Election Results*. *The Quarterly Journal of Economics*, 133(4), 1981–2036.
<https://doi.org/10.1093/qje/qjy010>
- Südschleswigscher Wählerverband (SSW) (2021). Über den SSW [About the SSW]. Retrieved February 14, 2022, from <https://www.ssw.de/die-partei/ueber-den-ssw>
- Todorov, A., Mandisodza, A. N., Goren, A., & Hall, C. C. (2005). Inferences of Competence from Faces Predict Election Outcomes. *Science*, 308(5728), 1623–1626.
<https://doi.org/10.1126/science.1110589>
- Treibel, J. (2018). *Freie Demokratische Partei (FDP)* [Free Democratic Party (FDP)], in: Frank Decker / Viola Neu, Handbuch der deutschen Parteien, Vol. 3, Wiesbaden, 319–331.
- Trilling, D. (2014). Two Different Debates? Investigating the Relationship Between a Political Debate on TV and Simultaneous Comments on Twitter. *Social Science Computer Review*, 33(3), 259–276.
<https://doi.org/10.1177/0894439314537886>

- Wagner, M., & Meyer, T. M. (2014). Which Issues do Parties Emphasise? Salience Strategies and Party Organisation in Multiparty Systems. *West European Politics*, 37(5), 1019–1045. <https://doi.org/10.1080/01402382.2014.911483>
- Williams, C. B. (2017). Introduction: Social Media, Political Marketing and the 2016 U.S. Election. *Journal of Political Marketing*, 16(3–4), 207–211. <https://doi.org/10.1080/15377857.2017.1345828>
- Zolleis, U. & Schmid, J. (2013). *Die Christlich Demokratische Union Deutschlands (CDU)* [The Christian Democratic Union of Germany (CDU)], in: Oskar Niedermayer, *Handbuch Parteienforschung*, Wiesbaden, 415-437.

Appendices

Appendix A. Data

Appendix B. Results

Appendix C. 2021 Federal Elections

GitHub Repository

<https://github.com/philippklaeger/Gaining-The-Competitive-Edge>

Data Sets

Candidate Tweets Data

https://drive.google.com/file/d/1kH7gd1iNSgWOnBj3fBfeY-oKexz_3p_8/view?usp=sharing

Party Manifesto Data

<https://drive.google.com/file/d/1Sv7rNSH3eYUhfOmhQKGBU6MxvwKKz0gl/view?usp=sharing>

Wordscore / Textscore Data

<https://drive.google.com/file/d/182zpfEFUFarKkbjkqH90kpCs-iQsNO5u/view?usp=sharing>

Appendix A. Data

Data Set – Tweets

Table A1. Summary Statistics for the Candidate Tweet Data.

218,256 observations

Party	SPD	CDU/CSU	Greens	FDP	AfD	Left
Observations	39,435	40,133	47,116	41,364	19,361	30,847
Most Used Words	1. spd (2987) 2. geht (1841) 3. cdu (1761) 4. menschen (1648) 5. mal (1505) 6. schon (1423) 7. danke (1393) 8. innen (1373) 9. dann (1354) 10. laschet (1250)	1. deutschland (2166) 2. cdu (1974) 3. corona (1899) 4. geht (1743) 5. menschen (1699) 6. spd (1557) 7. wollen (1423) 8. danke (1351) 9. gibt (1285) 10. mio (1251)	1. klimaschutz (3617) 2. menschen (2728) 3. geht (2208) 4. cdu (2201) 5. btw (1994) 6. laschet (1985) 7. bundesregierung (1923) 8. wollen (1915) 9. bundestag (1899) 10. innen (1856)	1. fdp (3225) 2. vielzutun (1924) 3. corona (1852) 4. deutschland (1688) 5. geht (1654) 6. menschen (1638) 7. dann (1551) 8. immer (1514) 9. schon (1488) 10. gibt (1461)	1. afD (7674) 2. deutschland (1619) 3. bundestag (1564) 4. corona (1301) 5. btw (925) 6. deutschland- (842) 7. merkel (830) 8. kongress (793) 9. schon (758) 10. cdu (735)	1. menschen (2137) 2. linke (1838) 3. bundesregierung (1493) 4. cdu (1461) 5. bundestag (1439) 6. btw (1361) 7. geht (1254) 8. corona (1206) 9. deutschland (1173) 10. gibt (1127)

Figures A2. Wordclouds of all candidate tweets.



Figures A3-A8. Wordclouds of all candidate tweets. Grouped by party.



Social Democrats (SPD)



Conservatives (CDU/CSU)



Greens



Liberal Democrats (FDP)



Alternative (AfD)



The Left

Table A2. 2019 Chapel Hill Expert Survey (own rep.; based on Jolly et al., 2019)

This research utilizes the overall ideological score as reference scores for the wordscore procedure. For further contextualization, this table provides further insights in the specific policy positions of the six major political parties in Germany.

	SPD	CDU/CSU	Greens	FDP	AfD	Left
Overall	3.619	6.524	3.238	6.429	9.238	1.429
Ideological Score						
left vs. right						
Economic Issues Score	3.714	6.143	3.810	7.905	7.000	1.286
left vs. right						
Social & Cultural Values Score	3.381	6.571	1.095	3.429	9.524	2.810
libertarian vs. traditional						
Immigration Policy Score	4.150	6.850	1.700	5.950	9.900	2.700
liberal vs. restrictive						
Environmental Score	4.700	6.125	1.550	7.526	8.450	4.250
sustainability vs. econ. growth						
State Spendings Score	3.053	6.395	3.158	8.895	7.286	1.000
public services vs. tax reduction						
Identity Score	3.421	6.211	1.105	3.895	9.684	2.895
cosmopolitanism vs. nationalism						
Trade Orientation Score	4.222	3.778	3.882	1.611	6.688	6.222
liberalization vs. protectionism						
Civil Score	4.050	7.150	1.850	3.450	9.500	2.421
civil liberties vs. law & order						

Appendix B. Results

Table B1. Left-Wing vs. Right-Wing Words

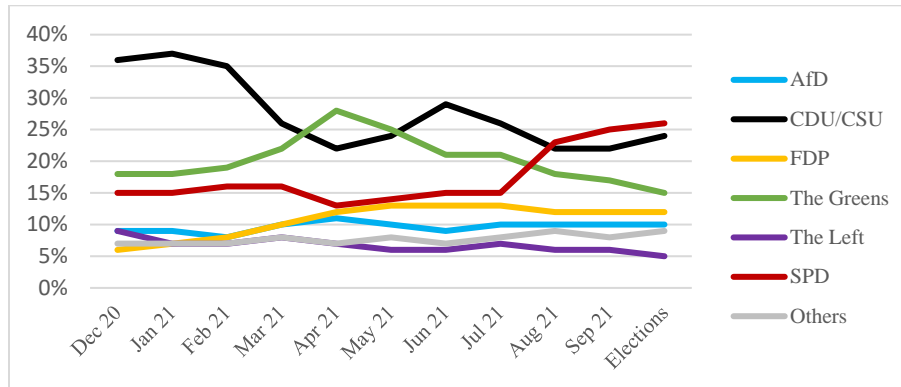
This table provides an overview over the most extremely scored words in the candidate tweets.

	Most Left-Wing Words	Wordscore		Most Right-Wing Words	Wordscore
1.	Linke [Left]	(1.570)	1.	AfD [AfD]	(8.857)
2.	Solidarische [solidary]	(2.247)	2.	Wahlprogramm [electoral manifesto]	(8.386)
3.	Profite [profits]	(2.497)	3.	Bundestagswahl [federal elections]	(8.247)
4.	Beschäftigten [employees]	(2.510)	4.	Volk [people]	(7.543)
5.	Armut [poverty]	(2.636)	5.	Willkommenskultur [welcoming culture]	(7.410)
6.	Löhne [wages]	(2.692)	6.	Bundesbank [federal bank]	(7.191)
7.	Kämpft [fights]	(2.736)	7.	Islam [Islam]	(7.124)
8.	Gewerkschaften [unions]	(2.742)	8.	Zuwanderung [immigration]	(7.113)
9.	Sozial [social]	(2.763)	9.	Parteienfinanzierung [party funding]	(7.063)
10.	Druck [pressure]	(2.790)	10.	Schweizer [Swiss]	(7.016)

Appendix C. 2021 Federal Elections

Poll History

Figure C1. Poll data for the 2021 German Federal Elections (own representation; based on Forsa 2022).

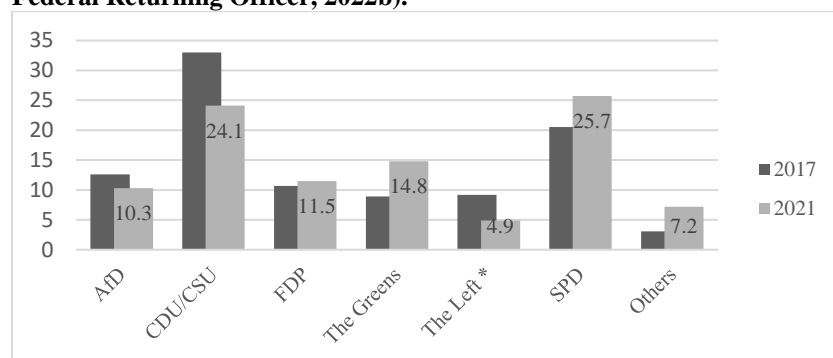


Note: Each monthly estimate represents the last poll of each month. The used estimates are derived from weekly conducted polls by the German opinion research institute Forsa.

As figure 1 displays, three parties in the Conservatives (CDU/CSU), Greens and Social Democrats (SPD) were leading the weekly polls during the last year before the elections. Despite starting into the year with a considerable surplus, the Conservatives were unable to retain their lead in the elections in late September. The Greens appeared to be their fiercest rival for most of the campaign. However, it was ultimately the Social Democrats rose victorious. Over the last two months before the election, the Social Democrats managed to attain roughly 10% of additional voter support. In the aftermath of the elections, the three parties of Social Democrats (SPD), Greens and Liberal Democrats (FDP) formed a government coalition. Referring to the parties' colors, this coalition is also known as the "traffic light coalition" (Forsa 2022).

Election Results

Figure C2. Comparison of results for the 2017 and 2021 German Federal Elections. Percentual shares are based on the second vote proportions (own representation; based on Federal Returning Officer, 2018; Federal Returning Officer, 2022b).



* Note: The Left Party failed to win at least 5% of the second votes. However, they satisfied the other necessary condition of being included in the parliament by winning three direct mandates.

Table C2. Comparison of vote counts and seats for the 2017 and 2021 German Federal Elections (own representation; based on Federal Returning Officer, 2018; Federal Returning Officer, 2022b).

	2021			Difference to 2017		
	First Votes (Candidate)	Second Votes (Party)	Seats	First Votes (Candidate)	Second Votes (Party)	Seats
Alternative (AfD)	4,695,611	4,803,902	83	-621,888	-1,074,213	-11
Conservatives (CDU/CSU)	13,239,572	11,178,298	197	-4,046,666	-4,139,046	-49
Liberal Democrats (FDP)	4,042,951	5,319,952	92	+793,713	+320,503	+12
The Left	2,307,536	2,270,906	39	-1,659,101	-2,026,364	-30
The Greens	6,469,081	6,852,206	118	+2,751,159	+2,693,806	+51
Social Democrats (SPD)	12,234,690	11,955,434	206	+805,459	+2,416,053	+53

As figure 2 displays, three parties (SPD, Greens and FDP) were able to win votes compared to the previous elections (Forsa 2022). Particularly in regards to the second votes, the Social Democrats (+2.41 million) and Greens (+2.69 million) were able to gain the support of over two million voters respectively (table 2). In contrast, the Conservatives (-4.14 million) and the Left Party (-2.03 million) lost several million voters (Federal Returning Officer, 2018; Federal Returning Officer, 2022b). Additionally, the proportion of small parties that did not meet the entry requirements to be included in the parliament increased (Forsa 2022). Subsequently, for the first time in 16 years, the strongest faction in the parliament is represented by the Social Democrats and not the Conservatives.

Voter Demographics

The 2021 German Federal Elections are characterized with a record share of postal voters (47.3%). This characteristic could be attributed to the Covid-19 pandemic and the associated regulations. The voter turnout in 2021 was 76.6%. The age group of 50- to 59-year-olds (80.2%) represents the highest voter turnout per age group (Federal Returning Officer, 2021a). The Greens, Social Democrats (SPD) and Conservatives (CDU/CSU) were elected predominantly by women. Conversely, the Alternative (AfD), Liberal Democrats and the Left Party were preponderately elected by men (Federal Returning Officer, 2021c).

The Conservatives and Social Democrats are both reliant of older voters. The Conservatives realized above-average voter potential among voters aged 70 or older with a share of 38.4%. Only 8.2% of first voters and 10.3% of voters aged 25 to 34 elected the Conservatives. Similarly, the voters of the Social Democrats represent the strongest faction among voters aged 60 to 69 (31.7%), and the second strongest faction among voters aged 70 or older (34.2%). Unlike the Conservatives, the Social Democrats performed considerably better among first voters (15.6%) and voters aged 25 to 34 (17.4%) (Federal Returning Officer, 2021c).

The Greens and Liberal Democrats are particularly successful among young voters. The Greens represent the strongest faction among first voters (24.0%) and voters aged 25 to 34 (22.9%). Appositely, the Liberal Democrats also realized above-average voter potential among first voters (20.5%) and voters aged 25 to 34 (14.9%). Similarly, the Left Party draws its main support from first voters (7.8%) and voters aged 25 to 34 (6.6%). The Alternative (AfD) performed best among the voters aged 25 to 34 (14.9%) and voters aged 35 to 44 (12.4%) (Federal Returning Officer, 2021c).

Regarding all voters, the Alternative (10.3%) represents the second smallest faction in the new parliament. However, the Alternative has noticeably higher voter success in the states of the former German Democratic Republic. In the states Saxony (24.6%) and Thuringia (24.0%), the Alternative had the highest share of second votes of all parties. Except for Berlin, the Alternative represents the second or third strongest faction in all other four eastern states (Federal Returning Officer, 2021c).