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No Wall But Some Gaps: Voter Turnout in Reunified Germany

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Abstract: Previous research provides limited insight into why voter participation still differs between East and West Germany more than three decades after reunification. In this study, we look at the difference in voter turnout in German federal elections, specifically for the constituencies along the former East-West border of the country. Guided by Riker and Ordeshook's (1968) simple calculus of voter framework, itself based on Downs's (1957) rational choice perspective of turnout, we examine the role that socioeconomic factors may have in explaining the consistently lower turnout in the East. We focus on the most recent federal election held on September 26, 2021. Our findings indicate that lower levels of disposable income and educational attainment in the East increase the costs of voting. Additionally, lower trust in institutions – most likely rooted in the legacy of the Soviet-era authoritarian regime – reduce the non-material benefits of voting, further discouraging electoral engagement. A weaker sense of civic duty and worse political knowledge also contribute to these differences. Altogether, East Germans tend to have lower expected returns to voting, and therefore a lower voter turnout. Ultimately, this study sheds light on how historical, socioeconomic, and institutional factors continue to shape voter behaviour in a reunified Germany.

Keywords: Voter Turnout, Electoral Participation, Rational Choice Perspective, Calculus of Voting, East-West Germany

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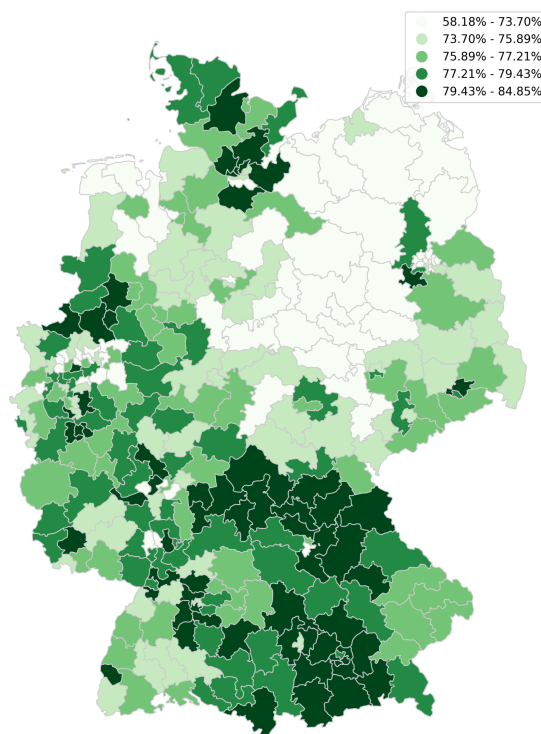
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1 Introduction

Why do some people vote while others abstain? For decades, researchers have studied and debated the factors that influence voter turnout. An especially intriguing question is why some regions vote less than their close neighbours — a pattern observed in Germany where electoral constituencies in the former East consistently show lower turnout rates than those in the former West (see Figure 1). This traces back to the Second World War and Germany’s division into two states which developed under vastly different political and economic systems. Despite reunification over 30 years ago, differences in voter turnout persist. This study investigates the socioeconomic factors that might explain this regional disparity.

Figure 1: **Voter Turnout Across German Constituencies in the 2021 Federal Election.**



Note: Authors’ own map. Each quintile contains the same number of constituencies.

Source: Data from die Bundeswahlleiterin.

To explore this, we use Ordeshook and Riker’s (1968) calculus of voting framework. The model posits that an individual’s voting behaviour is based on a cost-benefit analysis where they weigh the perceived benefits of voting against the costs. Ordeshook and Riker’s model is an extension of Downs’s (1957) rational choice theory, and incorporates non-material and psychological factors into the perceived benefits of voting.

Our study begins by examining the difference in voter turnout in the last federal election held on September 26, 2021. We show that the difference is important: Eastern regions had a voter turnout on average 3.5 percentage points lower than Western regions. The same pattern is observed when focusing on the electoral constituencies located on the former border¹: Eastern constituencies had a voter turnout on average 4.1 percentage points lower than their Western counterparts. In both cases, the difference is significant at the 5% level. Using both aggregate- and individual-level data, the latter obtained from the 2021 German Longitudinal Election Study, we then study a selection of socioeconomic variables. We look at their distribution across the border and their effect on voter behaviour to identify whether they play a role in explaining the difference in turnout. The variables are chosen based on existing literature as outlined by Smets and van Ham (2013) in their meta-study of recent voter turnout research.

We find that voters in Eastern constituencies report that they care significantly less about the election outcome compared to those in Western constituencies, resulting in a lower perceived benefit of voting. Moreover, they have lower disposable incomes and less educational attainment, both of which increase the costs of voting. They also exhibit lower trust in institutions, a weaker sense of civic duty, and poorer political knowledge, all of which reduce the non-material benefits of voting. As a result, the costs of voting outweigh the benefits more frequently in the East, and this contributes to the lower turnout.

The topic of voter turnout has been extensively studied through the rational choice model and various other perspectives. However, this paper sets itself apart in the following ways. First, the East-West divide in Germany and its effect on current society remain understudied from many points of view, including electoral participation. Few studies also apply Ordeshook and Riker’s calculus of voting framework to regions with such a complex past. Thus, we offer a new perspective to the discussion on voter rationality in politically unique contexts. This issue is especially critical for democratic reasons since elections are the foundation of any democratic process. As Lijphart (1997) highlights, low electoral participation often signals unequal participation where certain demographic groups abstain more than others. This imbalance results in unequal political representation and a skewed distribution of power that disproportionately disadvantages already marginalised groups. In this context, it seems crucial to identify why Eastern Germans abstain far more than Western Germans from exercising their right to participate in elections. Further, the topic is also highly relevant from a policy perspective. Whilst the historical divide of the country remains a central issue in German political discourse, and broader development inequalities have been addressed², there is a lack of policies targeting voter participation. Identifying the roots of the turnout difference is a first step in helping strengthen democratic engagement.

¹We focus on the electoral constituencies located along the former East-West border to minimise the effect of unobserved differences and better isolate the effect of the division of the country on voter turnout. This is further elaborated in section 5.1.

²As part of the *Aufbau Ost* initiative, several economic policies including the *Solidarpakt* have been implemented since 1989 to address inequalities in market structures and infrastructure deficiencies in the East (Bundeszentrale für politische Bildung/bpb, n.d. a).

The structure of our paper is as follows. In section 2, we introduce Downs’s rational choice perspective of voter turnout and provide an overview of the existing literature surrounding it. We also present our two research questions. In section 3, we offer a background analysis of Germany’s historical division before explaining the country’s current federal election system. Section 4 outlines our data collection process, including the selection of variables, and section 5 our methodology. In section 6, we analyse the difference in voter turnout between Eastern and Western constituencies before examining the reasons for that difference in section 7. Finally, sections 8 through 10 contain the conclusion, references, and appendices.

2 Background and Theoretical Considerations

In this section, we give an explanation of the rational choice perspective that is going to guide us in our analysis of German voter turnout. Following that, we discuss previous literature on the model, as well as studies about the various socioeconomic factors that can be included in its different terms. Finally, we present our research questions.

2.1 Rational Choice Perspective on Voter Turnout

First developed by Downs in 1957, the rational choice perspective on voter turnout is one of the simplest ways to approach the question of electoral participation. Downs argues that an individual’s choice to cast a ballot stems from a cost-benefit analysis where they weigh the efforts of voting against the potential advantages of a favourable outcome. An individual chooses to vote if the benefits outweigh the costs, that is if the expected utility of voting is positive. Downs presents the following model:

$$R = P \times B - C$$

Where R is an individual’s expected utility of voting; P the probability that an individual’s vote influences the outcome of the election; B the benefit the individual receives if their preferred candidate or party wins the election; and C the cost of voting.

In Downs’s framework, the cost of voting includes, among other things, the time and effort spent on both researching parties and candidates, and the act of voting itself. These exist without fail, although they might vary in size between individuals. Since the influence of a single vote on the outcome of an election (P) is considered extremely small when it comes to large elections (such as national elections), the expected returns to voting ($P \times B$) are frequently outweighed by the costs. Thus, in Downs’s perspective, the expected utility of voting R is often negative, making the act of voting irrational. This leads to what Downs calls the *paradox of voting* where the model cannot explain why, in real life, we observe that people actually do participate in elections. Therefore, voter participation cannot fully be explained by Downs’s model.

To address this issue, Ordeshook and Riker (1968) augment Downs’s model by adding one term to the equation:

$$R = P \times B - C + D$$

Where D represents the psychological benefits of voting.

The additional term D includes any other, non-material motivation to voting that adds value to the perceived benefits. Ordeshook and Riker suggest that voter participation is not solely driven by the probability of influencing an election outcome but also by a positive return associated with, for instance, fulfilling one’s civic duty. This sentiment is often high enough to exceed the costs of voting, thus finally making R positive and the act of voting rational.

In this paper, we build our analysis of German voter turnout on Ordeshook and Riker’s extended version of the rational choice perspective, also called the calculus of voting framework.

2.2 Literature on the Rational Choice Perspective

Downs’s rational choice perspective has been extensively studied and critiqued by various researchers who often offer extensions to the model in order to address its limitations.

Blais (2000) analyses why individuals choose to vote despite the negligible impact of a single vote. He criticises Downs’s original model and its theoretical limitations in predicting voter turnout, particularly its failure to incorporate aspects like civic duty and social norms. Similarly, Blais et al (2000) test Downs’s model empirically and find that – while it provides useful insights – it often falls short in predicting turnout in real-world elections. The authors argue that the assumption that voters act as perfectly rational, utility-maximising agents does not align with observed voting behaviour.

Rolfe (2012) shifts the focus to the role of social networks in shaping voter turnout. Supported with empirical evidence, she argues that – beyond a rational cost-benefit analysis – social interactions and group dynamics significantly influence if and how people vote.

Schofield and Sened (2005) also critique aspects of Downs’s rational choice model, in particular party positioning in political landscapes. Downs predicts that in a two-party system, both parties will converge toward the median voter as they attempt to maximise their share of votes by appealing to the average or centrist voter. However, Schofield and Sened argue that this oversimplifies reality. They find that activists from both ideological extremes exert significant pressure on parties, pulling them away from centrist policies. Additionally, valence factors (non-ideological qualities to a party or candidate) challenge the theory. These attributes attract voters regardless of policy, allowing parties to gain support without necessarily adopting centrist positions. This illustrates that real-world party positioning is more complex than Downs’s model might suggest.

Abrahamson et al (2010) investigate how strategic voting behaviour varies between two electoral systems: first-past-the-post (FPTP) and proportional representation (PR). The study builds on Downs's theory by analysing how strategic considerations are influenced by the structure of the electoral system. The authors show that voters anticipate and respond to the incentives created by each system, adjusting their choices to maximise the impact of their vote on government formation and policy direction. Thus, they may choose not to vote for their preferred party or candidate if they believe another to have a better chance of impacting policies. Considerations beside direct costs and benefits are therefore also evaluated by individuals when deciding whether to vote.

Knutsen (2006) delves deeper into how voting behaviour in Western Europe has been influenced by social class over time. In relation to Downs's rational choice model, he highlights that economic self-interest is not the sole driver of voting behaviour. He shows that social class also has a significant impact on party loyalty, and that voters may align with parties based on class-related identities rather than purely rational calculations. However, using Eurobarometer survey data from 1975 to 1997, Knutsen also shows a general decline in class-based voting across multiple European countries, caused by shifts in social structures and political divides.

2.3 Literature on Socioeconomic Factors

As Smets and van Ham (2013) very accurately title their paper, there is an *embarrassment of riches* when it comes to deciding which factors to include in an analysis of voter participation. Below, we present an overview of the literature on the parameters included in the rational choice model, and the range of possible factors and proxies.

Blais (2006) gives an overview of what motivates a person to vote. The key elements include socioeconomic factors such as income, education and age; institutional factors such as electoral systems and voter registration laws; and psychological factors such as civic duty. Blais et al. (2019) dig deeper into the costs of voting, dividing them into direct costs (i.e. the time and effort to perform the act of voting) and information costs (i.e. the time and effort to research and decide upon whom to vote for). The study is based on Canadian elections and the *Making Electoral Democracy Work* project that analyses elections across five other countries. The authors show that direct costs have a larger impact on voter behaviour than information costs. However, the overall influence of costs on turnout is quite low.

Fauvelle-Aymar et al. (2006) explore the impact that the closeness of election results has on voter turnout. The authors conclude that the closer the race, the more people are motivated to vote. Exploiting this closeness is nonetheless difficult in one-round elections where voters cannot reliably assess it before the outcome has been determined.

Blais and Dobrzynska (1998) use cross-national data to look at factors that influence voter turnout across multiple democracies. They analyse socioeconomic, political, and institutional factors, and find that high voter turnout rates are generally found in smaller, highly developed countries. Compulsory

voting laws with penalties also drastically increase turnout. Additionally, proportional representation tends to encourage higher participation rates compared to majoritarian systems.

Franklin et al. (2004) look at voter turnout trends in established democracies, such as Germany, from 1945 and onwards. The authors focus on institutional factors affecting voting behaviour and point to electoral competitiveness and party systems as key factors driving citizen engagement in democratic processes. They argue that highly competitive elections and proportional representation tend to increase voter turnout. The authors also document a decline in voter turnout across established democracies since the Second World War, attributed to (amongst other things) a decline in party identification.

2.4 Research Questions

Our analysis builds upon the following two research questions:

1. *Is there a significant difference in voter turnout in German federal elections between Eastern and Western constituencies along the former border?*
2. *What role do socioeconomic factors play in explaining this potential difference?*

Expected Outcomes: We expect voter turnout to be consistently lower in East Germany compared to West Germany. West Germany’s historically stronger economy has resulted in higher incomes and better integration into global political networks, which may have fostered civic engagement. In contrast, East Germany’s weaker economy led to lower incomes and limited resources, both of which are essential for voter participation. Furthermore, East Germany’s socialist history may have eroded trust in institutions and limited exposure to pluralistic politics, decreasing political interest, knowledge, and sense of civic duty. As a result, East Germans likely feel disconnected from democratic processes, also leading to lower voter turnout.

3 Institutional Setting

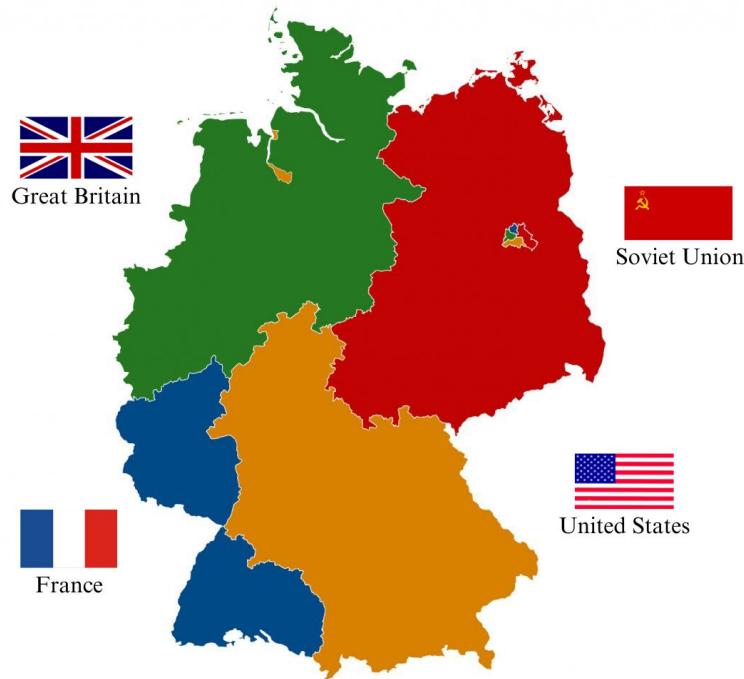
In the following section, we start by exploring the historical division of Germany and how it may have affected the factors that we later analyse in relation to voter turnout. We continue with an overview of the current electoral system.

3.1 Historical Division of Germany

Shortly before Germany’s surrender in May 1945, the soon-to-be victorious Allied powers – Great Britain, the United States of America, the Soviet Union and France – met to discuss the country’s future. To guarantee a smooth transition into a post-Nazi state, the country was in need of both economic and political reconstruction. To achieve this, the Allies decided to occupy the country and split it into four zones. The north-west was assigned to Great Britain, the south-west to France, the south-east to the United States, and the north-east to the Soviet Union. The capital Berlin, although located in the Soviet zone, was divided in a similar way between the four states (Ilko-Sascha, 2024).

Figure 2 illustrates this division.

Figure 2: Allied Occupied Zones Between 1945 and 1949.



Note: Authors' own translation.

Source: Bundeszentrale für politische Bildung/bpb, n.d. b

As the Cold War progressed, the relationship between the Soviet Union and the other Allied states eroded. In Germany, this translated into two virtually opposite ways of ruling the occupied zones. Capitalist systems were implemented in the Western zones controlled by the United States, Great Britain, and France. These integrated West Germany into the globalised economy and encouraged active citizen participation in multi-party elections. In contrast, the Soviet Union extended its communist beliefs into its zone, characterised by authoritarianism and extensive state control (Winkler, 2018). Institutions like the Stasi (*Staatssicherheit*) enforced surveillance and propaganda to maintain power. While political participation was formally mandatory, it was largely symbolic with voter turnout rates above 90% reflecting coercion rather than actual democratic engagement (Bundeszentrale für politische Bildung, 2019).

By the time of reunification in 1989, the contrasting systems had left their traces. West Germans had decades of experience with pluralistic democracy while East Germans had lived under state so-

cialism, forming different expectations of political processes and attitudes toward governance.

The differences went beyond political divergences: even on economic matters did the West and the East differ greatly. Under Soviet rule, East Germany adopted a centrally planned economy that prioritised heavy industry (e.g. mining and manufacturing) over consumer goods and services. This both created inefficiencies and stifled innovation. Restricted access to global markets further contributed to low productivity and low wages in the East. Meanwhile, West Germany’s market-driven economy grew during the so-called economic miracle (*Wirtschaftswunder*) of the 1950s and 1960s, also contributing to political stability and trust in democratic institutions (Ciesla, 2002).

The education system also reflected these ideological divides. In East Germany, schools were influenced by the Soviet ideology aiming to create loyal socialist citizens. This limited exposure to broader educational opportunities, compared to the West where intellectual freedom was encouraged. Moreover, the East’s suppression of political freedoms drove talented individuals to the West, leading to a “brain drain” that further weakened the East’s economy (Bundeszentrale für politische Bildung, 2016).

Despite a decision that was initially only meant to be temporary, the division of the country eventually led to the establishment of two separate states in 1949: the Federal Republic of Germany (hereafter, West Germany) out of the American, English and French zones; and the German Democratic Republic (hereafter, East Germany) out of the Soviet zone. The construction of the Berlin Wall in 1961 only deepened the division between East and West Germany, making the prospect of reunification more distant than ever (Winkler, 2018).

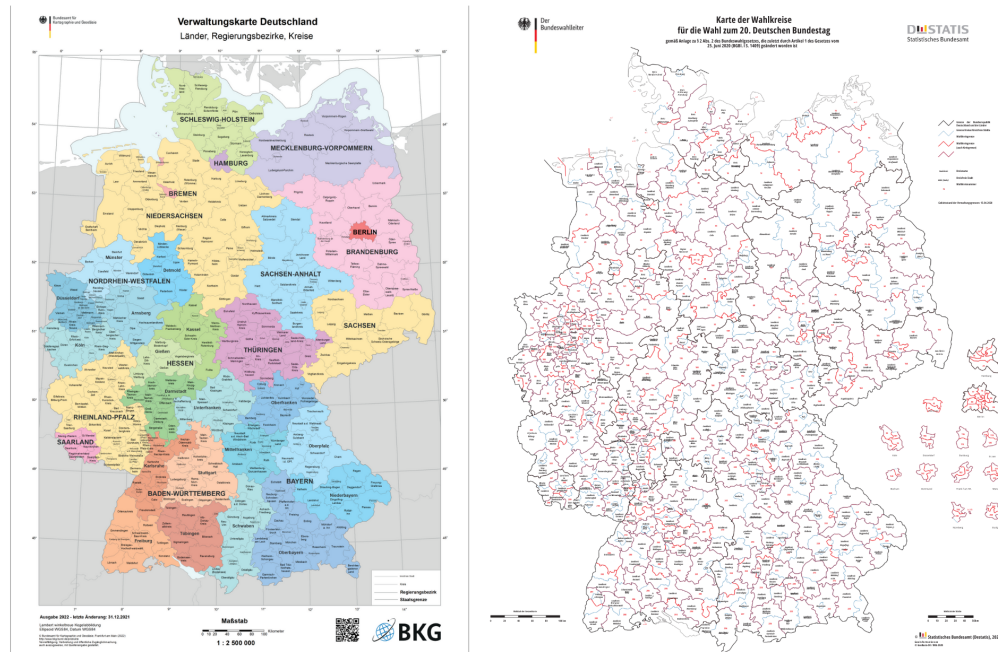
Thus, the two states evolved separately from one another. This continued until November 1989 and the fall of the Berlin Wall which led to the reunification of Germany the following year. The four decades of division did however leave a mark despite significant efforts to integrate a newly reunited Germany into the European and international scene, including adopting a common European currency and joining NATO (Görtemaker, 2022). Today, social and political attitudes still differ between the former East and West. Van Hoorn and Maseland (2010) even argue that inequalities between the regions, while rooted in historical differences, have deepened due to difficulties in integrating the East with the rest of the country. They challenge the *cultural legacy* hypothesis which posits that East Germans retain collectivist and egalitarian values from the socialist era, whereas West Germans are more individualistic and market-oriented. Instead, the authors suggest that disparities in economic performance arise not only from differences in values and attitudes, but also from ongoing challenges in post-reunification integration. Addressing East-West disparities therefore requires the recognition of historical legacies, while simultaneously tackling current economic inequalities.

In our analysis, we exploit the current variations between East and West Germany to understand the difference in voter turnout.

3.2 German Federal Elections

Before diving into the election process, it is useful to be familiar with how Germany is divided for different purposes. Germany is a federal republic with 16 states (*Bundesländer*), each with their own state government and laws. These states are further divided into districts (*Landkreise*). There are a total of 294 districts, to which we can add 106 *Kreisfreie Städte*, i.e. cities that are not part of any district but represent their own administrative unit (Berlin and Hamburg, for instance) (Die Bundeswahlleiterin, n.d.). Finally, for election purposes, the states are divided into 299 constituencies (*Wahlkreise*). Note that constituencies are redrawn before each election according to their population, with the goal of being as close as possible to the average number of inhabitants per constituency (approximately 250 000). Thus, they are defined with slight differences in each election (Zech, 2017). Nevertheless, they are always defined within the same regions. Therefore, constituencies belong (and have belonged) either to the former East or the former West, and never cross the border. For our analysis, it is also important to note that districts and constituencies do not match geographically although they are rather similar in size. We will mostly use election constituencies as geographic units. Figure 3 illustrates the division into states, districts and electoral constituencies.

Figure 3: German States and Districts (left panel),
and Election Constituencies in the 2021 Federal Election (right panel).



Source: Bundesamt für Kartographie und Geodäsie/bkg, n.d. (left panel) and Statistisches Bundesamt (Destatis), n.d. (right panel).

German federal elections (*Bundestagswahlen*) are one-round elections held every four years with the purpose of electing representatives to the German parliament, the *Bundestag*. Representatives are among other things responsible for choosing the country’s government and chancellor (*Bundeskanzler*in*) (Zech, 2017). In the federal elections, each voter is allowed to cast two votes: a first vote (*Erststimme*) and a second vote (*Zweitstimme*). The first vote goes to an individual candidate in the voter’s electoral constituency. The candidate with the most votes is directly elected to the parliament, filling half of the seats – one for each of the 299 constituencies. The second vote goes to a state-wide party list. Any party that receives at least 5% of the country’s second vote, or wins the first vote in three or more constituencies, will be represented in the parliament. The final proportion of seats that each party obtains is equal to the proportion of second votes received on a national level (Bundesregierung, 2024).

Initially, the German parliament has 598 seats. However, it might happen that a party has more candidates directly elected from the first vote than seats allowed by the second vote. In that case, their total number of seats is increased to allow all of their direct candidates to be in the parliament. This implies an addition of overhang seats (*Überhangmandate*). Afterwards, the total number of seats for all other parties also increases to respect the overall proportionality. This is an addition of levelling seats (*Ausgleichsmandate*). After the 2021 election for instance, the parliament had 735 seats, including 34 overhang seats and 103 levelling seats (Deutscher Bundestag, n.d.).

4 Data

In this section, we present the variables we have chosen to analyse in our study, beginning with those collected at the aggregate level, followed by individual-level variables. For each, we describe the data sources and any transformations applied. Lastly, we address potential concerns related to the data collection process.

The variables, summarised in Table 1, were chosen based on Smets and van Ham’s meta-study on individual-level voter turnout (2013) which reviews numerous empirical studies published between 2000 and 2010 to identify factors consistently associated with voting. Data availability was also a key consideration in the selection process. Appendix 1 presents summary statistics of all variables used.

4.1 Aggregate-Level Data

For aggregate-level data, our dependent variable is **aggregate voter turnout in the 2021 federal election measured at the constituency level**. This measure, reported by the German Federal Returning Officer (*Die Bundeswahlleiterin*), represents the percentage of eligible voters who participated in the election, calculated as the number of voters divided by the total number of eligible voters in each constituency. The Federal Returning Officer, appointed by the German Federal Minister of the Interior, is responsible for ensuring the proper conduct of elections (Die Bundeswahlleiterin, 2021).

Table 1: **Summary of Variables Used.**

Variable	Unit Before Standardising	Turnout Level	Rational Choice Model
Disposable Income	1000 EUR per person per year	Aggregate turnout	Net cost (D-C)
Proportion of Early School Leavers	%	Aggregate turnout	Net cost (D-C)
Importance of the Outcome	1 (low) - 5 (high)	Individual intention to vote	Perceived benefit (B)
Trust	1 (low) - 11 (high)	Individual intention to vote	Net cost (D-C)
Trust in the Parliament	1 (low) - 11 (high)	Individual intention to vote	Net cost (D-C)
Civic Duty to Vote	1 (low) - 5 (high)	Individual intention to vote	Net cost (D-C)
Party Identification	1 (weak) - 5 (strong)	Individual intention to vote	Net cost (D-C)
Political Interest	1 (weak) - 5 (strong)	Individual intention to vote	Net cost (D-C)
Political Knowledge	0: low; 1: high	Individual intention to vote	Net cost (D-C)

Two of our independent variables are collected on an aggregate level, both of which are provided by the German Federal Statistical Office (*Statistisches Bundesamt*).

Disposable Income: We use data on per capita household disposable income in 2021, reported in euros (Statistische Ämter des Bundes und der Länder, n.d. a). Disposable income could have two opposing effects on voter turnout. On one hand, the higher the disposable income, the higher the opportunity cost of voting. This stems from time spent on researching candidates and going to the polling station that could have been spent on other income-generating activities. Such a cost would discourage individuals with higher incomes to vote. On the other hand, there may be material costs associated with voting, such as transportation to the polling station or childcare on election day. Whilst often negligible, these costs would be alleviated by a higher disposable income. In contrast to the previous theory, this would imply that individuals with high disposable incomes are more inclined to vote. The two theories and their effect sizes will be further discussed when we present our results.

Educational Attainment: As a proxy for educational attainment, we use the proportion of students who leave school without a lower secondary school degree, a variable we also call the 'proportion of early school leavers' (Statistische Ämter des Bundes und der Länder, n.d. b). A lower secondary school degree is typically obtained after the 9th or 10th grade at the age of 15-16. We choose this level of schooling specifically because a lack of a lower secondary school degree is a symptom of deep-rooted issues in the educational system. If you do not have a lower secondary degree, you are highly unlikely to continue with higher education. Regarding voter turnout, higher levels of education are expected to positively impact electoral participation by reducing information costs, as it provides the skills required to make an informed decisions. Education can also foster a sense of civic duty, thus not only lowering

the practical but also the psychological barriers to participation. Note that the interpretation of our proxy variable is the opposite of educational attainment: a high proportion of students leaving lower secondary school without a degree indicates a *lower* educational attainment.

Both disposable income and the proportion of early school leavers are reported at the district level. Since voter turnout data is only available at the electoral constituency level, we align the two by matching districts to constituencies as closely as possible accounting for differences in geographical boundaries. We then calculate the average disposable income and average proportion of early school leavers of each constituency. This average is weighted by the 2021 population in each district. While this matching method is not perfect, it provides results that are likely sufficient for the purposes of our study.

Since there were 24 constituencies located on the border in 2021, we are left with 24 observations for the two aggregate-level variables.

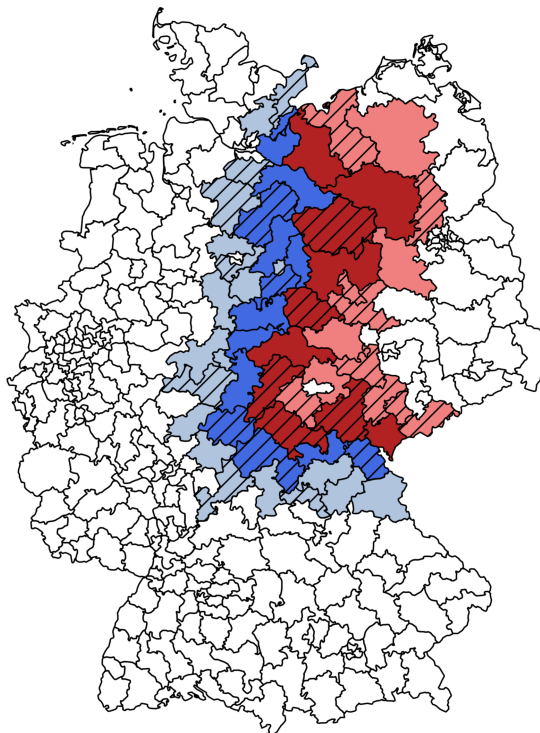
4.2 Individual-Level Data

For individual-level data, we use the German Longitudinal Election Study (GLES), specifically the 2021 pre-election survey (GESIS, 2023). The GLES is a repeated cross-sectional survey designed to provide data on attitudes, opinions, and political behaviour of voters before and after national elections. It uses a mixed-mode approach combining online and paper-and-pencil interviews. The pre-election survey was conducted in the four weeks leading up to the most recent federal election, i.e. in August and September of 2021 (GESIS - Leibniz Institute for the Social Sciences, n.d.).

The target population of the survey is German citizens aged 16 and older, registered in Germany as their primary residence. For each respondent, the survey records their electoral constituency and whether they are registered in a former East or West region. The survey covers a random sample of constituencies, meaning that not all constituencies along the former border are included in the dataset. To ensure sufficient data for our analysis, we expand our focus to include constituencies at *two* levels from the border. This leaves us with data from 30 constituencies along and close to the former border, and an average of 930 answers per variable of interest. Figure 4 shows the constituencies available in the dataset. Appendix 2 contains a list of constituencies used in our analysis.

From the GLES, we use a respondent’s **voting intention** as the dependent variable, i.e. how certain they are to vote on September 26, 2021. Respondents are asked to rate their voting intention on a scale of 1 (certain not to vote) to 5 (certain to vote). Voting intention is likely a strong predictor of actual voter turnout at the individual level. If a respondent has already voted early in the election, their answer is recorded as a 6. For interpretation purposes, we replace those answers by a 5 in our dataset, collecting early and certain votes in one single value. We exclude observations from the few respondents who were ineligible to vote at the time of the survey, narrowing our sample to German citizens aged 18 and older.

Figure 4: **Constituencies Along the Former East-West Border.**



Note: Authors' own map.

The blue constituencies are located on the West side of the border and the red on the East side.

The light blue and light red constituencies are situated one level further away from the border.

The striped constituencies are those available in the GLES data.

The individual-level independent variables are the following:

Importance of the Outcome: This variable measures how much importance a respondent places on the outcome of the 2021 federal election. We use it as a proxy for the perceived benefit of a favourable result, i.e. the term B in the rational choice model. It is expected that the greater an individual's stakes in the election, the more likely they are to participate.

Trust & Trust in Parliament: These two questions assess how much a respondent trusts other people in general, and how much a respondent trusts the parliament, respectively. Although the survey includes trust measures for multiple institutions, we focus on trust in the parliament as it is the most relevant for studying federal elections. We expect individuals who are more trusting, both of people in general and of the parliament, to have a greater appreciation for the electoral process and therefore also a higher intention to vote. Further, when individuals trust institutions, they are more likely to believe the information they provide. This may reduce the time and effort spent on verifying information about elections, parties and candidates, thereby lowering the cost of voting.

Civic Duty to Vote: This variable captures how strongly a respondent believes voting is a civic duty in a democracy. It reflects parts of the psychological benefits of voting where the sense of fulfilling one’s duty may encourage citizens to vote regardless of their small influence on the outcome.

Party Identification: This question measures the strength of a respondent’s attachment to a political party. The stronger the attachment, the easier it is for the individual to make a voting decision. As a result, strong party identification reduces the information cost of voting, thereby increasing the intention to vote.

Political Interest: This question assesses a respondent’s general interest in politics. Individuals with a strong interest in politics are more likely to follow political news and events closely, reducing the time and effort required to research candidates and policies. This lowers the information cost of voting. Further, individuals with high political interest might see the act of voting itself as a source of personal satisfaction and fulfilment. This psychological benefit can further increase the perceived value of voting.

Political Knowledge: This variable reflects a respondent’s knowledge of the German political system. To assess this, the GLES first asks about the mechanics of the German federal elections, specifically the role of the first and second votes in determining the proportion of seats in the parliament. Then, a dummy variable is created to indicate whether the respondent answered correctly (1) or incorrectly (0). We use this dummy variable in our analysis and expect greater political knowledge to reduce the costs of voting and increase the likelihood of participation, much in the same way as political interest.

To align the GLES data with our analysis, we make several changes. First, we exclude missing and erroneous observations for all variables used, including responses such as ”Don’t know,” ”Not applicable,” and ”Don’t want to answer.” Next, we adjust the East dummy variable to match the format used for the aggregate variables where 0 represents West and 1 represents East (answers in the GLES are recorded using the opposite system). Finally, we invert the scale of a selection of variables to facilitate the interpretation of our results. Appendix 3 details the formulation of each survey question used, their initial scales, as well as how we have changed those for interpretation purposes.

4.3 Limitations of the Data

Several limitations should be recognised when interpreting our results, in particular due to the use of the GLES. Survey data presents inherent challenges. First, the survey sample may not fully represent the German population – both because of the limited number of constituencies included, and the issue of self-selection (the survey being voluntary). The effort required to complete the survey (as reported by GESIS, the mean duration of the survey was 76.08 minutes for the online interview and 108.8 minutes for the paper interview) means that the respondents are most likely those who already recognise the importance of such data collection and are willing to invest time in it. This probably correlates with a higher intention to vote which limits the possibility to generalise results to the entire German

population. Appendix 4 details the distribution of GLES responses regarding voting intention. It is evident that the majority of survey respondents are either certain to vote (answer recorded as 5) or have already voted (answer recorded as 6).

Second, surveys rely on subjective responses to subjective questions. The accuracy and consistency of answers is influenced by trivial factors (e.g. time constraints of a particular respondent), as well as by differences in how individuals interpret the questions. This is particularly true for the GLES which gathers information on complex psychological constructs, such as trust, that can be challenging to fully capture using survey questions and their limited answer scales. Even so, we consider this survey to be one of the most reliable sources available for studying these concepts. This is supported by the fact that the GLES is conducted by the Leibniz Institute for the Social Sciences, a leading social science institute in Germany that uses robust sampling and validation methods to ensure the credibility of their results. Further, the GLES is the only survey that regularly and consistently collects data on voter behaviour and attitudes directly related to German elections (GESIS - Leibniz Institute for the Social Sciences, n.d.).

5 Methodology

In this section, we begin by defining the scope of our analysis. We then present our study design and the two regression models that we use to examine the impact of various factors on voter turnout differences between East and West constituencies. Finally, we discuss potential limitations of our methodology.

5.1 Focus of the Analysis

To show that there is a significant difference in voter turnout between constituencies in former East and West Germany, we analyse all nine elections since reunification. However, when exploring the reasons behind this difference, we focus specifically on the most recent German federal election held in 2021. This approach ensures consistent data and improves comparability across constituencies whose geographical boundaries have changed over time.

We further limit our scope to constituencies along the former East-West border to minimise unobserved factors that may vary across different regions of Germany. These include characteristics such as cultural factors, or even influences from neighbouring countries. If left unaccounted for, they could distort our results. By concentrating on border constituencies – which are likely to be similar enough due to their closeness – we hope to reduce omitted variable bias and better isolate the effect of Germany’s historical division on voter turnout.

Finally, we exclude Berlin from our analysis for practical and methodological reasons. After the Second World War, the city was divided into four sectors (and later into East and West Berlin), but today’s electoral constituencies do not align with those historical boundaries. This complicates data collection and comparison. Additionally, it is likely that Berlin’s voter turnout is influenced by its

uniquely urban and multicultural character which could distort the pattern we aim to isolate.

5.2 Specifications

In our research design, we use two regression models to examine the potential impact of each variable of interest on voter turnout differences between East and West constituencies. The first regression tests whether the variable of interest differs systematically between the two regions:

$$Y = \alpha + \beta_1 East + \epsilon \quad (1)$$

Where Y represents the variable of interest, and $East$ is a dummy variable coded as 1 for constituencies in the former East and 0 for those in the former West.

The second regression examines the relationship between the variable of interest and voter turnout to assess whether the variable can explain differences in turnout:

$$Turnout = \alpha + \beta_2 Y + \epsilon \quad (2)$$

Where $Turnout$ is the dependent variable, and Y the same variable of interest as in (1).

A significant coefficient β_1 in equation (1) indicates that the factor exhibits significantly different levels between East and West constituencies along the former border. A significant coefficient β_2 in equation (2) suggests that the variable of interest plays a role in explaining variations in voter turnout. In order to conclude on the factor’s role in explaining turnout differences between the East and the West, both regressions must yield significant results. Only then can we infer that the factor of interest not only differs between the regions but also contributes to observed turnout disparities.

Furthermore, we do not include control variables in our main analysis, despite recommendations in the literature to account for factors consistently linked to voter turnout such as age and gender (Smets and van Ham, 2013). While these variables are often significant predictors of turnout, there are strong theoretical reasons to exclude them in this study. Our study design inherently accounts for some pre-treatment differences – those existing before 1949 and thus unrelated to the division of the country – by focusing on constituencies along the former East-West border. It is also worth noting that obtaining consistent and reliable data on such pre-treatment differences is challenging. Post-treatment differences – those that developed after 1949 – however, are an integral part of what we aim to study as they may themselves have been shaped by the historical division of Germany. They are not purely independent variables and controlling for them could distort the relationship we aim to study. Doing so would risk introducing bias to our estimates and undermine causal inference (Angrist and Pischke, 2009).

We report heteroscedasticity robust standard errors for all regressions. We also standardise the independent variables of regression (2) by subtracting the mean and dividing by the standard deviation. This allows for better comparison between the factors and their effect on voter turnout.

5.3 Limitations of the Methodology

Our methodology has limitations that should be acknowledged. First, despite our narrow focus, we cannot fully eliminate all pre-treatment differences. Although the constituencies at the border are expected to share more similarities than others by being neighbours, factors – including economic conditions and demographic patterns – may still have differed before 1949. This was shown by Becker et al. (2020) who challenge the common practice of treating the division as a natural experiment between two uniform regions. Instead, they suggest that cultural and historical differences predating the division contribute significantly to current disparities. This unaccounted variation may also influence voter turnout in ways not directly attributable to the East-West divide.

Additionally, while our specifications help us identify whether a particular factor impacts voter turnout variation between East and West constituencies, they do not allow us to quantify the extent to which each variable contributes to the observed difference. Together, these limitations imply that while we can suggest certain factors influence turnout, we cannot determine their exact impact or isolate their individual effect with certainty.

6 Regional Disparities in Voter Turnout

Before trying to explain a potential disparity in voter turnout between former East and West Germany, we start by establishing that this difference is significant.

A clear gap in voter turnout between East and West Germany in the 2021 federal election is evident in Figure 1. We first quantify this difference at a state level by conducting a simple linear regression using aggregate regional voter turnout as the dependent variable and a dummy variable for the East as the independent variable. We continue to exclude Berlin. The results presented in Table 2 confirm a significant difference: states in the former East have, on average, a voter turnout 3.5 percentage points (pp) lower than those in the former West. This difference is significant at the 5% level.

A similar regression is run with data from the entire GLES sample where the individual intention to vote is regressed on the East dummy. The results are presented in Table 3. We see that Eastern voters exhibit a significantly lower voting intention, being, on average, 0.099 points less certain about voting (on a scale from 1 to 5). It is difficult to compare the magnitude of this estimate with the coefficient in Table 2, however, what seems to be a smaller effect of the East dummy on the intention to vote may reflect the biases of the limited GLES sample.

Table 2: **The Effect of the East Dummy on Aggregate Voter Turnout in the 2021 Federal Election, on a State Level.**

<i>Dependent variable:</i>	
Aggregate Voter Turnout	
East	−0.035** (0.017)
Observations	15
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01	

Robust standard errors in parentheses.

Note: Authors' calculations based on data from die Bundeswahlleiterin.

Table 3: **The Effect of the East Dummy on Individual Intention to Vote in the 2021 Federal Election, on an Individual Level.**

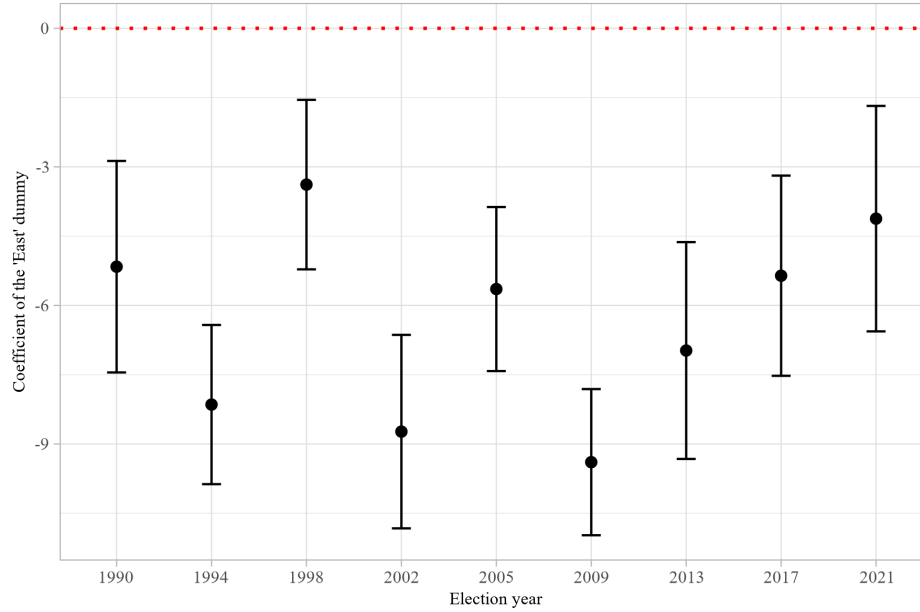
<i>Dependent variable:</i>	
Intention to Vote	
East	−0.099*** (0.024)
Observations	4,956
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01	

Robust standard errors in parentheses.

Note: Authors' calculations from GLES 2021 data.

For the rest of our analysis, we focus on constituencies near the former East-West border. We therefore also assess the difference in aggregate turnout at this level. The findings are consistent: since reunification, constituencies on the Eastern side of the border have consistently had lower aggregate voter turnout rates compared to their Western counterparts, always significant at the 5% level or below. In the most recent federal elections, constituencies on the Eastern side of the border had a turnout 4.1 pp lower than constituencies on the Western side. The results are presented in Figure 5.

Figure 5: **Difference in Aggregate Voter Turnout Between Constituencies on the Eastern and Western Sides of the Border, 1990-2021.**



*Note: Voter turnout is measured in %.
Authors' calculations based on data from die Bundeswahlleiterin.*

Having established the significance of the difference in voter turnout, we now explore the possible reasons for it. In the following section, we analyse various socioeconomic factors to determine if and how they affect the expected utility of voting of Eastern and Western Germans.

7 Determinants of Voter Turnout

The results of regression (1) and regression (2) are presented in Table 4 and Table 5, respectively. Recall that the results of regression (1) show whether the variable of interest differs between Eastern and Western constituencies. The results of regression (2) show whether this potential difference affects the aggregate voter turnout (in the case of aggregate-level variables) or the intention to vote (in the case of individual-level variables).

Table 4: **Regression (1) Results.**

		<i>Dependent Variable:</i>							
	Disposable Income (1000 EUR)	Proportion of Early School Leavers (%)	Importance of the Outcome	Trust	Trust in the Parliament	Civic Duty	Party Identification	Political Interest	Political Knowledge
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
East	-1.572*** (0.393)	0.023*** (0.005)	-0.093* (0.054)	-0.375** (0.171)	-0.668*** (0.170)	-0.315*** (0.072)	0.031 (0.049)	0.005 (0.056)	-0.072*** (0.033)
Observations	24	24	962	962	946	963	799	964	917
<i>Note:</i> * p<0.1; ** p<0.05; *** p<0.01									

Robust standard errors in parentheses.

Note: Authors' calculations based on data from the Statistisches Bundesamt, die Bundeswahlleiterin, and GLES 2021.

Table 5: **Regression (2) Results.**

	Aggregate Voter Turnout			Voting Intention					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Disposable Income (1000 EUR)	0.019*** (0.007)								
Proportion of Early School Leavers (%)		-0.017*** (0.006)							
Importance of the Outcome			0.286*** (0.041)						
Trust				0.099*** (0.026)					
Trust in the Parliament					0.121*** (0.027)				
Civic Duty						0.213*** (0.035)			
Party Identification							0.040 (0.027)		
Political Interest								0.135*** (0.032)	
Political Knowledge									0.067*** (0.021)
Observations	24	24	962	962	946	963	799	964	917

Note: *p<0.1; **p<0.05; ***p<0.01

Robust standard errors in parentheses.

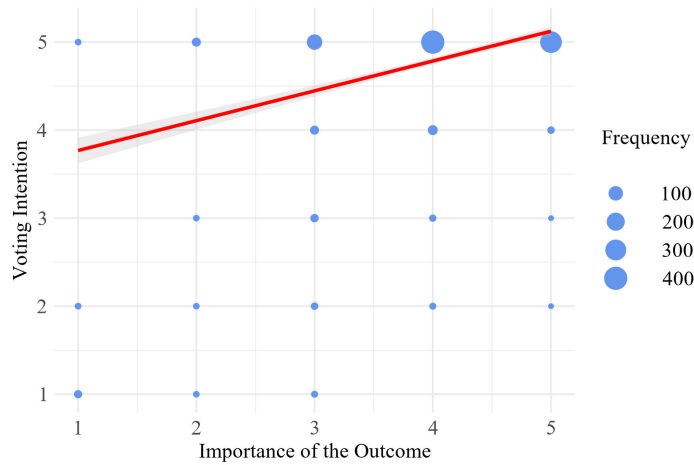
Note: Authors' calculations based on data from the Statistisches Bundesamt, die Bundeswahlleiterin, and GLES 2021.

7.1 Expected Material Benefit

We begin by analysing a voter’s expected material benefit. In the rational choice model, it is represented by $P \times B$: the probability that an individual vote influences the election outcome (P), multiplied by the perceived benefit of a favourable result (B). We use a measure of the importance that a voter assigns to the election outcome as a proxy for the perceived benefit.

Importance of the Outcome: As presented in the tables above, there is a difference between Eastern and Western constituencies in terms of how much they care about the results of the 2021 federal election. On average, voters in the East care 0.093 less (on a scale of 1 to 5) about the outcome. The effect of perceived importance on voting intention is positive: a 1 standard deviation (SD) increase in the importance a respondent assigns to the election outcome increases their voting intention by 0.286 units (on a scale of 1 to 5), on average. Both estimates are statistically significant. Figure 6 illustrates the positive relationship between the importance of the outcome and the intention to vote.

Figure 6: **Distribution of Voting Intention Across Importance of Outcome.**



Note: Each data point is a cluster of observations (here, survey answers). The regression line is illustrated by the red line, and the confidence interval by the area shaded in grey.

Source: Data from GLES 2021.

Ordeshook and Riker (1968) argue that P is extremely small, particularly in large-scale elections such as the German federal elections where over 46 million citizens voted in 2021. Even at the constituency level with an average population of about 250 000, a rational voter is likely to recognise that their single vote has little impact on the final result. Moreover, P is arguably close to equal for all Germans, whether they reside in the East or the West. Consequently, the value of $P \times B$ is negligible in our context. We therefore simplify the analysis by focusing on the net costs $D - C$.

7.2 Net Costs

Having addressed the expected material benefits, we now consider the net costs ($D - C$). We focus on net costs rather than separating costs (C) from non-material benefits (D) as many factors, including those we use as proxies, influence costs and psychological benefits simultaneously. This makes it challenging to isolate the effect of the two terms on voter turnout. Starting with the aggregate-level variables, we examine average disposable income and proportion of early school leavers, the latter as an indicator of educational attainment.

Disposable Income: Eastern constituencies have lower disposable incomes (1572€ less per person per year, on average). Disposable income impacts voter turnout: a one SD increase in yearly disposable income raises voter turnout by 1.9 pp. Both estimates are significant at the 1% level. Using non-standardised values, a 1000€ increase in yearly disposable income leads to an average increase in voter turnout of 1%. Building on our previous discussion about the potential effects of disposable income on voter turnout, the positive estimate suggests that a higher income is associated with a higher voter turnout, and not the opposite. That being said, an opportunity cost associated with high income may still exist, although it appears to have a lower effect size.

Educational Attainment: Eastern constituencies exhibit lower educational attainment, reflected in a higher proportion of early school leavers (2.3 pp higher on average). This variable is negatively correlated with voter turnout: a one SD increase in the proportion of early school leavers reduces voter turnout by 1.7 pp. Both estimates are significant at the 1% level. Using non-standardised values, we can say that a 1% increase in the proportion of early school leavers leads to an average decrease in voter turnout of 0.982%. This suggests that educational attainment, on the other hand, is positively correlated with voter turnout.

Figure 7: **Distribution of Voting Intention Across Disposable Income.**

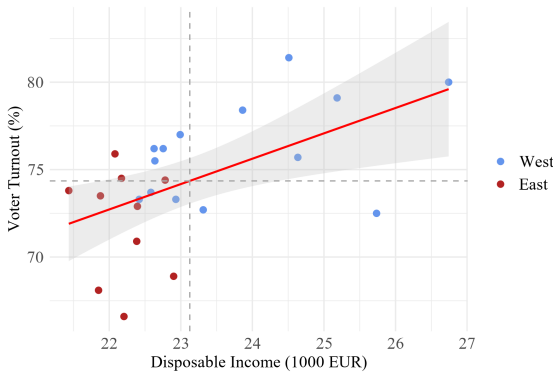
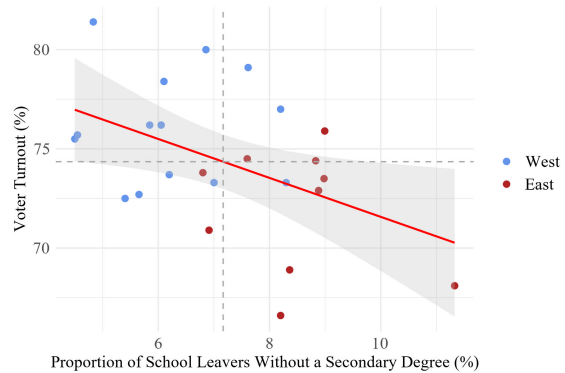


Figure 8: **Distribution of Voting Intention Across Proportion of Early School Leavers.**



Note: Each data point is a constituency. The red line is the regression line, the grey-shaded area the confidence interval. The crossbars show the average values of the variables on both axes.

Source: Statistisches Bundesamt and die Bundeswahlleiterin.

Figure 7 illustrates the positive relation between disposable income and voter turnout, and figure 8 the negative relation between early school leavers and voter turnout.

Next, we turn to the individual-level variables.

Trust: On average, residents of Eastern constituencies report lower trust levels (0.375 less on a scale of 1 to 11), significant at the 5% level. Trust is positively correlated with voting intention: an one SD increase in trust raises voting intention by 0.099 (on a scale of 1 to 5), significant at the 1% level.

Trust in the Parliament: Similarly, Eastern constituencies exhibit lower trust in institutions, specifically the German parliament, with trust levels that are 0.668 lower on average (on a scale of 1 to 11). Trust in the parliament is also positively correlated with voting intention: a one SD increase in trust leads to a 0.121 increase in voting intention. The estimates are significant at the 1% level. Both trust variables are measured on the same scale, which shows that the difference in trust levels between Eastern and Western constituencies is twice as large for trust in the parliament compared to general trust.

Figures 9 and 10 illustrate the positive relation between the two trust measures and voting intention.

Figure 9: **Distribution of Voting Intention Across Trust.**

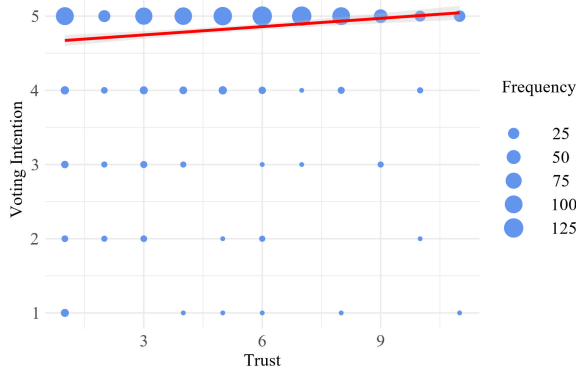
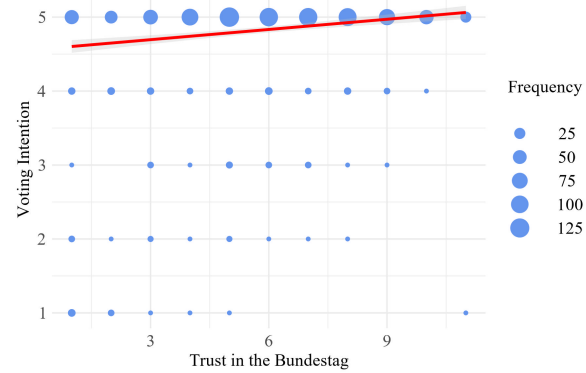


Figure 10: **Distribution of Voting Intention Across Trust in the Parliament.**



Note: Each data point is a cluster of observations (here, survey answers). The red line is the regression line, the grey-shaded area the confidence interval.

Source: GLES 2021 data

Voting as a Civic Duty: Eastern Germans see voting as less of a civic duty (0.315 less on a scale of 1 to 5) than Western Germans. Perceiving voting as a civic duty is strongly associated with high voting intention: a one SD increase in the independent variable leads to a 0.213 increase in voting

intention. Both estimates are significant at the 1% level.

Party Identification: Voters in Eastern constituencies tend to have a slightly stronger identification with the party they associate with, but the estimate is not significant at the 10% level. Whilst stronger party identification correlates positively with voting intention, this relationship is also not statistically significant. Therefore, we can reject neither the hypothesis that party identification is the same across the border, nor the hypothesis that the strength of party identification does not affect voting intention.

Figures 11 and 12 illustrate the relation between civic duty and voting intention, and party identification and voting intention.

Figure 11: **Distribution of Voting Intention Across Civic Duty.**

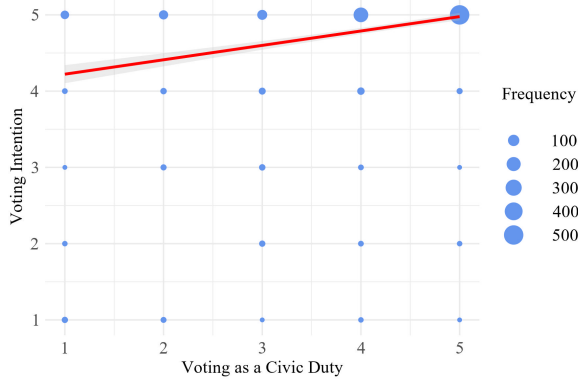
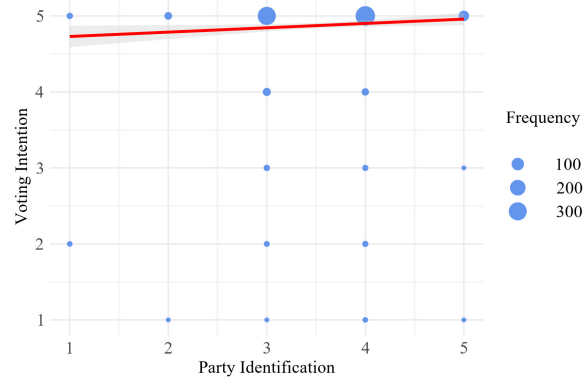


Figure 12: **Distribution of Voting Intention Across Strength of Party Identification.**



Note: Each data point is a cluster of observations (here, survey answers). The red line is the regression line, the grey-shaded area the confidence interval
Source: GLES 2021 data.

Political Interest: Political interest is positively correlated with voting intention, and this is significant at the 1% level. However, the difference in interest between Eastern and Western constituencies is not statistically significant. Therefore, we cannot reject the hypothesis that political interest is the same across the border, nor can we draw any conclusions on its role in explaining the turnout difference that we are interested in.

Political Knowledge: Voters in Eastern constituencies score on average 0.072 points lower on a question about the German electoral system, a difference that is significant at the 5% level. Political knowledge is positively correlated with voting intention: a one SD increase in political knowledge raises voting intention by 0.067, significant at the 1% level.

Figures 13 and 14 illustrate the positive relation between political interest and voting intention, and political knowledge and voting intention.

Figure 13: **Distribution of Voting Intention Across Political Interest.**

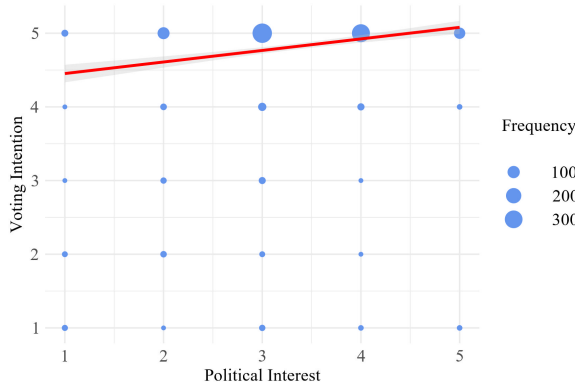
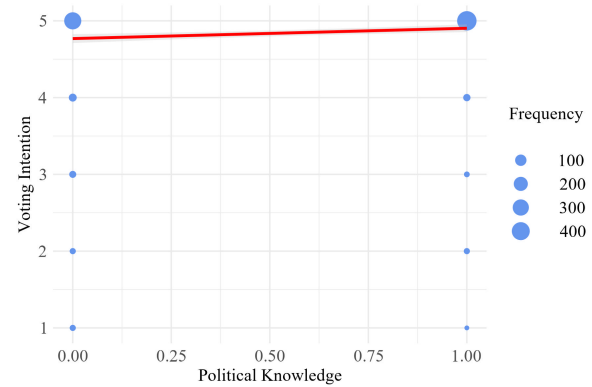


Figure 14: **Distribution of Voting Intention Across Political Knowledge.**



Note: Each data point is a cluster of observations (here, survey answers). The red line is the regression line, the grey-shaded area the confidence interval.

Source: GLES 2021 data.

To check the robustness of our results, we also run the regressions of individual-level variables on voting intention whilst controlling for gender and age (the latter through a respondent's year of birth). Both of these controls are available in the GLES dataset. The significance of estimates is not affected in any material way, and the signs remain the same – with the exception of Political Interest in regression (1) whose estimate was not significant to begin with. See Appendix 5 for a summary of results with control variables. In the rare case that the current gender and age differences between Eastern and Western constituencies only stem from pre-1949 variations, controlling for them would remove some bias to our estimates. However, as this is extremely unlikely, they are presumably bad controls (see discussion in section 5.1). Thus, we keep our focus on our main results.

Effect on Voter Turnout: Both the variables political interest and party identification are statistically insignificant in at least one of their regressions. Their effect on voter turnout is therefore inconclusive. For the remaining factors, however, there is a clear pattern. Eastern Germans seem to care less about the election outcome, thus making the expected material benefits of voting lower compared to in the West – although the term $P \times B$ is likely negligible. Further, Eastern Germans have lower disposable incomes and a lower educational attainment (as shown by a higher proportion of early school leavers). As discussed in the Data section, this likely leads to both higher costs and lower non-material benefits of voting, increasing the net cost in the East. In addition, Eastern Germans

exhibit lower trust levels – both in other people and in the parliament –, a lower sense of civic duty when it comes to voting, and worse knowledge about the federal election process. These, again, simultaneously increase the information costs and lower the psychological benefits of voting. Altogether, all significant results point towards Eastern Germans facing a higher net cost of voting. We can thus conclude that the perceived utility of voting R is lower, and more frequently negative, in the East compared to the West. This translates into a lower voter turnout.

Since the independent variables in regression (2) have been standardised, we can compare the size of their effect on turnout. The average disposable income and the proportion of early school leavers have very similar effects on aggregate voter turnout. There is more variation amongst the individual-level variables. The importance of the outcome and civic duty have the largest impact on the intention to vote. In contrast, political knowledge and general trust levels seem to have a much lower effect (although it is important to note that political knowledge is a dummy variable, which severely limits its predictive power).

8 Conclusion

This thesis sets out to investigate the difference in voter turnout in federal elections across the former East-West border of Germany, and how it may be explained. With the help of the rational voting theory, more specifically the extension of the model introduced by Ordeshook and Riker (1968), we analysed a range of socioeconomic variables and their effect on voter turnout. The variables included are: the perceived importance of the election outcome, the average disposable income, the proportion of school leavers without a lower secondary school degree, an individual’s trust in most people and their trust in the parliament, their sense of civic duty, the strength of their potential party identification, their political interest, and their political knowledge. Using both aggregate-level data and individual-level insights from the German Longitudinal Election Study (GLES), we analyse the effect of those variables on the enduring electoral disparities between East and West Germany.

Our findings show a persistent disparity in voter turnout between East and West Germany, with former East German constituencies demonstrating lower electoral participation rates. This gap is evident not only at the broader state level but also in constituencies located directly along the historical East-West border. Our analysis also reveals significant differences in chosen socioeconomic variables between Eastern and Western constituencies situated along the border. Eastern voters were found to care less about the election outcome, decreasing the expected material benefit of voting. They also have lower disposable incomes and educational attainment, which raises the perceived costs of voting. Furthermore, lower levels of institutional trust, a weaker sense of civic duty, and poorer political knowledge in the East reduce the non-material benefits of voting.

Following the rational choice theory which posits that individuals weigh the costs and benefits when deciding whether or not to vote, it appears that the costs of voting outweigh the non-material benefits more frequently in the East. We leave out the expected material benefit of voting as it is considered

extremely low in both Eastern and Western constituencies due to the sheer size of the voter base. We can therefore conclude that the expected utility of voting R is lower in East Germany compared to West Germany. Thus, electoral participation is less appealing in Eastern constituencies, resulting in a lower voter turnout.

In our study, we have discussed a limited number of factors based on one single model of voter turnout. For future research, it would be interesting to expand the study of voter turnout across the East-West border to include a multitude of factors, in particular exploring how these interact with other historical and cultural influences. Using another source for subjective variables (e.g. trust), or one that is more representative of the German population, might also make the results more accurate. Such improvements might provide clearer conclusions on factors like party identification and political interest where our current estimates were inconclusive.

Moreover, both Downs's (1957) original model and Ordeshook and Riker's (1968) extended version are based on rationality and the underlying assumption that voters perform a cost-benefit analysis. In reality, it is hard to imagine that individuals actually take the time to think about information costs, or how much exactly they will gain (or lose) from a specific election outcome. Hence, it would be possible to complement the rational choice theory with a variety of cognitive models that allow for irrational individuals. These might perhaps capture actual voting behaviour better.

Finally, while our methodology aims to reduce the impact of unobserved factors, our results are specific to German federal elections and constituencies at the former East-West border. We must therefore be cautious when generalising our conclusions to other contexts, both to other elections in Germany and to completely different countries. However, conducting comparable studies on turnout in other regions, especially those with similarly complex political pasts (e.g. Northern Ireland) would increase the understanding of these unique dynamics. Further, looking at other societies transitioning to democracy could offer more insight into how economic divides impact democratic engagement. Long-term studies covering several election cycles could also show the extent to which these trends are persistent.

To conclude, while Germany has made remarkable progress in reunifying its economic system, the electoral divide between East and West persists. Addressing this disparity is not only crucial for ensuring equal representation in the country's democratic processes, but also key in creating a more inclusive and cohesive society. Through our analysis, we hope to contribute to the ongoing discussion about the factors that drive or hinder voter participation and inspire future research in this important area.

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10 Appendices

10.1 Appendix 1: Summary Statistics of Variables Used

Table 6: **Summary Statistics of the Aggregate-Level Variables.**

	N	Mean	Std. Dev.	Min	Max
Aggregate Voter Turnout (%)	24	74.35	3.57	66.60	81.40
Average Disposable Income (1000 EUR)	24	23.13	1.33	21.44	26.74
Proportion of Early School Leavers (%)	24	7.17	1.68	4.50	11.33

Note: Data from the 2021 federal election. Only including the 24 constituencies along the former East-West border. Variables are not standardised.

Source: the Statistisches Bundesamt.

Table 7: **Summary Statistics of the Individual-Level Variables.**

	N	Mean	Std. Dev.	Min	Max
Voting Intention	970	4.82	0.66	1	5
Importance of the Outcome	962	4.11	0.84	1	5
Trust	962	5.28	2.66	1	11
Trust in the Parliament	946	5.86	2.63	1	11
Civic Duty	963	4.17	1.13	1	5
Party Identification	799	3.59	0.69	1	5
Political Interest	964	3.35	0.86	1	5
Political Knowledge	917	0.57	0.50	0	1

Note: Data from the 2021 federal election. Only including survey answers from the 30 constituencies close to the border and available in the GLES dataset. Variables are not standardised. The scales are the ones we have manipulated for interpretation purposes.

Source: GLES 2021 data.

10.2 Appendix 2: List of Constituencies Included in Our Analysis

Note: All German electoral constituencies are numbered. The lists below follow this order.

Constituencies Used for the Aggregate-Level Variables

- **Western side of the border:** Herzogtum Lauenburg – Stormarn-Süd; Lübeck; Lüchow-Dannenberg – Lüneburg; Celle – Uelzen; Gifhorn – Peine; Salzgitter – Wolfenbüttel; Helmstedt – Wolfsburg; Goslar – Northeim – Osterode; Göttingen; Werra-Meißner – Hersfeld-Rotenburg; Fulda; Coburg; Hof; Bad Kissingen
- **Eastern side of the border:** Schwerin – Ludwigslust-Parchim I – Nordwestmecklenburg I; Prignitz – Ostprignitz-Ruppin – Havelland I; Altmark; Börde – Jerichower Land; Harz; Vogtlandkreis; Eichsfeld – Nordhausen – Kyffhäuserkreis; Eisenach – Wartburgkreis – Unstrut-Hainich-Kreis; Saalfeld-Rudolstadt – Saale-Holzland-Kreis – Saale-Orla-Kreis; Suhl – Schmalkalden-Meiningen – Hildburghausen – Sonneberg

Constituencies Used for the Individual-Level Variables

- **Western side of the border:** Ostholstein – Stormarn-Nord; Lübeck; Rotenburg I – Heidekreis; Harburg; Celle – Uelzen; Hannover-Land II; Salzgitter – Wolfenbüttel; Braunschweig; Göttingen; Schwalm-Eder; Fulda; Bamberg; Hof; Bad Kissingen; Main-Spessart
- **Eastern side of the border:** Ludwigslust-Parchim II – Nordwestmecklenburg II – Landkreis Rostock I; Prignitz – Ostprignitz-Ruppin – Havelland I; Oberhavel – Havelland II; Altmark; Harz; Magdeburg; Anhalt; Burgenland – Saalekreis; Erzgebirgskreis I; Zwickau; Eisenach – Wartburgkreis – Unstrut-Hainich-Kreis; Gotha – Ilm-Kreis; Gera – Greiz – Altenburger Land; Saalfeld-Rudolstadt – Saale-Holzland-Kreis – Saale-Orla-Kreis; Suhl – Schmalkalden-Meiningen – Hildburghausen – Sonneberg

10.3 Appendix 3: List of GLES Questions and Scales

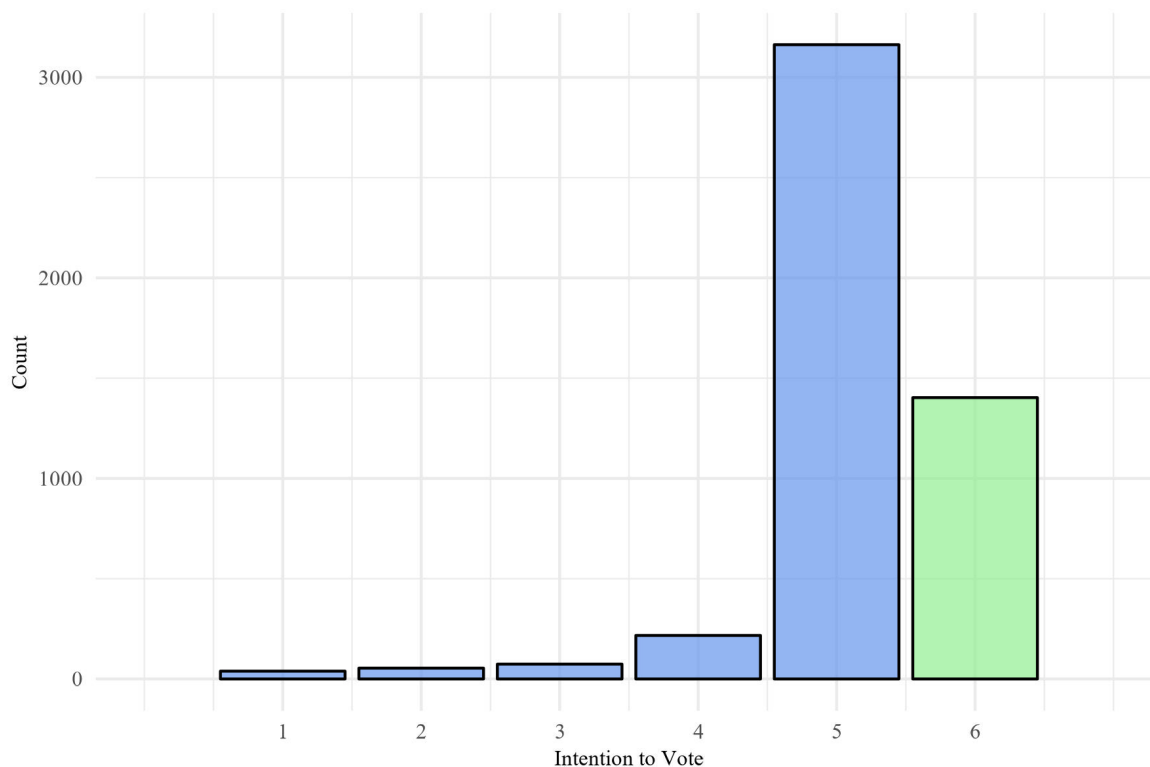
Table 8: GLES Questions and Scales of Variables Used.

Variable	Question Formulation	Initial Scale	Modified Scale
Voting Intention	Q6: <i>When elections are held a lot of people vote, others do not manage to vote or do not participate in elections for other reasons. How likely is it that you will vote in the federal election on 26 September 2021?</i>	1 (certain to vote) - 5 (certain not to vote); 6 (have already made a postal vote)	1 (certain not to vote) - 5 (certain to vote or has already made a postal vote)
Importance of the Outcome	Q3: <i>How important is the outcome of the upcoming federal election to you personally?</i>	1 (very important) - 5 (not important at all)	1 (not important at all) - 5 (very important)
Trust	Q78: <i>Quite generally speaking, on balance, would you say that most people can't be trusted or that most people can be trusted?</i>	1 (can't be careful enough) - 11 (most people can be trusted)	Unchanged
Trust in the Parliament	Q79b: <i>How much do you personally trust the Bundestag?</i>	1 (do not trust at all) - 11 (trust completely)	Unchanged
Citizen Duty to Vote	Q50d: <i>In a democracy it is the duty of all citizens to vote regularly in elections.</i>	1 (strongly disagree) - 5 (strongly agree)	Unchanged
Party Identification	Q76: <i>All in all, how strongly or weakly do you lean toward this party?</i>	1 (very strongly) - 5 (very weakly)	1 (very weakly) - 5 (very strongly)
Political Interest	Q1: <i>Quite generally, how interested are you in politics?</i>	1 (very interested) - 5 (not at all interested)	1 (not at all interested) - 5 (very interested)
Political Knowledge	Q5rf: <i>In the federal elections you have two votes, the first vote and the second vote. What do you think: Which vote decides how many seats each party will have in parliament?</i>	0: wrong answer; 1: correct answer	Unchanged

Source: GLES 2021.

10.4 Appendix 4: Distribution of Intention to Vote in GLES Responses

Figure 15: Histogram of Individual Voting Intention.



Note: Responses from all constituencies available in the GLES dataset are included. The scale is as follows: 1 signifies an individual is 'certain not to vote' and 5 signifies an individual is 'certain to vote'. A response is recorded as 6 if the individual has already voted early at the time of the survey.

Source: GLES 2021 data.

10.5 Appendix 5: Regression Results with Control Variables

The results of regressions (1) and (2) when controlling for gender and age are presented on the following two pages. In the GLES survey, gender (question d1) is a dummy variable coded as 1 for 'Male' and 2 for 'Female'. Age is controlled for using a respondent's year of birth (question d2a).

Note that the independent variables of regression (2) have been standardised by subtracting the mean and dividing by the standard deviation.

10.6 AI Disclosure

In our paper, we have used OpenAI's ChatGPT Large Language Model (LLM), based on the GPT-4 architecture, as well as Google AI's language model Gemini, for the following two purposes:

1. Help with resolving various coding errors.
2. Provide a supportive environment for idea generation and brainstorming. For instance, we may have an idea or thought which we ask AI about. Then, with the help of follow-up questions, we gain additional insights about our ideas and their potential benefits and errors. As an example, this was used in order to find relevant papers on our subject. Here, we had a discussion with AI about certain papers and their applicability to our study.

The use of OpenAI creates certain risks. These include ethical risks (misinformation and amplified biases) and technical risks (AI can "hallucinate" facts and does not have specialised knowledge). However, during our writing process, we always kept these risks in mind and carefully weighed AI's benefits against its potential harms. We believe that we have gained useful insight from using AI, including saving time with coding, without creating an unhealthy dependence on it.

Table 9: **Regression (1) Results Controlling for Gender and Year of Birth.**

<i>Dependent variable:</i>							
	Importance of the Outcome	Trust	Trust in the Parliament	Civic Duty	Party Identification	Political Interest	Political Knowledge
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
East	-0.105* (0.055)	-0.456*** (0.174)	-0.802*** (0.171)	-0.328*** (0.073)	0.027 (0.050)	-0.016 (0.055)	-0.065* (0.033)
Gender	-0.047 (0.054)	0.016 (0.173)	0.278* (0.169)	0.045 (0.073)	0.021 (0.049)	-0.369*** (0.054)	-0.027 (0.033)
Year of Birth	-0.003*** (0.002)	-0.011** (0.005)	-0.024*** (0.005)	0.001 (0.002)	-0.0003 (0.001)	-0.006*** (0.002)	0.003*** (0.001)
Observations	938	939	924	939	783	940	898

Note: *p<0.1; **p<0.05; ***p<0.01

Robust standard errors in parentheses.

Note: Authors' calculations based on data from the Statistisches Bundesamt, die Bundeswahlleiterin, and GLES 2021.

Table 10: Regression (2) Results Controlling for Gender and Year of Birth.

	<i>Voting Intention</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gender	0.127*** (0.038)	0.107*** (0.039)	0.107*** (0.040)	0.102*** (0.039)	0.092*** (0.037)	0.173*** (0.043)	0.106*** (0.038)
Year of Birth	-0.0000 (0.001)	-0.001 (0.001)	-0.0004 (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.0001 (0.0001)	-0.001 (0.001)
Importance of the Outcome	0.279*** (0.041)						
Trust		0.095*** (0.026)					
Trust in the Parliament			0.113*** (0.027)				
Civic Duty				0.207*** (0.034)			
Party Identification					0.039 (0.027)		
Political Interest						0.146*** (0.032)	
Political Knowledge							0.065*** (0.021)
Observations	938	939	924	939	783	940	898

Note: *p<0.1; **p<0.05; ***p<0.01

*Robust standard errors in parentheses. Independent variables have been standardised.
Note: Authors' calculations based on data from the Statistisches Bundesamt, die Bundeswahlleiterin, and GLES 2021.*