

Place, Perception, and Politics
A Geospatial Analysis of Deprivation and Discontent

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Summary

The importance of place in shaping political attitudes and behaviour is more prominent than ever. Both public and academic discourses suggest that a place's rurality and economic hardship contribute to political discontent, manifesting in low turnout and increased support for radical-right parties. However, previous studies are often limited in their explanatory power by focusing on a small set of contextual variables, by studying voting behaviour at an aggregate level, or by approaching place with attitudinal measures without accounting for objective conditions. As a result, these studies do not allow us to draw direct conclusions about how and which place-based factors are related to (manifestations of) discontent at the individual level or whether and how subjective perceptions moderate this relationship. This dissertation addresses this gap and challenges deterministic views on place effects by arguing that objective spatial disparities need to interact with subjective perceptions of deprivation to translate into political discontent.

The dissertation consists of three articles that underscore this argument by exploring different aspects of the link between place and discontent in Germany, using geocoded survey data and high-resolution place-based information. In the first article, I examine the role of public service provision in shaping political trust, demonstrating that accessibility to essential services influences political attitudes more than economic deprivation. The second article focuses on how subjective perceptions of deprivation influence the relationship between objective place-based deprivation and political trust. Place-based deprivation is only partially associated with political trust, while subjective perceptions amplify its effects. The third article focuses on preferences for radical-right parties instead of political trust. I explore whether living in a left-behind area affects party evaluation differently for individuals who feel left behind, which captures a broader sense of marginalization than geographical location. The findings confirm a reinforcing relationship between living in a left-behind place and feeling left behind, particularly regarding rurality.

Overall, the link between place-based factors and political discontent exists. Yet, at the individual level, it is generally weak and varies based on place-based characteristics, studied outcomes, and perceptions of deprivation. My findings underscore the complexity of the relationship between place and political discontent. I contribute to previous research by introducing public service provision as a critical factor and spatial linking methods to integrate fine-grained spatial data with survey data. Distinguishing between political trust and radical-right support offers a more granular understanding of their drivers. Lastly, this dissertation highlights that place alone does not suffice to explain political discontent, but subjective perceptions of deprivation are crucial for understanding place-based effects.

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Chapter 1: Introduction

1.1 Rethinking the Link Between Place and Political Discontent

The rail connection to the nearest major city has been discontinued since 1997. The only remaining hospital is more than 20 minutes away from many villages. In the mornings, there is often not even a bus serving the nearest school. Lüchow-Dannenberg, the central district of the Wendland region, is the least densely populated district in the former West German states and scores a perfect 100 out of 100 on the rurality index¹. It also ranks in the lowest quintile among German districts for the number of railway stations, hospital beds, and local access to doctors, pharmacies, and schools. Economically, the district faces similar constraints, with its GDP also ranking in the lowest quintile nationwide.

Given these structural disadvantages and the popular discussion on ‘left-behind’ places, one would expect Lüchow-Dannenberg to exhibit pronounced levels of political discontent. Both public and academic discourse suggest that place-based deprivation, characterised by rurality, economic hardship, and a lack of public services and infrastructure, contributes to high dissatisfaction with political institutions and increased support for radical-right parties and politicians. However, this is not the case in Lüchow-Dannenberg. In the 2021 federal election, voter turnout was indeed lower than the national average. Yet, support for the German radical-right party Alternative für Deutschland (AfD) was also low, with the party receiving only 7.1 % of the vote – significantly below the national average of 10.3 %. Even though structural conditions suggest otherwise, residents of the Wendland region do not appear to translate place-based deprivation into pronounced discontent or radical-right voting behaviour. One possible explanation is that the residents of the Wendland are different. Individuals’ experiences and subjective perceptions of their own and their in-group’s level of deprivation and recognition may differ from those in other parts of the country, making them less susceptible to place-induced discontent. The region is known for its creative and alternative lifestyles, Schützenfeste and Easter bonfires, and for maintaining a strong

¹Data are taken from the INKAR database. Rurality is measured as the proportion of inhabitants living in municipalities with a population density of less than 150 inhabitants/km². It also includes the population-weighted linear distance to the nearest general practitioner (GP), pharmacy and primary school, hospital beds per 1,000 inhabitants, the number of ICE, IC, EC and regional railway stations and gross domestic product (GDP) in absolute terms in millions of euros, voter turnout and AfD votes in the 2021 federal election, and population density in inhabitants per km². The data are available for all German districts in 2021/2022 and are used to calculate the quintiles for each indicator.

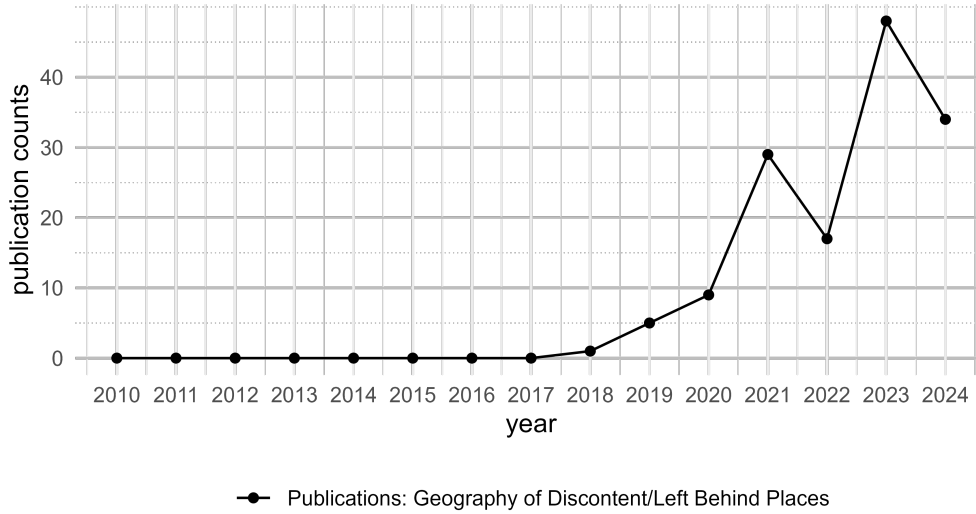
environmental movement. Hence, while Lüchow-Dannenberg may not be a good example of a place-based deprivation or rural-urban divide in Germany, it serves as a strong case for why the role of place in shaping political discontent is more complex than often assumed.

1.2 Studying Place-Based and Perceptual Divides

Despite the Lüchow-Dannenberg example, place in general has become a line of conflict that divides society, as illustrated by the spatial patterns of the rise of radical-right parties across Europe, the Brexit Leave vote in the UK, Trump support in the US and low voter turnout (Becker, Fetzer, and Novy 2017; Broz, Frieden, and Weymouth 2021; Carreras 2019; Colantone and Stanig 2018; Dippel, Gold, and Heblich 2015; Ford and Goodwin 2014; Koeppen et al. 2021; Rooduijn and Burgoon 2018). Over the last decade, the number of scholarly publications addressing the ‘geography of discontent’ or the ‘left-behind places’ has grown immensely (Figure 1) (Dijkstra, Poelman, and Rodríguez-Pose 2020; McCann 2020). At the heart of the studies analysing these spatial patterns lies the argument that economically lagging, most often rural regions are the breeding grounds of political discontent. Resentment against the political elites grows in these areas because citizens feel those in power do not care about their neighbourhoods. They sense that their communities are systematically neglected in the distribution of resources, and they perceive that local traditions and lifestyles are misunderstood and disrespected by urban elites (Cramer 2016; Fitzgerald 2018). Radical-right parties and politicians successfully target these resentments.

This re-emergence of place is somewhat surprising. Although place has long been an important notion in explaining political attitudes and behaviour and has driven the field of electoral geography (Agnew 1996; Falter 1991; Siegfried 1913), scholars have debated for years – just as some do today – whether place truly matters for political attitudes and behaviour. From a longitudinal perspective, the influence of place on individuals should diminish over time as attachment to place decreases due to the increasing mobility of citizens and evolving information and communication technologies (Gimpel and Reeves 2022; Gustafson 2014; Lewicka 2011). Some even diagnosed the ‘end of geography’ (Friedman 2005; O’Brien 1992). Still, “most [...] interactions occur in places: they literally take place – we do not yet live in placeless worlds” (Johnston and Pattie 2017: p. 244). This notion is supported by empirical studies showing that mobility does not necessarily lead to a decrease in place attachment (Gustafson 2014) and that even digital spaces are shaped by place (Gimpel and Reeves 2022).

One topic that has brought renewed attention to place-based explanations is globalisation and the backlash against globalisation in the ‘places that don’t matter’ (Rodríguez-Pose 2018). Globally, a general backlash on globalisation has explained increasing political discon-



Note: To explore the topic of the geography of discontent and left-behind places, I conducted a search in the Web of Science Core Collection using the following query: ('geography of discontent' OR 'geographies of discontent') OR ('left-behind place' OR 'left behind place' OR 'left behind places' OR 'left-behind places') OR 'places that don't matter' OR 'places being left behind' OR 'places being left-behind'.

Figure 1. Publication Counts Over Time

tent and radical-right support in the last decade. Citizens feel left behind by globalisation, a “perception of being treated unfairly, of being ignored and dismissed [...] and a panoply of fears of irretrievable loss, both economic and cultural, and anxieties and pessimism with respect to the future” (Betz and Oswald 2022: pp. 134–136). Several empirical studies show that these economic and cultural fears are rooted in or intensified by places.

First, economic geographers have highlighted that certain regions are particularly affected by negative economic consequences of globalisation and, consequential, the citizens living there, resulting in a *place-based economic divide*. Research shows that local economic trade shocks (Autor, Dorn, and Hanson 2013, 2016; Colantone and Stanig 2018) and long-term deindustrialisation in certain areas (Broz, Frieden, and Weymouth 2021; Gordon 2018) can trigger a downward spiral leading to support for radical-right parties and Leave voting in the Brexit referendum. These effects are evident across both the US (Rodríguez-Pose 2018; Scala and Johnson 2017) and European democracies (Becker, Fetzer, and Novy 2017; Carreras 2019; Dijkstra, Poelman, and Rodríguez-Pose 2020; Dippel, Gold, and Heblich 2015). The effects range beyond voting behaviour and single-country studies: regional economic inequalities and wealth can diminish trust in both national and supranational institutions, e.g. EU, across countries (Dellmuth 2024; Katsanidou and Mayne 2024; Lipps and Schraff 2021; Mayne and Katsanidou 2022).

Second, we also observe a *place-based cultural divide*. While economic grievances are crucial, they do not fully capture the political dynamics observed in many regions. Cultural factors, particularly the perception that rural values, traditions, and ways of life are misunderstood or disrespected by urban elites, are central to rural resentment (Cramer 2016). Quantitative studies support this strong cultural component of rural resentment (de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a; Jacobs and Munis 2023) and underline the fear of losing the place-based cultural identity that drives discontent and its manifestation in voting behaviour in these places (Bolet 2021; Fitzgerald 2018; Munis 2022). Maxwell (2019) analyses the clustering of cosmopolitan values in European cities and national values in the countryside, concluding that the spatial divide in values and attitudes is a pre-existing divide that persists due to self-sorting. Research on historical legacies underlines the finding that cultural divides are not new but that attitudes and values are deeply rooted in some places (Acharya, Blackwell, and Sen 2016; Haffert 2021; Munis 2021; Pepinsky, Goodman, and Ziller 2020; Ziblatt, Hilbig, and Bischof 2024). Particularly in the case of the cultural divide, rural and urban identities play a crucial role in shaping in-group and out-group perceptions (Bornschieer et al. 2021). As such, the rural-urban divide is often framed as a single, overarching distinction that encompasses both – economic and cultural – dimensions of place-based divides. However, reducing place-based differences to a single continuum poses the risk of oversimplifying the complex dynamics of the real world (McKay, Jennings, and Stoker 2021). Therefore, rurality can be treated as a distinct dimension within the framework of this dissertation.

In summary, the existing literature generally suggests that place shapes political attitudes and behaviour from an economic and cultural perspective. However, the empirical findings are not as unambiguous as they seem and point to a complex mechanism driving spatial divides in political support and voting behaviour. In their meta-analysis, Sipma and Lubbers (2020) show mixed evidence for a link between local unemployment rates and support for radical-right parties, the relationship between economic growth and trust in the EU may be non-linear (Vasilopoulou and Talving 2024), and residence in economically declining regions is associated with low EU support but not with low national support (Lipps and Schraff 2021; Mayne and Katsanidou 2022). Moreover, country studies show that rurality is only marginally or negligibly associated with political trust, radical-right sentiments or place resentment (Arzheimer and Bernemann 2024; de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023b; Zumbunn 2024).

Given these mixed findings and the growing body of literature on the geography of discontent, this dissertation seeks to answer the overarching research question: Which place-based factors contribute to political discontent and its manifestations, and why are some individuals more affected by these factors than others? This research question necessarily

breaks down into several sub-questions, three of which I address in this dissertation, looking at different explanations for this puzzle:

1. How does the provision of public services contribute to political discontent and its manifestations? While the existing literature on the ‘geography of discontent’ has primarily emphasised economic and cultural divides, it often overlooks other place-based factors, such as public service provision, which may also significantly shape political attitudes.
2. How do place-based factors influence political trust in national institutions and support for radical-right parties? While much of the geography of discontent literature has focused on support for radical-right parties, the relationship between place and political trust in national institutions has not been studied as extensively. Existing empirical studies yield mixed results, suggesting that the effects of place-based deprivation may not be as generalisable as often assumed. This underscores the need to examine political trust and radical-right party support as distinct outcomes.
3. How do subjective perceptions of deprivation reinforce the effects of place-based deprivation on (manifestation of) political discontent? While socioeconomic factors are known to moderate the relationship between place and political attitudes, the role of subjective perceptions has not been sufficiently explored despite its importance for how individuals process information and form attitudes.

In the following, I will further substantiate these research questions and introduce the main concepts underlying this dissertation.

1.2.1 The Role of Public Service Provision

The first question that guides this dissertation is: How does the provision of public services contribute to political discontent and its manifestations?

To answer this question, it is first necessary to introduce the broader concept of ‘place’ and ‘place-based factors’, which I use throughout this dissertation. Place, in the geographical sense, refers to the location of an individual in space and is therefore defined as an area of residence or neighbourhood. The scale of place can vary from a fine-grained local level to a nation-state and global environment. The “context-as-place” (Agnew 1996) approach provides a distinctive geographical perspective on the context that shapes individual attitudes and behaviour. As such, this approach differs significantly from the traditional understanding of context as a social environment, as seen in influential theories of voting behaviour and attitudes such as the Ann-Arbor model (Campbell et al. 1980) and micro-sociological approaches (Lazarsfeld, Berelson, and Gaudet 1969). Place not only

defines the encounter with people in space but also encompasses “environmental observation” (Johnston and Pattie 2006). Cho and Rudolph (2008) describe this approach as “casual observation” and explain that “spatial proximity shapes behaviour through low-intensity neighbourhood cues that occur outside the realm of voluntary or explicit forms of social interaction” (p.277, see also Baybeck and McClurg (2005) and Books and Prysby (1988)). I adopt this theoretical framework and use the terminology ‘place-based factors’ to describe the relevant neighbourhood conditions, including rurality, economic conditions, and, I argue, the local provision of public services.

Public services are crucial to citizens’ lives (Vogler 2023), and the accessibility – or lack thereof – of these services influences their ‘micro-geography of everyday life’ (Agnew 1996: p. 133). As citizens are inevitably confronted with their surroundings, they gather information about their neighbourhood, including the provision of public and private goods and the accessibility of infrastructure (Bailey et al. 2013; Galster 2012). Where is the nearest hospital in case of an emergency, and how far is the closest train station for daily commuting? These questions shape how individuals experience their environment. If public services are lacking, the livelihood of an area, and thus its social and cultural capital, is threatened – a development also known as local or rural marginalisation (Bock 2016). Furthermore, the provision of services is an important indicator of whether policymakers are addressing the needs of a community (Kumlin and Haugsgjerd 2017). Accordingly, a lack of public and private services may have several consequences regarding political attitudes and behaviour: citizens perceive the state as failing to meet their expectations, grievances grow that they are not getting their fair share, incumbents are punished and radical-right parties are supported (Cremaschi et al. 2024; Nyholt 2024; Patana 2022).

Nevertheless, the lack of public services and infrastructure has received little attention as a source of deprivation. Although previous studies have highlighted satisfaction with public services as an antecedent of political trust at the individual and/or cross-country level (Goubin and Hooghe 2020; Haugsgjerd and Kumlin 2019; Kumlin, Nemčok, and van Hootegeem 2024; van der Meer and Dekker 2011; Zmerli 2013), research from a place-based perspective is lacking. Only two recent studies show that its lack of public services increases support for radical-right parties in Italy and Denmark (Cremaschi et al. 2024; Nyholt 2024).

In this dissertation, I address this research question by analysing the relationship between a lack of public services and political trust in detail. I also show how spatial linkage methods can be used to measure the lack of services as accurately as possible without being tied to neighbourhoods defined by administrative boundaries.

1.2.2 (Manifestations of) Political Discontent

The second sub-question of this dissertation focuses on the outcomes of the geography of discontent: How do place-based factors influence political trust and, in comparison and contrast, support for radical-right parties?

Political trust is defined here as the degree to which individuals believe that, even without constant scrutiny, the government delivers outcomes that meet their expectations (Hetherington 2005), aligning with Easton's concept of (covert) support for the political system (Easton 1965). The focus on political trust as a key indicator of political discontent is also crucial for understanding the relationship to the rise of radical-right parties (RRP)² one possible manifestation of this discontent.

While the correlation between political trust and support for RRP is well-documented (Betz 1994; Lubbers, Gijsberts, and Scheepers 2002), it is essential to avoid oversimplifying this relationship. Not all individuals with low political trust are drawn to extreme or radical parties. Some may disengage entirely from the political system as a passive manifestation of political discontent. Early research into political discontent and its mobilisation effects suggests that while low political trust combined with high political efficacy can lead to political activism or support for populist parties, low trust combined with low political efficacy may result in political disengagement (Craig 1980). Consequently, I use the concept of (manifestations of) political discontent to distinguish between political trust and support for RRP, studying them separately in the three articles of this dissertation.

While place and support for RRP, Donald, Trump, and Brexit have been studied more extensively (Becker, Fetzer, and Novy 2017; Broz, Frieden, and Weymouth 2021; Carreras 2019; Colantone and Stanig 2018; Dippel, Gold, and Heblich 2015; Ford and Goodwin 2014; Koeppen et al. 2021; Rooduijn and Burgoon 2018), the relationship between place and political attitudes has not received the same attention. Although, there is an increasing focus

²Radical-right parties (RRPs) are characterised by two main features: nativism and authoritarianism (Mudde 2007). Nativism entails the belief that the state should be inhabited exclusively by members of the native group, emphasising both economic and cultural threats posed by outsiders. Authoritarianism reflects a commitment to law and order, social hierarchy, and a rejection of liberal pluralism (Mudde 2007; Rydgren 2007). A key factor driving the success of the populist radical right across Europe is its ability to mobilise politically alienated voters, who are particularly inclined to support these parties due to their populist rhetoric, which articulates distrust toward the mainstream political establishment (Gidron and Hall 2017; Rooduijn and Burgoon 2018; Schulte-Cloos and Leininger 2022). In contrast, while radical-left parties also oppose austerity and aspects of European integration, their mobilisation based on populist, anti-establishment rhetoric remains contested and has received comparatively less empirical attention (Ziller and Schübel 2015). Furthermore, research has not presented any conclusive spatial patterns of the success of the radical left, but urban identities correlate with support for new left parties and rural identities are associated with radical-right support in Northwestern Europe (Bornschier et al. 2021). As a result, this dissertation focuses on radical rights when analysing the political consequences of place-based effects.

on understanding how place influences political trust. The idea that trust in institutions declines when citizens are dissatisfied with the outcomes of the political system is central to the study of political trust. Trust levels are deeply tied to individuals' evaluations of government performance, as institutional trust reflects how citizens believe that government delivers outcomes in line with their expectations (Easton 1965; Hetherington 2005). Within this performance-trust framework, political trust strongly depends on contextual performance factors, such as the economy, social services, and infrastructure (Kumlin and Haugsgjerd 2017; Luehiste 2014). However, the empirical studies on political trust within the 'geography of discontent' have produced mixed results, emphasizing the differentiation between the rural-urban and the deprivation divide (McKay, Jennings, and Stoker 2021). For instance, trust is lower in peripheral regions of Norway (Stein, Buck, and Bjørnå 2019), while in the UK, residents of less central areas show greater discontent and Euroscepticism, though they do not exhibit lower trust or democratic satisfaction (Jennings, Stoker, and Twyman 2016). Further, empirical studies suggest a gradient rather than a rural-urban dichotomy, with trust decreasing from urban to rural areas in Europe (Kenny and Luca 2021). Additionally, this decline in trust is mainly driven by individuals' characteristics, with a 'residual' place-based effect (Mitsch, Lee, and Ralph Morrow 2021). Regarding the deprivation divide, regional economic inequalities and wealth disparities across the EU can erode trust in both national and supranational institutions, such as the European Union, and contribute to heightened Euroscepticism (Dellmuth 2024; Lipps and Schraff 2021; Mayne and Katsanidou 2022). Nonetheless, individuals' socio-economic status plays a similar role in influencing trust and moderates the effect of place (Katsanidou and Mayne 2024; Lenzi and Perucca 2021).

By focusing on the question of to which extent political trust besides RPP support is affected by place, I add to this emerging political trust literature and identify both shared and divergent relations of the effects of place on both trust and RRP support.

1.2.3 The Subjective Dimension of Deprivation

One question that directly arises when analysing place and discontent from an individual-level perspective is whether all individuals are equally affected by place deprivation. I argue that this is not the case and focus on feelings and subjective perceptions as reinforcing and mitigating factors of place deprivation.

Even though the aggregate data often shows clear spatial patterns, the empirical evidence for the existence of a place-discontent relationship is mixed and often weak at the individual level. Some studies have, therefore, focused on the channels through which place affects discontent (Harteveld et al. 2022; Salomo 2019). However, Arzheimer and Bernemann (2024) find only minimal evidence that place resentment mediates the effect

of local contextual conditions on, e.g. right-wing sentiment, even though the effects of individuals' perceptions and feelings outweigh the effects of place-based factors. The few studies that investigate heterogeneous effects show that place-based identity (de Lange, van der Brug, and Harteveld 2023; Zumbunn 2024) and socioeconomic characteristics (Córdova and Layton 2016; Katsanidou and Mayne 2024; Lenzi and Perucca 2021) amplify the place effects.

However, what about feeling left behind and subjective perceptions of deprivation? Previous research has established that emotional responses and perceptions are crucial in shaping individuals' political attitudes and how they process political information (Brader, Valentino, and Suhay 2008; Danckert, Dinesen, and Sønderskov 2017). Thus, perceptions can influence citizens' attitude formation and behaviour because people perceive facts about their situation subjectively (Headey 1991) and deprived citizens sometimes even justify and legitimate the status quo (Jost 2019). In political geography, citizens' living places serve as a political cue representing the status quo as it embeds information about the economic condition and the provision of services. Hence, I analyse whether perceptions of deprivation moderate the relationship between place-based factors and political discontent.

These perceptions of deprivation are not feelings or perceptions of place-based grievances but are defined as a general sense of one's in-group or oneself not receiving the fair share. The theoretical basis of the concept is relative deprivation, described as 'the judgment that one is worse off compared to some standard accompanied by feelings of anger and resentment' (H. J. Smith et al. 2012: 1) and can be either egocentric or group-based (Runciman 1966). In this dissertation, I employ two differentiations of the concept: feeling left behind and perceived deprivation. In the case of feeling left behind, material deprivation coincides with a lack of social recognition for the needs of one's in-group and is based on the concept of societal marginalisation (Bollwerk, Schlipphak, and Back 2022; Gidron and Hall 2017; Inglehart and Norris 2016). This general sense of being deprived and lacking recognition can stem from multiple sources. It can unite citizens who share this feeling for different reasons, for example, their low incomes, low-skilled jobs, conservative values, or rural residence (Bollwerk, Schlipphak, and Back 2022; Steiner, Schimpf, and Wuttke 2023). In contrast, perceived deprivation focuses on the egocentric perception of resource distribution (Headey 1991; Tyler, Rasinski, and McGraw 1985). Once again, deprivation is presented in general terms: the impression of not receiving one's fair share.

In this dissertation, I test if individuals' perceptions of deprivation amplify feelings of discontent and shape political attitudes. This is based on the assumption that persons who consider themselves as deprived and left behind are more likely to perceive and react to local deprivation. Conversely, those who do not perceive deprivation may dismiss local

disparities or shift blame elsewhere.

1.3 Mapping the German Landscape

Before summarising the three articles of this dissertation that tackle these research questions, I will introduce key background information on Germany, which serves as the context for all three articles.

In Germany, the role of place-based factors for attitude formation and voting behaviour has long played a very subordinate role and was dominated by the east-west divide. Even three decades after reunification, differences between east (former GDR) and west Germany can still be observed, some of which overlap with the urban-rural divide, even if the decline and exodus from (eastern) rural areas has slowed down (Heider et al. 2023; Träger 2022). Nevertheless, public discourse on place-based deprivation has increased across Germany in recent years, regardless of historical boundaries (Deppisch 2021). In response, the federal government established the Commission for Equal Living Conditions in 2018 to develop policy recommendations to address place-based inequalities. Place-based deprivation is a prominent issue in German politics and has come into focus simultaneously with the rise of the German RRP ‘Alternative for Germany’ (AfD), reflecting a broader trend in Western Europe. An aggregate-level analysis of the 2017 and 2021 Bundestag elections from an aggregate perspective reveals spatial patterns that indicate that the AfD performed significantly better in smaller towns and villages than in cities, especially in the east (Haffert and Mitteregger 2023; Klärner and Osigus 2021; Stroppe and Jungmann 2022).

Nevertheless, research on the relationship between place-based factors and political discontent and AfD support, as well as other political attitudes, has yielded mixed results. Qualitative studies indicate that the lack of public transportation and social infrastructures drive dissatisfaction with politics and AfD support (Hillje 2018) and that AfD is successful in more economically depressed neighbourhoods within both cities and rural areas (Förtner, Belina, and Naumann 2020). Quantitative studies on the electoral success of the AfD show that rural-urban differences alone do not sufficiently explain voting patterns (Schröder 2018), but rural areas with negative demographic trends and low-income areas have exhibited higher AfD vote shares (Franz, Fratzscher, and Kritikos 2018). The results reveal that in eastern Germany, the relatively rural municipalities have comparatively high AfD vote shares, whereas in western Germany, the fairly rural and the non-rural municipalities have similar AfD vote shares (Deppisch, Osigus, and Klärner 2022). Similarly, AfD support tends to be stronger in areas with poor access to services but not necessarily in rural areas (Diermeier 2020). While economically challenged (Kurtenbach 2019) and low-income (Franz, Fratzscher, and Kritikos 2018) areas have also demonstrated greater support for the AfD, economic

dominance does not have a uniform effect across eastern and western districts (Nickel and Groß 2023). For right-wing sentiments, Arzheimer and Bernemann (2024) find no effect of rurality after controlling for local conditions and individual traits. Similarly, Kiess et al. (2024) reports that place-based factors lack significance and add no explanatory value.

The ambiguous findings are less surprising given the complex spatial dynamics in Germany. There are clear and pronounced regional disparities in place-based conditions, but these dynamics do not follow simple patterns such as an urban-rural divide. Within the cities, the neighbourhoods are very heterogeneous and range from gentrified districts to hotspot (‘Brennpunkt’) neighbourhoods. At the same time, rural areas range from economically depressed peripheral regions to affluent, growing communities, emphasising their diversity rather than a uniform state of disadvantage (Küpper and Peters 2019; Lorenz and Pischtschan 2025; Weingarten and Steinführer 2020). For example, the accessibility of services such as public transport and medical care is a challenge in particularly remote areas but is not a mutual problem for all rural areas (Deppisch, Osigus, and Klärner 2022; Küpper 2016), and an analysis of the development of medical care shows that there is no general positive or negative trend in rural or urban regions (Reiter, Hecht, and Jehling 2024).

Against this backdrop, place-based deprivation is a salient topic due to the prevalent regional disparities. However, a simplistic rural-urban divide, which treats both regions as homogeneous and opposing entities, fails to capture the complex spatial relationship in Germany (Förtner, Belina, and Naumann 2020). Therefore, the German case underscores the need to account for the heterogeneity of regional, aggregate units and across place-based factors. Moreover, focusing solely on AfD support as a manifestation of political discontent offers limited insights into Germany’s geography of discontent. As a welfare state with average levels of political trust compared to the rest of the EU (Torcal 2017), Germany provides an exemplary case for studying the place-trust relationship.

1.4 Empirical Studies

In this dissertation, I investigate the extent to which different place-based factors contribute to political discontent, e.g. political trust, and its manifestations, e.g., preferences for radical-right parties. Building on the first findings, I continue to ask why some individuals are (more) affected by place-based factors than others focusing on the subjective perceptions, such as feeling of deprivation, as moderating factors. These overarching research questions are addressed by three empirical studies, each with a different focus on specific sub-questions. Figure 2 summarise the main explanatory factors, moderators, and outcomes of each of the three articles.

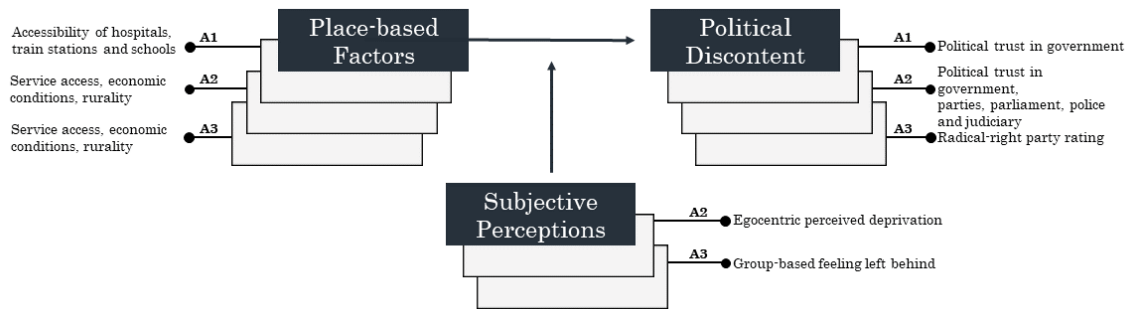


Figure 2. Articles of Dissertation Numbered by Order of Appearance

1.4.1 Left Behind in a Public Services Wasteland?

The first article emphasizes the role of public service provision for trust in the national government. It asks, first, whether the accessibility of public services, namely hospitals, train stations, and schools, reduces political trust independently of economic conditions, and second, whether the accessibility or the change in accessibility of these services affects citizens' trust.

The core argument of this article is based on two well-established findings of political trust research: First, citizens expect material benefits as outcomes of political institutions, and second, whenever the political system fails to produce the expected outcome, citizens' trust in government erodes (Easton 1965; Hetherington 2005). In welfare states, the satisfaction with and provision of public services is a crucial part of the expected outcomes of political systems and accessible public services are essential in citizens' daily lives (Kumlin, Nemčok, and van Hootegeem 2024): Is there a hospital nearby in case of a health emergency? How far is the nearest train station for commuting to work or shopping in another city? Are there schools close to home? If the state fails to provide accessible public services, it fails to meet its citizens' expectations, which, in turn, undermines political trust. Therefore, lower levels of accessibility to public services should be associated with lower levels of political trust in the national government.

Throughout the dissertation, I define accessibility of public services as the spatial proximity between a citizen home and the location of a service facility (Levesque, Harris, and Russell 2013; Weber 2003). In this article, I focus on three types of service facilities that are of general interest – health care, public transport, and education – and compare the effects between them and the effects of public services and other place-based factors. In addition to providing public services, economic deprivation and the rurality of a place have received the most attention in explaining the geographical divide in political trust (Dellmuth 2024; Lenzi and Perucca 2021; McKay, Jennings, and Stoker 2021; Stein, Buck,

and Bjørnå 2019). These factors are also at least partially correlated with the provision of public services, making it necessary to show that the accessibility of public services has an independent effect on political trust.

This first hypothesis of this article is based on the assumption that citizens perceive low accessibility of services in their neighbourhood compared to other places in the state. With the second hypothesis, I suggest that a decline in – rather than a static lack of – public service accessibility is associated with a lower level of trust in the government. Citizens should be particularly sensitive to temporal changes in the provision of public services because the decline of services, such as the closure of a hospital, increases the salience of these issues and is more noticeable and impactful than static low accessibility. When services that were once easily accessible are withdrawn, citizens’ established routines are disrupted, and they are more likely to perceive the government as failing to meet their expectations. Previous studies linking political discontent to economic decline and adverse shocks suggest that this development can trigger a reinforcing cycle of decline (Autor, Dorn, and Hanson 2016; Broz, Frieden, and Weymouth 2021).

The results of the first study show that low accessibility of public services, particularly train stations, is linked to low political trust, but effect sizes are small. The accessibility of schools and changes in hospital provision yielded no significant relation with government trust.

1.4.2 Place-Based Deprivation, Perceived Deprivation and Political Trust

The second article builds on these findings by asking whether subjective perceptions of relative deprivation moderate the relationship between place-based factors and political trust. In my first article and similar works by others, researchers often observe a weak relationship between place characteristics and political trust, radical right voting, or other indicators of political discontent. One potential explanation that I explore here is that perceptions of deprivation moderate the objective place-based effects.

The second article, therefore, distinguishes between two factors influencing trust in the political system: outcome-oriented evaluations and perceptions of fairness (Tyler, Rasinski, and McGraw 1985). First, I re-examine the direct relationship between – objective, place-based – economic hardship and service provision with political trust, understood as the outcome-oriented evaluation of the political system: Place-based deprivation is associated with lower levels of political trust. Second, I focus on subjective perceived deprivation to examine the effect of the egocentric perception of resource distribution. The assumption is consistent with the premises of political trust research: When citizens feel they are not

receiving their fair share, their trust in political institutions should diminish .

Building on theories of distributive justice (Headey 1991), perceived deprivation can also influence how individuals interpret facts about their socio-economic situation, such as local economic hardship or access to services. Citizens who feel deprived should be more sensitive to objective place-based deprivation, which may reinforce the effect of existing disparities. Conversely, those who do not perceive deprivation may ignore contextual information or attribute blame to individuals rather than institutions. The third hypothesis, therefore, states that the negative relationship between place-based deprivation and trust is expected to be stronger when citizens perceive themselves as relatively deprived.

The empirical analyses find that place-based deprivation only partially correlates with political trust, finding only small and, in the case of service accessibility, also not robust effects. In contrast, perceived deprivation is strongly correlated with political trust and partially amplifies the effects of place-based deprivation on political trust. Individuals who feel relatively deprived are more affected by their neighbourhood's economic conditions, suggesting that subjective feelings play a crucial role in the place-trust relationship.

1.4.3 Who Prefers RRP? On Being and Feeling Left Behind

The third article investigates the relationship between place-based deprivation and positive evaluation of the German RRP AfD. The theoretical relationship between place and trust and place and RRP support is similar: economic hardship and lacking services can manifest in low levels of political trust and the support of RRP who establish themselves as advocates of the deprived and unrecognised. While there may be a correlation between low trust levels and support for the RRP (Betz 1994; Lubbers, Gijsberts, and Scheepers 2002), it is crucial to recognise that individuals with low political trust might withdraw from the political system entirely rather than vote for a radical party (Craig 1980). Additionally, ideology, cultural values, and perceived threats – such as increased competition for resources – are likely to have a more pronounced influence on forming party preferences (Mudde 2007; Rydgren 2007) Therefore, this third article highlights the need to take these differences into account and to analyse political discontent, e.g. political trust, and its manifestation, e.g. radical-right party preference, separately.

The central research questions posed by the third article are: Is place-based deprivation associated with positive ratings for the German radical-right party AfD, and are place-based factors reinforced by subjective perceptions? Compared to the second article, I employ the same approach to conceptualise place-based deprivation through economic deprivation and

service provision, adding a measure of population density to examine the effect of rurality, which mainly served as a control in the previous studies. Thus, I hypothesise that citizens living in a deprived or rural area are more likely to support a radical-right party.

In this article, I utilise the concept of ‘feeling left behind’ as a driver of RRP support. Despite its frequent appearance in public and academic discourse, the concept of ‘feeling left behind’ still lacks a clear theoretical framework (Betz and Oswald 2022; Goodwin and Heath 2016). I define this term as the subjective feeling that the needs and concerns of one’s in-group are not recognised and respected in society, building on the perceived marginalisation scale (Bollwerk, Schlipphak, and Back 2022). The perceived marginalisation scale is based on a multi-dimensional framework, focusing on the perceived lack of recognition for various reasons, including low-income, low-skilled jobs, conservative values, and rural residence. While relative deprivation theory remains central to this concept (Runciman 1966), the multi-dimensionality of social recognition and the group-based nature of the concept is crucial, as radical-right parties position themselves as advocates for those feeling excluded and challenge mainstream parties framed as maintaining the status quo. Thus, my second hypothesis states that citizens who feel left behind are more likely to support a radical-right party.

Additionally, I hypothesise that this subjective feeling moderates the place-based effects. Emotions and perceptions significantly influence how individuals process information cues (Brader, Valentino, and Suhay 2008; Danckert, Dinesen, and Sønderskov 2017), making them more selectively attentive to information confirming their emotions. Assuming that one’s living place serves as an informational cue (Bailey et al. 2013; Galster 2012), the positive relationship between place-based deprivation and RRP support should be stronger for citizens who feel left behind.

I find that the lack of service provision, living in a rural neighbourhood, and feeling left behind are positively associated with support for RRPs. The reinforcing relationship between objective conditions and subjective perceptions is observed for rural residents. Residents in less densely populated regions who feel left behind show a greater inclination toward supporting RRPs compared to those in urban areas. In contrast, individuals who do not feel left behind do not exhibit significant differences in RRP support based on population density.

1.5 Contribution

The main purpose of this dissertation is to contribute to understanding how place-based factors influence political discontent and its manifestation at the micro-level. Therefore, I study the relationship between various indicators of place-based deprivation and political

trust and RRP support in Germany, presented in three articles. The analyses show that the relationship between static neighbourhood deprivation and (manifestation of) political discontent is generally weak and varies based on a) specific neighbourhood characteristics and b) individuals' subjective perceptions of deprivation. The results speak to the larger debate on the 'geography of discontent' in several ways by demonstrating

- (1) the importance of considering the role of public service provision in shaping political attitudes and behaviour,
- (2) the impact of methodological advancements in spatial linking methods and fine-grained contextual data,
- (3) the need to differentiate between different outcomes when studying place-based factors,
- (4) that place is often not enough to explain political discontent, but subjective perceptions of deprivation are crucial to understanding the place-based effects on political trust and radical-right support. Place as such is not a strong predictor of political discontent.

1.5.1 Addressing the Service Gap

The empirical analyses presented in this dissertation enhance our understanding of how public service provision impacts political trust and support for RRP. Public services are essential to citizens' daily lives (Vogler 2023). Previous research on the accessibility of services mainly focused on countries with undeveloped or developing welfare state systems and found that a lack of public services does not necessarily translate into political discontent (Brinkerhoff, Wetterberg, and Wibbels 2018; Chukwuma, Bossert, and Croke 2019). In European welfare states, studies emphasise that citizens' experiences and perceptions of service delivery subsequently affect trust in the public sector or government (Bouckaert, van de Walle, and Kampen 2005; van de Walle and Bouckaert 2003; van de Walle, van Roosbroek, and Bouckaert 2008), but studies on the geography of discontent have so far focused on economic and cultural divides. In my first article, I find that a lack of public services, especially train stations, is associated with low political trust. Shortly after its publication, my findings were confirmed by two other studies that examined the effect of (changes in) public service provision and found that a lack of services increases support for RRP in Italy and Denmark (Cremaschi et al. 2024; Nyholt 2024). As such, I am one of the first to show that accounting for public service provision is necessary to fully understand the 'geography of discontent'.

1.5.2 Leveraging Fine-Grained Data

Through my work, I contribute to understanding how integrating new data types and methodologies advances our understanding of whether and which place-based factors

influence political discontent and its manifestations. The inclusion of public service provision as a place-based factor goes hand in hand with methodological advancements because it was necessary to construct measurements of respondents' living conditions and the accessibility of services as precisely as possible. In contrast, existing literature on place-based deprivation has focused on sub-national variation but often uses broad geographic units, such as municipalities or districts, that may not fully capture the relevant social contexts that influence citizens' political attitudes, an issue also known as the Uncertain Geographic Context Problem (UGCoP) (Kwan 2012b). The review of the German case has demonstrated that municipalities or districts cannot capture the internal variation essential to understanding the spatial dynamics in Germany. Hence, results on the geography of discontent are likely to depend on the chosen aggregation level. This dissertation addresses this gap using georeferencing, spatial linkage methods, and fine-grained contextual data from multiple sources, going beyond the traditional linking of administrative boundaries. I present a detailed examination of spatial variations in economic conditions and population density by integrating survey responses with fine-grained structural data at a 1km x 1km grid level. Additionally, I calculate the distance to the closest service facilities, such as hospitals and train stations, allowing a more precise understanding of how service accessibility affects political trust and party support. This fine-grained geographic approach offers several advantages: it enables more precise measurement of place-based deprivation, captures spatial variations that higher-level units might overlook, and allows the robustness of findings across different spatial aggregations to be tested. The flexibility to adjust neighbourhood sizes provides a way to evaluate how different spatial granularity levels affect analyses in political geography. My findings show that effect sizes and significance can differ across spatial aggregation levels and place-based factors, especially when analysing public service provision. This finding underlines the importance of advancing the field with spatial linking methods and increasingly available data on a fine-grained spatial level.

1.5.3 Disentangling Political Trust and Radical Support

This dissertation contributes to the growing body of research on political trust by introducing a place-based perspective to this aspect of political discontent. During the time that this dissertation has been written and the research conducted, place-based explanations have gained increasing attention in the study of political trust. Recent contributions focus on sub-national regional disparities from a comparative perspective (Dellmuth 2024), moderating effects of place-based identities (Zumbrunn 2024), and the role of place resentment for trust (Hegewald 2024). In this dissertation, I link research on political trust with the geography of discontent, demonstrating that place-based factors, particularly service provision, can serve as objective measurements to enhance our understanding of the performance-trust

relationship. In the context of the left behind narrative and the previous findings on the subjective perceptions of service provision, it seems worthwhile to expand political trust research to analyse the difference between subjective and objective economic and political performance measures. Furthermore, the findings suggest that the persistent absence of essential public services, such as train stations, is associated with diminished political trust. In contrast, other place-based factors, including service decline and rurality, do not exhibit a robust relationship. This result deviates from previous results on the decline of service provision (Cremaschi et al. 2024; Nyholt 2024). Moreover, my findings in the third article on RRP support demonstrate that the (moderating) effect of rurality plays a more crucial role than service provision. This dissertation suggests that political trust and RRP support do not always follow the same geographic patterns, despite the partial comparability of the empirical studies. This highlights the need for further exploration and differentiation of place-based effects across different political outcomes.

1.5.4 Going Beyond Objective Realities

My analyses contribute to the growing body of literature on subjective perceptions in place-based effect research, shedding light on the conditions under which these factors influence attitudes and behaviour. While the significance of place-based conditions is often intuitively understood, theoretical discussions regarding when and for whom these conditions become salient in attitude formation and political behaviour are still emerging. Prior studies show that factors such as place-based identity (de Lange, van der Brug, and Harteveld 2023; Zumbrunn 2024) and socioeconomic characteristics (Córdova and Layton 2016; Katsanidou and Mayne 2024; Lenzi and Perucca 2021) amplify the effects of place on political outcomes like voting for radical-right parties, political trust, and Euroscepticism. As an extension of this research, this dissertation builds on the study of emotions and feelings as activating factors for political information cues (Brader, Valentino, and Suhay 2008; Danckert, Dinesen, and Sønderskov 2017), an area largely unexplored within political geography. Specifically, I show that when citizens feel marginalised, or their people's needs are overlooked, they are more likely to incorporate place-based grievances into their political decision-making. My empirical analysis shows that residents in less populated areas who perceive their social status as unrecognised exhibit greater support for RRPs compared to their urban counterparts sharing similar feelings. However, for citizens who feel respected and recognised, population density makes no difference to whether they support an RRP. Similarly, an increasing proportion of low-income households in a neighbourhood affects political trust only for those who perceive themselves as relatively deprived. Although this is only a first step towards a theoretical-led discussion into the psychological underpinnings of mechanisms that drive place-based effects, it promises to be a fruitful avenue for future research.

My findings on subjective perceptions of deprivation also speak to a broader debate: Are we truly experiencing a time where the significance of place in shaping political attitudes and behaviour is more pronounced than ever? Do we live in a ‘place era’? First, I argue and show that it is essential to focus on how people respond to their neighbourhood conditions rather than examining the objective realities of those conditions. Second, I also find that besides the moderating effects, the direct impact of place on political discontent diminishes when controlling for attitudinal and socioeconomic factors, echoing similar studies (Arzheimer and Bernemann 2024; Koeppen et al. 2021; Lenzi and Perucca 2021). These results contribute to the field by indicating that aggregate-level patterns may reflect compositional rather than contextual effects. Moreover, place attitudes, such as place resentment and place-based identities, might be more relevant for understanding political discontent than objective conditions (de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a; Jacobs and Munis 2023). I stress the importance of examining the objective-subjective nexus, exploring the conditions under which these effects occur, and differentiating more clearly between objective place-based conditions and subjective perceptions. The relationship between place and political discontent and its manifestations is more complex than previously assumed, with subjective perceptions being vital for understanding this relationship and might be even more vital than the objective place effects.

Chapter 2: Left Behind in a Public Services Wasteland? On the Accessibility of Public Services and Political Trust³

Abstract: Public discourse and scholars alike argue that the spatial divide in voting behavior and attitudes is rooted in geographic inequalities that serve as breeding grounds for political discontent. In previous studies, scholars have mainly focused on the economic conditions to analyze how place-based context influences the voting behavior of citizens. However, this focus on voting behavior and a small set of contextual variables do not allow us to draw direct conclusions as to how, and which, place-based factors relate to discontent on the attitudinal level. I argue that specifically the accessibility of public service infrastructure serves as low-intensity information cue for citizens to evaluate the political performance of modern welfare states. These evaluations complement objective economic perceptions and are part of the performance-trust link. Hence, citizens should trust the government less, if public service are not provided or only hard to access. I test this relationship for the German case by spatially linking the addresses of survey respondents with the location of public service facilities and collective municipal-level data. The resulting unique data set allows to explore the relationship of the accessibility of public service facilities and political trust as well as their temporal development. Results of multi-level analyses indicate that shorter distances to train stations are associated with increased trust in the government, but all other results for like the change in provision stay inconclusive. The findings implicate that a long-term lack of public services contributes to geographically polarized discontent in Germany.

2.1 The Geography of Discontent

The geography of discontent is one of the emerging fields of studies concerned with explaining attitude formation and political behavior from a place-based perspective. One reason for the re-examination of place as an explanatory factor is the spatial pattern of right-wing populist voting behavior in recent years, which has been echoed in the public controversy

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about disadvantaged, rural places breeding resentment and populism in Western democracies (Rodríguez-Pose 2018).

At the heart of these ‘left behind’ studies stands the argument that citizens living in relatively disadvantaged areas have the perception that they lack access to most economic and social resources. This impression leads to a sense of being left behind by globalization, national economic development, and/or political elites (Cramer 2016).

To examine this mechanism, many empirical studies focus on how economically deprived, rural places drive right-wing populist voting behavior. Research shows that economic trade shocks (Autor, Dorn, and Hanson 2013; Colantone and Stanig 2018) or long-term de-industrialization (Broz, Frieden, and Weymouth 2021) can set off a downward spiral that leads to the electoral success of populist parties and Brexit support. Such effects occur across the US (Rodríguez-Pose 2018; Scala and Johnson 2017) and European democracies (Carreras 2019; Dippel, Gold, and Heblich 2015; Evans et al. 2019). Even if these studies point in the direction of geographic inequalities contributing to an up-rise of discontent, the focus on voting behavior and a limited set of contextual variables do not allow us to draw direct conclusions as to how, and which place-based factors relate to discontent on the attitudinal level. One exception is the study by Harteveld et al. (2022) who investigate multiple roots and paths through which context factors affect populist radical right voting behavior. They find that attitudes preceding vote preferences have different roots in rural and urban places. In addition, McKay, Jennings, and Stoker (2021) show that communitropic distrust is particularly strong in rural areas with a weak local economic status quo.

This paper builds on these studies in highlighting the need to further disentangle contextual effects and understand the antecedents of political behavior expressed on the aggregate level. Specifically, I investigate how political trust is influenced by public service provision, economic hardship, and demographic composition in Germany. If people lack access to economic and social resources, they are likely to blame the state for their living conditions and lose trust in the government. This theoretical mechanism originates from works in the performance-trust framework (Luehiste 2006; van de Walle and Bouckaert 2001) that are extended by conceptualizing citizens’ living conditions as perceived outcomes of the political system. Nevertheless, the question remains which aspects of the living place should factor into this framework. Based on previous studies, economic factors cannot be dismissed. However, other factors besides the economic status should also influence the perception of the local living conditions. I argue that public service provision affects trust independently. On the one hand, some political economists argue that the lack of public services is a direct consequence of long-term economic decline and mediates the economic effects (Broz, Frieden, and Weymouth 2021). On the other hand, Bock (2016) notion of rural marginalization

has been empirically supported as a distinct phenomenon in the analysis of radical and right-wing populist voting behavior in European countries (Bolet 2021; Hartevelde et al. 2022). Besides, while empirical evidence suggests that class, wealth, attitudes, and party preference in the US are still separated by the rural-urban conflict line (Gimpel et al. 2020), in Germany the rural-urban divide cannot be reproduced as clearly (Deppisch, Osigus, and Klärner 2022). One reason might be that rural places vary in their access to public services and economic strength in Germany. In essence, public service provision is of specific interest to answer if and when living conditions translate into a negative government evaluation that decreases trust, in addition to economic factors, composition, and rurality.

To study this relationship, I provide direct measurements of the distance between public service facilities and residences of survey respondents by georeferencing and spatially linking the addresses of a 2018 representative face-to-face study of the German population with locations of hospitals, train stations, and schools. The calculated distances between the respondents and the closest facilities are part of a comprehensive data set that includes additional collective municipal-level data on the economic situation, job opportunities, the composition of a municipality, population density, and their temporal development. The results of several multilevel regressions indicate that the lacking provision of some public services - especially public transportation but also hospitals - are associated with lower levels of trust. However, other place-based factors do not show the expected effects. Even more surprisingly, the decline of living conditions yields no significant results.

In summary, this paper contributes to the emerging literature on the geography of discontent in three ways. Firstly, previous literature often considers economic inequalities the main, and sometimes the only, factor in determining discontent. However, neither government performance nor left behind places need to be exclusively perceived through an economic lens. In contrast, recent studies show that the diversity of factors contributing to the geographic divide on the sub-national level is of specific interest to understand which contextual factors matter most (Gimpel et al. 2020; Hartevelde et al. 2022; McKay, Jennings, and Stoker 2021). Based on insights of the trust literature, I apply the distinction between economic and political performance factors. By analyzing non-economic regional indicators that cover the political side of the performance-trust link, I examine if and when these factors contribute to citizens' trust in the government. Explicitly, the main focus is the accessibility of public services and infrastructures that are regularly in the center of public debates.

Secondly, this study links the theoretical work of Hetherington (2005) and Easton (1965) on political trust and system support with the place-based left behind research. It builds on the assumption that the evaluation of government performance is partly influenced

through cues from citizens' place of residence. If these places are deprived, trust levels should erode. The focus on the relationship of trust and place is of special interest in places like Germany where the geographic divide in voting behavior has recently received much scholarly attention (Deppisch, Osigus, and Klärner 2022; Diermeier 2020; Förtner, Belina, and Naumann 2020; Kurtenbach 2019) but the underlying mechanisms concerning the source of discontent are yet to be discussed.

The third advancement this paper makes it to further address the methodological approach of many, though not all, previous studies. Instead of relying on aggregate level data, this study uses several fine-grained spatial measurements of place-based factors linked with individual-level survey data. Thus, it builds on recent studies contributing more insights into the individual-level attitudes and mechanisms (Harteveld et al. 2022; McKay, Jennings, and Stoker 2021). With an increasing amount of available data, the possibilities to capture the respondent's living conditions more precisely grow. As such, this paper highlights different operationalizations of accessibility measurements and their application.

2.2 The Performance-Trust Link

The belief that trust in government declines when citizens are unhappy with the outcomes of the political system lies at the very core of political trust research.⁴ Political trust is the "degree to which people perceive that the government is producing outcomes consistent with their expectations" (Hetherington 2005: 9) and as such, a cognitive, evaluative orientation towards political authorities and political institutions. This definition is closely related to Easton's (1965) concept of political system support. In this framework, specific support can be defined as a performance-based and output-oriented evaluation of the political system (van de Walle and Bouckaert 2001). Hence, political trust depends strongly on contextual performance factors, i.e., outcomes of the political system, which are the basis for citizens' evaluations of the executive institutions of the state. Whenever the political system does not produce the expected outcome, citizens' trust in the government should erode. A major part of the trust literature focuses on material benefits as expected outcomes of the political system. The evaluations of this outcome can rely on one's own economic situation (Healy, Persson, and Snowberg 2017) or the perceived economic performance of the state (Hansford and Gomez 2015). Both considerations influence the confidence in political institutions

⁴In comparison to social or interpersonal trust, where two individuals develop mutual trust, political trust describes a vertical relationship between two (or more) partners. Scientific literature accounts for this difference in some instances by differentiating semantically between 'trust' in a mutual relationship and 'confidence' as a one-sided form of reliance on a partner (Schnaudt 2019). Others differentiate between trust and confidence on a more conceptual level by defining confidence as a 'represent belief on the capacity of an agency' (Norris 2017: 19). Acknowledging that the relation underlying interpersonal and political trust is different, the term trust is used here to depict volatile evaluations of political actors.

(Criado and Herreros 2007; Luehiste 2006; McAllister 1999; Zmerli 2013). The individual-level characteristics and perceptions are accompanied and influenced by contextual effects. The regional distribution of economic resources directly affects job opportunities and income levels but might be even more influential as a source of information about the state of the economy. Citizens are exposed to the conditions of their neighborhood in their daily lives and these place-based context conditions serve as low-intensity information cues (Baybeck and McClurg 2005; Cho and Rudolph 2008). Eventually, the “adverse local conditions translate into political opposition” (Lipps and Schraff 2021: 7) and can result in a spatial divide of trust along the lines of regional disparities. Additional empirical studies on political trust as part of the “geography of discontent” (McKay, Jennings, and Stoker 2021) emerging in recent years find mixed results. They highlight that it is necessary to distinguish between sub-national factors, national contexts, and studied outcomes. Trust is lower in peripheral areas in Norway but economic factors do not have a similar effect (Stein, Buck, and Bjørnå 2019). People living in the ‘backwaters’ of the UK hold more grievances and are Eurosceptic but do not express higher levels of distrust or democratic dissatisfaction (Jennings, Stoker, and Twyman 2016). In contrast, people living in both economically deprived and less populated areas in the UK hold more negative views about how well their community is listened to by politicians (McKay 2019). Most recently, McKay, Jennings, and Stoker (2021) focused on the place-based explanations of trust, perceived social marginality, and perceived economic deprivation. They find that people residing in economically deprived and rural areas lack governmental trust and identify several, area-specific mechanisms. In cross-country comparisons, EU support is depressed in economically challenged regions, but intertwined with national trust and citizens’ education level (Lipps and Schraff 2021; Mayne and Katsanidou 2022). Besides the mixed results, this overview shows that the trust literature is still limited in its geographic scope. For example, geographic trust divides in the UK and US as ‘high inequality context’ are comparatively well studied while sub-national studies of other European countries are sparse. Finally, economic factors are rather omnipresent in studies on place and trust. However, when studying the performance-trust link, it seems intuitive that the economic conditions are not solely shaping the relation of trust and living conditions. Besides economic performance factors, citizens also expect their nation state to ensure the provision of social services, infrastructure, and security (Dalton 2004; Luehiste 2014) influencing the political system similarly to economic factors. But which factors measuring sub-national inequalities should matter besides the economy, and when?

2.2.1 A Focus on Public Services

One answer highlighted in this study is the accessibility of public services.⁵ Evaluations of the welfare state play a crucial role in understanding individual political trust levels in modern democracies where citizens have a clear expectation that a welfare state provides sufficient public goods (Kumlin and Haugsgjerd 2017). Several studies support this assumption, shedding light on the role of satisfaction with the provision of public services for political trust on an individual level (Christensen and Laegreid 2005; Criado and Herreros 2007; Luehiste 2006; van der Meer and Dekker 2011; Zmerli 2013). Furthermore, public management studies show that experience with and perceptions of service delivery - often analyzed from a micro performance perspective - add up to an evaluation of the quality of public services, which then influences trust in the public sector in particular, or the government in general (Bouckaert, van de Walle, and Kampen 2005; van de Walle and Bouckaert 2003; van de Walle, van Roosbroek, and Bouckaert 2008). An exception to these studies with a focus on subjective perceptions are geographical approaches explaining the relationship of service delivery and citizens' perceptions of the government in developing countries. Service provision is a core element of accountable governance and less accessible services should induce dissatisfaction and distrust. However, empirical studies yield mixed results (Brinkerhoff, Wetterberg, and Wibbels 2018; Chukwuma, Bossert, and Croke 2019). From the left behind literature, one can conclude that - though studying other outcomes - public service provision as an indicator for local marginalization and decreasing social and cultural capital has an independent and similar effect compared with economic performance measures (Harteveld et al. 2022). Thus, public services seem of specific interest for analyzing if their accessibility can function as an objective indicator for subjective perceptions in Western democracies. In line with the theoretical arguments and previous empirical results, the main hypothesis reads as follows:

H1: A lower accessibility of public services is associated with a lower level of trust in the government.

Based on previous studies, I assume the same relationship for the above mentioned context factors, namely: lower economic power, older demographic, and lower population density.

2.2.2 Static Situation or Temporal Change?

Underlying the first hypothesis is the assumption that citizens have a sense that their

⁵The accessibility of public services and socioeconomic infrastructure is here conceptualized as the spatial proximity between a citizen and the location of a service facility (Levesque, Harris, and Russell 2013; Weber 2003).

neighborhood is lacking services and experiences economic hardship relative to other places in the nation. Newman et al. (2015) is one of the few studies with empirical support for this assumption: the share of immigrants and the unemployment rate in the near neighborhood of US citizens strongly correlates with the perception of local immigration and job opportunities. Still, the discussion of the temporality of left behind places is part of the yet needed specification of this concept (Pike et al. 2023). On the one hand, sustained spatial disparities and stagnation of unfavorable living conditions can contribute to manifesting distrust. On the other hand, citizens are known to react to temporal changes if politicized on the national level (Hopkins 2010) and the left behind literature usually refers to a vicious cycle of reinforcing decline that induces discontent (Broz, Frieden, and Weymouth 2021). Thus, if change is the decisive root of place-based effects, the following hypothesis can be derived:

H2: A decline of accessibility of public services is associated with a lower level of trust in the government.

Again, I assume the same relationship for the decline of economic opportunities, increase in older demographic, and decline of population density.

2.2.3 Narrowing Down Salient Services in Germany

Until now, I have addressed public services and infrastructure as observable infrastructure facilities provided by welfare states. In this study, Germany serves as a case study of an established welfare state with overall average political trust levels compared to other EU countries (Torcal 2017). Studies on political discontent - often using voting for the German radical-right party AfD (Deppisch, Osigus, and Klärner 2022; Diermeier 2020) or turnout (Haussner and Kaeding 2019; Schaefer and Roßteutscher 2015) in federal elections as a proxy for this concept - show an association with economic inequalities, lacking service delivery, and rurality. Looking at the actual distribution of regional indicators (see supplementary material, Figure A1), one can observe for all indicators that heterogeneity exists between and within urban and rural municipalities taking population density as an indicator for the level of rurality.⁶ However, some clusters emerge. Firstly, one can still observe the persistent differences between East (the area of the former GDR) and West

⁶Deppisch, Osigus, and Klärner (2022) point out in their paper the often simplified definition of rurality. While most studies, like this one, rely on population density and/or remoteness to proxy the rural-urban spectrum, other factors such as settlement density, housing development, and land use add to a more complex and arguably valid definition. While agreeing with the authors that a simplified measurement of rurality should not be the basis to draw a conclusion of the geography of either populist voting or political trust in deprived areas, the analyses here opt for separating out the density dimension and include it as an independent contextual predictor along economic, infrastructural and demographic indicators. Thus, less dense areas are not inevitably more economically weak or lack infrastructure.

Germany. Specifically, the economic indicators, tax revenue and unemployment, illustrate the East-West divide. Furthermore, clusters of a high share of elderly poses a challenge only for some, mainly East German states (Salomo 2019). High levels of unemployment are not only clustered in East Germany but occur increasingly in the urban centers in West Germany. Within the areas of provided public services, accessibility of health care, public transport, and education are identified by state institutions as the most important to secure the provision of services of general interest (Bundesinstitut für Bau-, Stadt- und Raumforschung 2017). While the overall accessibility of services is rather good, the provision of public services poses a particular challenge in some but not all remote places. In general, the accessibility of public services in Germany is not solely determined by rurality but there exists noticeable variation across rural areas (Küpper and Peters 2019; Milbert and Furkert 2020). As such, I focus specifically on these three areas that also have a high salience in the public debate. For example, a controversy on hospital provision was initiated in 2019 by a report of the Bertelsmann Stiftung suggesting more than half of the German clinics should be closed to finance a smaller number of larger, more specialized hospitals. The COVID-19 crisis again draws public attention to the provision of health care in general and the accessibility and capacity of hospitals in particular. While the discussion of school provision focuses mostly on the attractiveness of a neighborhood, mobility through public transport is decisive for many citizens in their daily lives. Between 2000 and 2017, nearly 200 train connections (approximately 2000 km of train lines) were closed with local initiatives protesting the closure of stations or advocating for re-opening stations and lines which have already been taken out of service for a long time (Eisenbahn Bundesamt 2023; Prengel 2022). Moreover, the German railway company (Deutsche Bahn AG) is financially benefiting from current climate change legislation raising the question of if and how they will dissolve geographic inequalities in the accessibility to the rail network. As a consequence of these controversies, the German federal government appointed a commission on Equal Living Conditions in 2018, which is tasked to develop policy recommendations to address the issue of inequality in - among others - these three areas.

2.2.4 Attribution of Responsibility

Is the federal government actually the one to blame for the (under) provision of health, public transport, and education infrastructures? The German Federal State is partly involved in financing all three services and deciding on their location. Germany's health system is not technically a federal state system, but the national government decides on general health policies, and the health system is mainly publicly funded. Thus, the German states' governments are responsible for hospital planning, including the location of hospitals (Ridic, Gleason, and Ridic 2012). When it comes to public transportation, the German railway

company has a de facto monopoly for passenger transport by land. Regional transport infrastructure lies in the hand of the state administrations, but needs to meet the objectives of the national spatial planning law that aims at the regional equality of living conditions. In contrast, education in Germany falls exclusively in the states' responsibility, even though the federal government is obliged to supervise the German school system. Thus, the states are responsible for implementing this educational mandate.

Besides the governments' actual role in providing these infrastructures, it might be even more critical for citizens to perceive the federal government as responsible. The attribution of responsibility in infrastructure provision is challenging because of the number of (political) actors involved in the decision-making processes. In economic voting research, several studies looked into the effects of attribution of responsibility dealing with a similar problem (Arceneaux 2006; Rudolph 2016). The empirical results show that even in low clarity contexts, economic voting is still observable (Dassonneville and Lewis-Beck 2017), but that information shortcuts become more critical. In these cases, citizens tend to blame (or credit) "the most inviting target" (Norpoth 2001: 420). The same mechanism is at work when it comes to political trust. In multi-level systems with several government levels being responsible for each policy area, citizens are not able to differentiate their trust evaluations (Muñoz 2017). Especially in the German health and transport sectors, the shared responsibilities between federal and state governments are unknown to most citizens and difficult to disentangle. In these contexts, the federal government should be the most inviting target to blame for the shortcomings. The case is different when it comes to education policies. The federal government has passed its sovereignty to the German states and is prohibited by law to influence the states' education policies.⁷ The hypothesis is, therefore:

H3: If the government is perceived as the responsible provider of services, lower accessibility of public services is associated with a lower level of trust in the government.

In the German case, lacking access to hospitals and train station should decrease governmental trust but school accessibility should not have the same effect.

2.3 Data and Measurements

2.3.1 Data Sources

To investigate these hypotheses, I use survey data from the German General Social Survey (GGSS) 2018 (GESIS-Leibniz Institute for the Social Sciences 2019). The GGSS is

⁷Following this argument, one would expect that the lack of schools has a negative effect on trust in state governments. Unfortunately, such a measurement is missing in the data and the hypothesis cannot be tested.

a representative cross-section study of the German population over 18 living in a private household. In addition to the repeated core questionnaire, the GGSS 2018 included a module on political attitudes containing all individual-level measurements. In the first sample stage, municipalities are selected with a probability proportional to their number of adult residents and, in the second stage, the municipal registration offices provide a random address sample of individual persons to conduct the face-to-face interviews. To allow data linking and fine-grained spatial analyses, the addresses of the GGSS 2018 respondents were geocoded in accordance with the General Data Protection Regulation (GDPR) following strict data security regulations. For each address of the sample, the geocoordinate was determined by using the Geocoding Service of the Federal Agency of Cartography and Geodesy (BKG) (Schweers et al. 2016).⁸ Based on the geocoordinate, the respondents were mapped on 100x100m INSPIRE grid cells (European Commission 2020) and assigned the coordinate of the centroid of the grid cell for data security reasons. Additionally, point coordinates were retrieved for the location of hospitals, schools, and train stations to construct the independent variables for the following analyses. Firstly, the location of hospitals was obtained from the Federal Statistical Office of Germany (Statistische Ämter des Bundes und der Länder 2019). The yearly published hospital register includes the addresses and contacts of the hospitals' main offices in Germany. The annual data from 2003 to 2017 were georeferenced to create a complete panel data set of all hospital locations in Germany. Secondly, point coordinates of train stations and additional information on the station type are available via the open data portal of the German railway company (Deutsche Bahn 2017). The year of reference is 2017. Thirdly, school locations were retrieved from the Points of Interest data set, which is curated by the BKG (Bundesamt für Kartographie und Geodäsie 2018). The federal office collected and georeferenced the addresses of all German schools relying on information provided by the Statistical Offices of the German states 2017/2018. The last included data source provides additional context information about the living environment of the respondents, their corresponding (collective) municipality. On the level of collective municipalities, small German municipalities are merged into self-governed units, which allows a better nationwide comparison between the very heterogeneous municipalities, resulting in a total of 4668 German collective municipalities. This level offers a more refined measurement than the often used district-level data, and at the same time the analyses can profit from a broad range of indicators published by the Bundesinstitut für Bau-, Stadt- und Raumforschung (2022).

2.3.2 Operationalization

⁸The 'ALLBUSS/GGS - Sensitive Regional Data' (GESIS-Leibniz Institute for the Social Sciences 2018) contains sensitive regional variables as an extension to the publicly available Scientific Use File of the GGSS 2018. The access to the sensitive data is subject to access restriction but data can be analyzed onsite.

Government Trust: The dependent variable of this study is trust in the German government. It is based on a question included in an item battery of the GGSS 2018 asking about trust in political institutions. Respondents state their level of trust in the German government on a 7-point Likert-scale ranging from 0 *no trust at all* to 6 *a great deal of trust*.

Accessibility of Public Services: The independent variables are defined as the proximity between a respondent and locations of public service facilities. As introduced before, three types of facilities are examined: hospitals, train stations, and schools. For all three facility types, the Euclidean (straight-line) distance in kilometers between a respondent and the closest facility serves as proxy for the accessibility of public service facilities.⁹ The measurements result from calculating distance matrices between survey respondents and the service locations in Germany. The closest location was identified for each respondent and the distance in kilometers retrieved from the matrix. For all models, I transform the distance measurements by adding one unit and taking the logarithm. Górecki and Marsh (2014) established this transformed measurement when analyzing voter-candidate proximity to account for the non-linearity in the model. Arguably, a 1 km change in the distance to the next hospital does not have the same influence on individuals' perception if the person lives in an urban or in a remote area. For distances smaller than 1 km, the logarithmic function would increase rapidly, so one unit is added before the log-transformation.

Economic Hardship, Composition, and Rurality: Besides the distance measurements, I also introduce several context-level measurements on the level of collective municipalities: economic hardship, job opportunities, demographic composition, and population density of the collective municipalities. Economic hardship is proxied with the logged mean tax revenue per capita on the level of collective municipalities. With aggregated income levels not available on this aggregation level, logged tax revenues capture the economic condition as closely as possible, which is reflected in the correlation coefficient of 0.80 between logged GDP and logged tax revenues per inhabitant at the district level. As a second indicator of economic hardship, the subsequent analyses include the share of unemployed. As a consequence of the exodus of young citizens, a place would be left with a relatively high level of elderly citizens. This is why the share of citizens above the age of 65 is included as a proxy in the analyses. Lastly, population density per km² serves as a continuous measure of rurality.

⁹Straight-line distance might differ in some instances from the actual travel time to a facility because of physical barriers and road networks. Still, previous studies found that both measurements are highly correlated and the added precision of the more complex calculation of travel time was without consequences for the results (Boscoe, Henry, and Zdeb 2012; Phibbs and Luft 1995). Still, even though the Euclidean distance is a straightforward operationalization to proxy travel time and suits the theoretical argument of casual observation, it is not sensitive to all aspects of service provision.

Individual-Level Controls: The following analyses include several individual-level control variables that are known covariates of the trust items and could also confound the accessibility measures. The theoretical section already mentioned that performance evaluations are also based on economic performance. On the individual level, I include the perception of the own economic situation ranging from 0 *very bad* to 4 *very good*. Additionally, I include the three most prominent covariates of governmental trust in the models: incumbent support, political interest, and interpersonal trust (Keele 2007; Newton and Norris 2000; Zhao and Hu 2017; Zmerli 2013). The variable *incumbent support* takes the value 1 if respondents identify themselves as a partisan of one of the two coalition parties, as citizens tend to have more trust in a government if it is controlled by their preferred party (Anderson et al. 2005). Further, citizens who are interested in politics are more likely to understand the functioning of the political system and feel able to influence the political decision-making processes. Given this, they are more likely to trust political institutions (Catterberg 2005). Therefore, a 5-point Likert-scale measures *political interest*. The general feeling that fellow citizens are trustworthy should manifest in a generalized disposition affecting other attitudes and functions as a trait that spills over when evaluating political authorities and institutions (Almond and Verba 1963; Gamson 1968). *Interpersonal trust* is measured on a scale from 0 *One cannot be careful enough* to 2 *Most people can be trusted*. Additionally, I included a measure of formal education,¹⁰ age in years, and gender as sociodemographic controls.

Summary statistics of all variables can be found in the supplementary material (Table A1).

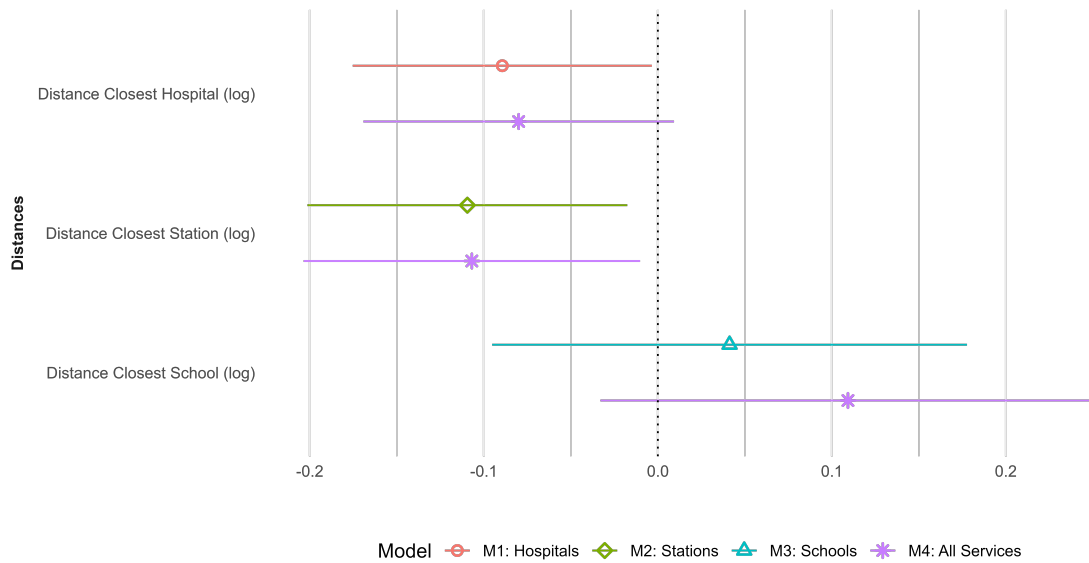
2.4 Results

For the following analyses, linear multilevel regression models with a random intercept and state fixed effects are estimated clustering the observations on the collective municipal-level. Multilevel modelling is necessary because the 2-stage sampling method leads to the clustering of respondents, as do the context-level variables. Survey weights are applied in all calculations to account for the oversampling of East German municipalities.

2.4.1 Inaccessibility of Services, Economic Opportunity, and Oopulation

The first models depict the main effects of the log of the straight-line distance to the public service facilities on trust in the German government (Figure 2.1 & Table 2.1). Based on the outlined theoretical argument, a higher distance to the closest service facility

¹⁰The measurement is based on the *International Standard Classification of Education* and recoded to three levels: lower secondary education and lower (1), upper secondary and post-secondary (2), short-cycle tertiary and higher (3).



Note. Predicted marginal effects. Data Sources: GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect regression with state fixed effects. Survey weights are applied.

Figure 2.1. Interaction Plot Distances, Societal Group, and Trust in Government

should be associated with a decrease in trust levels. The same should apply for the other contextual factors: economic hardship and job opportunities, population composition and density. In the main models, the distance to the closest hospital (Model 1) and train station (Model 2) are the only variables of interest that reach statistical significance. The distance to the closest train station keeps its significance level when controlling for all other distance measurements (Model 4). As expected, the distance to the closest school (Model 3) does not relate with political trust but it seems surprising that none of the other context-level factors (tax revenue, unemployment, population density, and share of elderly) shows a significant association with the dependent variable, either. In contrast, individual-level factors seem to be more important for the trust relationship: a preference for the incumbent party, higher interpersonal trust, and a positive evaluation of the own economic situation are associated with higher trust levels.

To check the robustness of these findings, alternative model specifications and operationalizations were tested. All tables can be found in supplementary material II. Ordered logit multilevel models, which are implemented to safeguard against bias due to the ordinal nature of the dependent variable, indicate that the effect of station distance holds under several alternative model specifications but the distance to the closest hospital is not as robust (Table A2). This finding is repeated in additional tests, e.g. when running the same OLS models with one distance measure or other contextual factor at a time to rule out that a

Table 2.1

Full Models Distance to Public Service Facilities and Trust in Government

	MLV-1	MLV-2	MLV-3	MLV-4
Distance Closest Hospital (log)	-.09 (.04)*			-.08 (.05)
Distance Closest Station (log)		-.11 (.05)*		-.11 (.05)*
Distance Closest School (log)			.04 (.07)	.11 (.07)
Individual Level				
Incumbent Preference	.66 (.05)***	.66 (.05)***	.65 (.05)***	.65 (.05)***
Interpersonal Trust	.32 (.03)***	.32 (.03)***	.32 (.03)***	.32 (.03)***
Political Interest	-.02 (.03)	-.02 (.03)	-.01 (.03)	-.02 (.03)
Own Economic Situation	.35 (.03)***	.35 (.03)***	.35 (.03)***	.35 (.03)***
Women	.16 (.05)**	.16 (.05)**	.16 (.05)**	.16 (.05)***
Education (middle)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.07 (.10)
Education (high)	.11 (.10)	.11 (.10)	.11 (.10)	.10 (.10)
Age	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*	-.00 (.00)
Municipality Level				
Tax Revenue (log)	-.08 (.28)	-.01 (.28)	-.04 (.28)	-.06 (.28)
Population Density	-.16 (.22)	-.16 (.21)	-.01 (.22)	-.20 (.22)
Share of Elderly (>65)	-.04 (.23)	-.04 (.23)	-.03 (.23)	-.04 (.22)
Unemployment Rate	.07 (.24)	.09 (.23)	.11 (.24)	.10 (.23)
State FE	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041
No. Municipalities	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

correlation of the contextual level variables biases the results (Table A3). The analyses show that the findings for the distance to the next station are consistent but the other context factors are still not reaching conventional significance levels.¹¹ I also include district fixed effects - rather than the state fixed effects - in the model to safeguard against any unobserved variables influencing the results. None of the distance or context level measurements reach significance in this specification (Table A4).

However, this result might simply reflect the lacking variance at this aggregation level (with often only one collective municipality located in a district). Besides these model specifications, I test alternative measurements of service provision to check whether alternative conceptualizations of accessibility apply here (see Apparicio et al. (2017) for a discussion of several alternatives). To capture the overall accessibility and provision of services in Germany for a respondent, the mean distance to all facilities was calculated

¹¹The collective municipality measurements are also not yielding towards significant result when excluding the distance measure and including each indicator separately (supplementary material II; Table A8).

for each respondent and service type. The number of service facilities within a 10- and 20-km buffer zone are also tested, following the assumption that respondents might rank the choice between several options in close proximity higher than shorter distances to the closest location. None of the alternative measures reach statistical significance (Table A5). The raw distances to the closest facility yield the same results as the main models (Table A6). Further, the main models include all public service facilities regardless of their type. However, additional characteristics were available for the included facilities which allowed for the sub-sampling of locations that might be more decisive in citizens' perception: hospitals offering basic care¹² or a maternity ward, long-distance train stops, primary and secondary schools. Again, the Euclidean distance to these facilities were calculated and the distance to the closest facility retrieved. Neither the often-discussed accessibility of hospitals with maternity wards or providing basic care nor the distance to the closest long-distance train stations or different school types (primary and secondary schools) show the expected results (Table A7).

In two additional analyses, I investigated if the findings change when a sub-sample analysis of rural, suburban, and urban municipalities is applied (supplementary material III) or when the interaction effects of service accessibility and belonging to a social group that is more likely to rely on these services are considered (supplementary material IV). Again, the results stay inconclusive.

In light of these robustness checks, the general assumption that the inaccessibility of public services, economic hardship, and population composition are associated with trust in the government (H1) does not hold in all circumstances. The only significant and mostly robust finding of this first set of analyses is that an increasing distance to the closest train station is related to a decrease of political trust. When assessing the hypothesis that citizens only blame the government if it is perceived as the provider responsible for these services (H3), the presented results are not completely comprehensive but point in the expected direction. The results support the hypothesis because the inaccessibility of schools does not have an effect on governmental trust but the opposing effects of health provision proves not to be robust. Previous studies have highlighted that it may be the change in the economic or social situation of a neighborhood, not the status quo, that influences political behavior and attitudes. I turn to these issues next.

2.4.2 The Perception of Temporal Change

Living conditions should become (more) decisive for government evaluations if citizens

¹²Hospitals with at least one of these service offerings and/or specializations qualify as hospitals who provide basic care: internal medicine, general surgery, trauma surgery, orthopedics.

experience eroding infrastructures, economic decline, and an exodus of young people. Even though we would assume that this mechanism appears for both the distance to train stations and hospitals, data are only available to test this hypothesis for hospital locations. Changes in distance to the closest hospital, tax revenue, unemployment, and share of elderly citizens is calculated for two time points (5 and 10 year change). The models yield no significant effects (Table 2.2), neither do robustness checks including each change factor separately (Table A10). Hence, the second hypothesis finds no support in this analysis.

Table 2.2

Temporal Change and Trust in Government

	5 Years	10 Years
5 Year Change		
Distance Closest Hospital (5 Years)	.02 (.01)	
Tax Revenue (5 Years)	−.00 (.00)	
Population Density ((5 Years)	−.00 (.00)	
Share of Elderly (>65) (5 Years)	.00 (.04)	
Unemployment Rate (5 Years)	−.04 (.05)	
10 Year Change		
Distance Closest Hospital (10 Years)		.01 (.01)
Tax Revenue (10 Years)		−.00 (.00)
Population Density ((10 Years)		−.00 (.00)
Share of Elderly (>65) (10 Years)		.00 (.02)
Unemployment Rate (10 Years)		−.02 (.03)
State FE	Yes	Yes
Individual Level Controls	Yes	Yes
No. Observations	3041	3041
No. Municipalities	149	149
GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. Full models reporten in Table A9 in the supplementary material. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.		

2.5 Discussion

The results of these analyses stand in stark contrast to previous analyses which mostly attribute citizen dissatisfaction and the rise of right-wing populist parties to subnational economic changes (Carreras 2019; Dippel, Gold, and Heblich 2015; Evans et al. 2019). For Germany, I find that (static) distance to the nearest train station has an independent effect on citizens' trust in the national government, even when controlling for static economic contextual conditions and in the absence of effects of economic decline. Remarkably, Guilluy (2018) finds a similar effect for the relationship between station accessibility and the electoral success of right-wing populist parties in France. But how can such findings be explained

in the German context? Comparing the effects of the three areas of public services, the distance effects for public transport might stand out for two reasons. First, a heterogeneous group of citizens rely on public transport for their daily lives: young adults travelling for social activities, commuters, and those who cannot afford or do not drive a car. In 2017, about nine million Germans did not live within walking distance of a regularly served public transport station (Bundesinstitut für Bau-, Stadt- und Raumforschung 2017). Hospitals, by comparison, are less regularly frequented and can be partially supplemented by on-call medical services. The relevance of school accessibility depends more on the family situation and, as mentioned, the federal government is not accounted for their provision. Thus, individual-level factors other than those tested in the additional analyses as limited proxies for the need for specific services may be at play. Individual characteristics, such as social class, could further influence access to public services. Second, public transport is a particularly charged topic in the national discourse. In addition to complaints about delays and controversies over redevelopment mega-projects such as *Stuttgart 21*, newspapers report that more than 100 cities have been disconnected from the long-distance rail network over the past two decades, including medium-sized cities with almost 250,000 inhabitants such as Chemnitz and Krefeld (Luik 2021). Also, between 2000 and 2017, nearly 200 train connections were shut down and local initiatives protest against the closure of stations or for the reopening of stations and connections that have been closed for a long time (Eisenbahn Bundesamt 2023; Prengel 2022). The latter may also indicate that station closures need not be the only source of frustration: The persistent absence of services can have a similar effect. Thus, these discussions are reinforced by questioning how the lack of infrastructure threatens the quality of life and how the German railway company contributes to changing transport policies towards more sustainability. Against this background, the finding on station accessibility suggests that macro-level factors such as the national debate can serve as an activator and influence which aspects of a place are associated with political distrust. Overall, this interpretation of the results is related to the overall argument of the article: Access to public services can play a role in linking services and trust, but which services and when seems to depend on micro and macro factors. The non-results on the economic context also need to be explained. The average unemployment rate of 5.7% in Germany in 2017 was one of the lowest rates since German reunification and among the lowest rates of all OECD countries. Even with a variation of 0.7% to 15.2% across all German municipalities, the unemployment rate may not be high enough to influence the government's assessment. Moreover, a lower unemployment rate does not necessarily mean that economic conditions have improved. In East German municipalities in particular, the falling employment rate is often a consequence of 'passive reorganization': the volume of work and the number of people in work are declining at the same time. This means that a change in the numbers

may not reflect a change in the actual situation of the citizens. Finally, the result also plays into the paradox of the relationship between economic performance and trust: while subjective assessments of economic performance and political trust show a strong and robust relationship, objective measures yield mixed results in explaining differences in trust levels – sometimes depending on the level of aggregation and operationalizations (van der Meer and Zmerli 2017).

2.6 Conclusion

This study's launching point was the question of whether, and when, a lack of public service infrastructure, economic hardship, and/or a neighborhood's population composition translate into low levels of trust in the German government. The only relationship that proved to be robust was that the inaccessibility of train stations is associated with lower trust in the government, with hospital inaccessibility pointing in the same direction. The inaccessibility of schools, low tax revenues, high unemployment, a high share of elderly people, and low population density, in contrast, are not associated with distrust. It might be even more puzzling that a change in service provision, economic situation, or population composition and density has no effect on the trust levels of the affected residents. The discussion of results underlines that the empirical focus on voting behavior and a small set of contextual variables do not allow us to draw direct conclusions as to which and how place-based factors are related to underlying attitudes like political trust. Reversing this argument, the findings for political trust might only be an indication for similar effects when shifting the focus on behavioral outcomes. However, this study has shown that place-based measurements can indeed function as objective measurement to further approach the performance-trust link. In the context of the current left behind narrative and the previous findings on the subjective perceptions of service provision, it seems worthwhile to expand political trust research to analyze the difference – and the interaction - between subjective and objective economic and political performance measures. Still, some limitations of this study and avenues for further research need to be addressed. When examining attitudes towards the German state from a geographical perspective, the former division into West and East Germany still influences living conditions. For example, the rural-urban divide in terms of economic strength is more pronounced in Eastern Germany. In addition, much of the East German infrastructure was restructured after reunification, leading to the closure of some public services, the improvement of railroad infrastructure, and the reopening of cross-border connections. Future research could further investigate these possibly interacting effects on a more comprehensive data basis than was possible here.

One limitation that this study inevitably faces concerns sorting effects. Citizens might self-select by moving to or remaining in neighborhoods based on their predisposition,

including political attitudes (Cho, Gimpel, and Hui 2013; Gimpel and Hui 2015; Maxwell 2019) but also needs for public services, resources, and forms of living (e.g. on residential self-selection in Germany Rössel and Hoelscher (2012); Scheiner (2014)). Furthermore, cultural, arguably historically grown, differences in the composition of regions can contribute to the politically divided landscapes (Dijkstra, Poelman, and Rodríguez-Pose 2020; Maxwell 2020). Hence, found effects might simply mirror the existing neighborhood composition. The threat of endogenous findings due to the self-selection of respondents into contexts cannot be resolved within the scope of this study and without longitudinal data. One way to face this limitation was to include several individual- and contextual-level factors to safeguard against omitted variables and show the robustness of the relationship between place and trust.

A methodological advancement of this study is to construct measurements to capture the living conditions of respondents as precisely as possible. Specifically, the measurement of service accessibility gives an example for future research to employ measurements that are not bound to neighborhoods defined by administrative borders. This advancement will benefit future research even more when more longitudinal data become available to further analyze change. However, the scale of the additional contextual data - collective municipalities - needs to be handled with caution because the size of the area and population vary greatly between these administrative units. For some respondents, we might be unable to capture the reference unit on which their assessment of the government's economic and political performance is based. The tested measurements of service provision offer a first insight on how to safeguard against this issue, but the remaining operationalizations are still constrained to one spatial scale. Still, the collective municipality seems to be the most approximate scale available on which citizens perceive and attribute contextual conditions to their own living situation and the feeling of being left behind. In this regard, an important path for future research will be to more closely investigate the relationship between place-based measurements and the subjective perceptions of citizens living under these conditions. How does the actual accessibility of public service facilities deviate from citizens' perceptions? And does an objective lack of service provision translate into grievances and deprivation? The initial empirical evidence points towards mediating effects of relative deprivation, grievances, and perceived marginalization (McKay 2019; Salomo 2019) of the living place. The development of appropriate measurements to capture both the relevant point of reference and the feeling of being left behind are only two of the challenges along this research path.

Finally, the question remains as to what these findings mean for service provision and policies to improve local living conditions in Germany. The findings suggest that some areas of Germany have long lacked access to some public services and that the persistent

lack - and not the decline - is associated with a manifestation of political distrust. The situation will most likely continue considering that experts often call for a cost-efficient focus to support urban centers and not invest in a nationwide provision of public services (Diermeier 2020). The recent decision to invest in public transportation through discount ticket prices reflects this trend: citizens without access to public transportation will hardly profit from such a policy. In the future, it might be necessary to reconsider this approach to counter the manifestation of geographically polarized discontent.

Supplementary Material

I Data Description

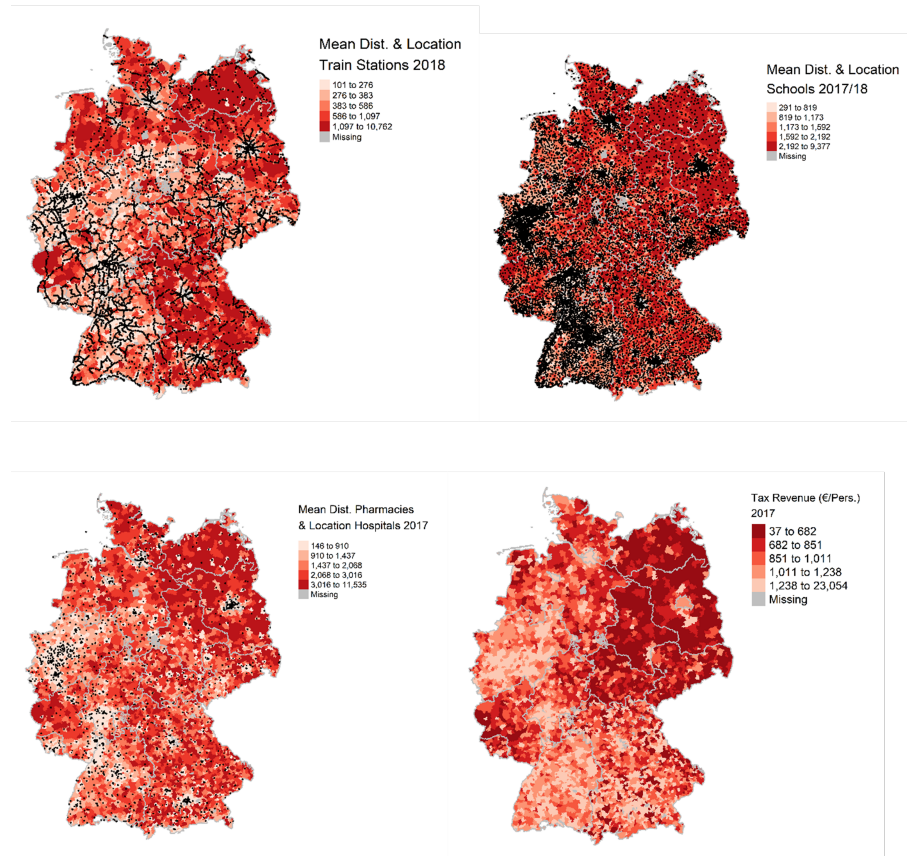
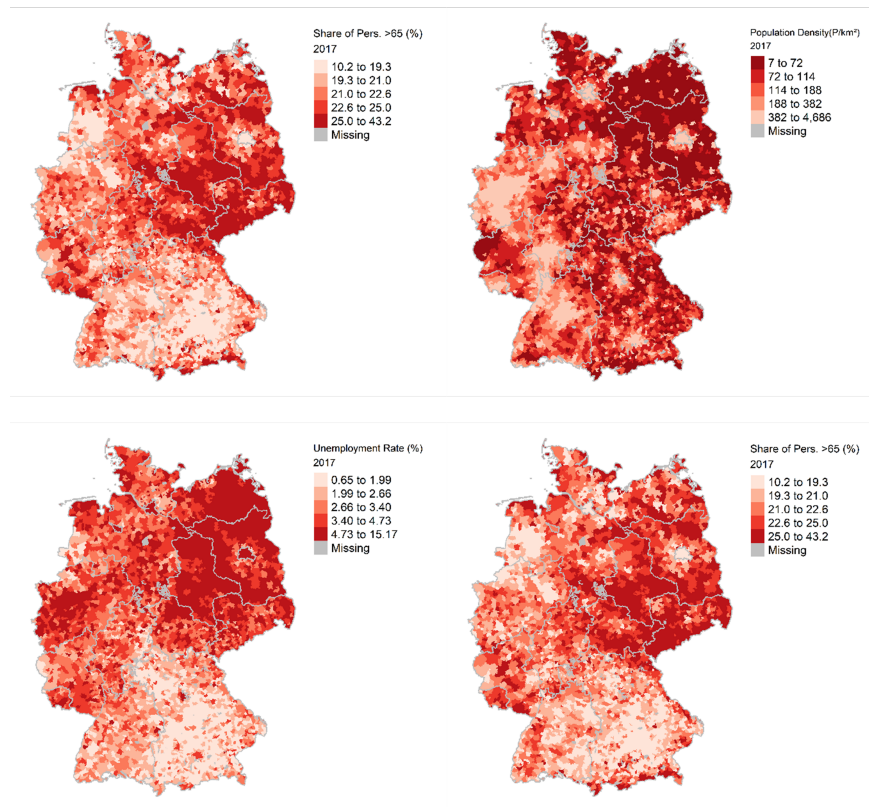


Figure A1. Regional Distribution of Disparities in Germany



Source: © Federal Statistical Office 2019, Deutsche Bahn 2017, BBSR Bonn 2022 and GeoBasis-DE / BKG 2022

Figure A1. Regional Distribution of Disparities in Germany (continued)

Table A1

Summary Statistics Linked Dataset

Indicator	N	Mean	St. Dev.	Min	Max
Trust in Government	3,239	2.93	1.44	0	6
Distance Closest Hospital (log)	3,267	1.62	0.77	*	*
Distance Closest Station (log)	3,267	1.16	0.63	*	*
Distance Closest School (log)	3,267	0.56	0.41	*	*
Incumbence Preference	3,112	0.39	0.49	0	1
Interpersonal Trust	3,249	0.90	0.76	0	2
Political Interest	3,267	2.33	0.92	0	4
Own Economic Situation	3,265	2.72	0.79	0	4
Women	3,268	0.49	0.50	0	1
Education (middle)	3,247	0.53	0.50	0	1
Education (high)	3,247	0.40	0.49	0	1
Age	3,263	52.36	17.58	18	95
East	3,268	0.32	0.47	0	1
Tax Revenue (log)	3,267	0.47	0.13	*	*
Population Density	3,267	0.18	0.23	*	*
Share of Elderly (>65)	3,267	0.40	0.21	*	*
Unemployment Rate	3,267	0.35	0.22	*	*
Distance Closest Hospital (10 Years)	3,267	0.59	3.34	*	*
Distance Closest Hospital (5 Years)	3,267	0.61	2.98	*	*
Tax Revenue (10 Years)	3,267	380.31	293.16	*	*
Tax Revenue (5 Years)	3,267	261.39	314.69	*	*
Population Density (10 Years)	3,267	26.71	78.70	*	*
Population Density (5 Years)	3,267	36.43	67.01	*	*
Share of Elderly (>65) (10 Years)	3,267	1.87	1.80	*	*
Share of Elderly (>65) (5 Years)	3,267	1.00	1.14	*	*
Unemployment Rate (10 Years)	3,267	-2.78	2.23	*	*
Unemployment Rate (5 Years)	3,267	-1.10	1.16	*	*

* Following the data security protocols of the research data center GGSS, the minimum and maximum values of contextual variables are blinded.

II Robustness Checks and Full Models

Table A2

Ordered Logit Models

	MLV-1	MLV-2	MLV-3
Distance Closest Hospital (log)	-.12 (.06)*		
Distance Closest Station (log)		-.15 (.06)*	
Distance Closest School (log)			.04 (.09)
Individual Level			
Incumbent Preference	.90 (.07)***	.90 (.07)***	.90 (.07)***
Interpersonal Trust	.42 (.05)***	.42 (.05)***	.42 (.05)***
Political Interest	-.00 (.04)	-.00 (.04)	-.00 (.04)
Own Economic Situation	.47 (.05)***	.47 (.05)***	.47 (.05)***
Women	.22 (.07)**	.22 (.07)**	.22 (.07)**
Education (middle)	-.02 (.13)	-.02 (.13)	-.02 (.13)
Education (high)	.18 (.14)	.19 (.14)	.19 (.14)
Age	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*
Municipality Level			
Tax Revenue (log)	-.08 (.35)	.01 (.34)	-.05 (.35)
Population Density	-.12 (.28)	-.13 (.27)	.07 (.27)
Share of Elderly (>65)	-.04 (.29)	-.03 (.28)	-.03 (.29)
Unemployment Rate	.02 (.30)	.05 (.30)	.07 (.31)
State FE	Yes	Yes	Yes
No. Observations	3011	3011	3011
No. Municipalities	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A3

Single Inclusion of Context Factors

	MLV-1	MLV-2	MLV-3	MLV-4	MLV-5	MLV-6	MLV-7
Distance Closest Hospital (log)	-.08 (.04)						
Distance Closest Station (log)		-.10* (.04)					
Distance Closest School (log)			.03 (.07)				
Tax Revenue (log)				-.03 (.25)			
Unemployment Rate					.06 (.20)		
Share of Elderly (>65)						.01 (.20)	
Population Density							-.00 (.16)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Level Controls FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041	3041	3041	3041
No. Municipalities	149	149	149	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Individual level controls: incumbence preference, interpersonal trust, political interest, evaluation of own economic situation, gender, education middle, education high, age. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A4

Inclusion of District Fixed Effects

	MLV-1	MLV-2	MLV-3
Distance Closest Hospital (log)	-.09 (.07)		
Distance Closest Station (log)		-.07 (.07)	
Distance Closest School (log)			.04 (.08)
Individual Level			
Incumbent Preference	.66 (.05)***	.66 (.05)***	.66 (.05)***
Interpersonal Trust	.31 (.03)***	.31 (.03)***	.31 (.03)***
Political Interest	-.03 (.03)	-.03 (.03)	-.03 (.03)
Own Economic Situation	.36 (.03)***	.36 (.03)***	.35 (.03)***
Women	.15 (.05)**	.15 (.05)**	.15 (.05)**
Education (middle)	-.05 (.10)	-.05 (.10)	-.05 (.10)
Education (high)	.10 (.11)	.11 (.11)	.10 (.11)
Age	-.00 (.00)	-.00 (.00)	-.00 (.00)
Municipality Level			
Tax Revenue (log)	9.39 (18.07)	9.13 (18.07)	8.97 (18.04)
Population Density	.57 (1.76)	.62 (1.76)	.58 (1.76)
Share of Elderly (>65)	-.02 (4.54)	-.17 (4.54)	.02 (4.53)
Unemployment Rate	-2.31 (5.15)	-2.13 (5.15)	-2.30 (5.13)
District FE	Yes	Yes	Yes
No. Observations	3041	3041	3041
No. Municipalities	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A5

Alternative Operationalization of Public Service Accessibility (Mean Distance/Buffer)

	MLV-1	MLV-2	MLV-3	MLV-4	MLV-5	MLV-6	MLV-7	MLV-8	MLV-9
Mean Distance Hospital	-.00 (.00)								
Mean Distance Station		-.00 (.00)							
Mean Distance School			-.00 (.00)						
No. Hospitals (10km Buffer)				-.00 (.01)					
No. Schools (10km Buffer)					.01 (.00)				
No. Stations (10km Buffer)						.00 (.00)			
No. Hospitals (20km Buffer)							-.00 (.00)		
No. Schools (20km Buffer)								.00 (.00)	
No. Stations (20km Buffer)									-.00 (.00)
Tax Revenue (log)	-.03 (.28)	-.03 (.28)	-.03 (.28)	-.04 (.28)	-.06 (.28)	-.04 (.28)	.01 (.28)	-.05 (.28)	-.02 (.28)
Population Density	-.04 (.21)	-.04 (.21)	-.04 (.21)	-.01 (.28)	-.29 (.26)	-.10 (.30)	.16 (.27)	-.09 (.27)	.15 (.28)
Share of Elderly (>65)	-.04 (.23)	-.05 (.23)	-.04 (.23)	-.03 (.23)	-.04 (.23)	-.03 (.23)	.03 (.23)	-.04 (.23)	.00 (.23)
Unemployment Rate	.09 (.24)	.09 (.24)	.09 (.24)	.09 (.24)	.17 (.24)	.10 (.24)	.03 (.24)	.12 (.25)	.04 (.24)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041	3041	3041	3041	3041	3041
No. Municipalities	149	149	149	149	149	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Municipality level controls: tax revenue (log), population density, share of elderly (>65), unemployment rate. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A6

Alternative Operationalization of Public Service Accessibility (Raw Distance)

	MLV-1	MLV-2	MLV-3	MLV-4
Distance Closest Hospital (raw)	-.01 (.01)			-.01 (.01)
Distance Closest Station (raw)		-.02 (.01)*		-.02 (.01)*
Distance Closest School (raw)			.03 (.03)	.04 (.03)
Individual Level				
Incumbent Preference	.65 (.05)***	.65 (.05)***	.65 (.05)***	.65 (.05)***
Interpersonal Trust	.32 (.03)***	.32 (.03)***	.32 (.03)***	.32 (.03)***
Political Interest	-.02 (.03)	-.02 (.03)	-.02 (.03)	-.02 (.03)
Own Economic Situation	.35 (.03)***	.35 (.03)***	.35 (.03)***	.35 (.03)***
Women	.16 (.05)**	.16 (.05)**	.16 (.05)**	.16 (.05)**
Education (middle)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.07 (.10)
Education (high)	.12 (.10)	.11 (.10)	.11 (.10)	.10 (.10)
Age	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*
Municipality Level				
Tax Revenue (log)	-.06 (.28)	-.00 (.28)	-.05 (.28)	-.04 (.28)
Population Density	-.10 (.22)	-.16 (.22)	.00 (.22)	-.15 (.22)
Share of Elderly (>65)	-.03 (.23)	-.04 (.23)	-.03 (.23)	-.03 (.23)
Unemployment Rate	.10 (.24)	.09 (.24)	.11 (.24)	.13 (.24)
State FE	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041
No. Municipalities	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table A7

Alternative Operationalization of Public Service Accessibility (Facility Selection)

	MLV-1	MLV-2	MLV-3	MLV-4	MLV-5
Dist. Closest Hospital with Basic Care (log)	-.05 (.04)				
Dist. Closest Hospital with Maternity Ward (log)		-.06 (.04)			
Dist. Closest Long-Distance Train Station (log)			-.07 (.04)		
Dist. Closest Elementary School (log)				.05 (.07)	
Dist. Closest Secondary School (log)					-.07 (.05)
Tax Revenue (log)	-.06 (.28)	-.05 (.28)	-.04 (.28)	-.04 (.28)	-.03 (.28)
Population Density	-.09 (.22)	-.12 (.22)	-.19 (.23)	-.00 (.22)	-.10 (.22)
Share of Elderly (>65)	-.03 (.23)	-.03 (.23)	.02 (.23)	-.03 (.23)	-.02 (.23)
Unemployment Rate	.06 (.24)	.05 (.24)	.05 (.24)	.11 (.24)	.05 (.24)
State FE	Yes	Yes	Yes	Yes	Yes
Individual Level Controls	Yes	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041	3041
No. Municipalities	149	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses.

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

Table A8

Inclusion of Context Effects without Distances

	MLV-1	MLV-2	MLV-3	MLV-4	MLV-5
Individual Level					
Incumbent Preference	.65 (.05)***	.65 (.05)***	.65 (.05)***	.65 (.05)***	.65 (.05)***
Interpersonal Trust	.32 (.03)***	.32 (.03)***	.32 (.03)***	.32 (.03)***	.32 (.03)***
Political Interest	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)
Own Economic Situation	.35 (.03)***	.35 (.03)***	.35 (.03)***	.35 (.03)***	.35 (.03)***
Women	.16 (.05)**	.16 (.05)**	.16 (.05)**	.16 (.05)**	.16 (.05)**
Education (middle)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)
Education (high)	.12 (.10)	.12 (.10)	.12 (.10)	.12 (.10)	.12 (.10)
Age	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*	-.00 (.00)*
Municipality Level					
Tax Revenue (log)	-.03 (.25)				-.04 (.28)
Population Density		-.00 (.16)			-.03 (.21)
Share of Elderly (>65)			.01 (.20)		-.03 (.23)
Unemployment Rate				.06 (.20)	.09 (.24)
State FE	Yes	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041	3041
No. Municipalities	149	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses.

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

Table A9

Full Models, Change Models (see Table 2 in manuscript)

	5 Years	10 Years
5 Year Change		
Distance Closest Hospital (5 Years)	.02 (.01)	
Tax Revenue (5 Years)	−.00 (.00)	
Population Density ((5 Years)	−.00 (.00)	
Share of Elderly (>65) (5 Years)	.00 (.04)	
Unemployment Rate (5 Years)	−.04 (.05)	
10 Year Change		
Distance Closest Hospital (10 Years)		.01 (.01)
Tax Revenue (10 Years)		−.00 (.00)
Population Density ((10 Years)		−.00 (.00)
Share of Elderly (>65) (10 Years)		.00 (.02)
Unemployment Rate (10 Years)		−.02 (.03)
Incumbent Preference	.65 (.05)***	.66 (.05)***
Interpersonal Trust	.32 (.03)***	.32 (.03)***
Political Interest	−.01 (.03)	−.01 (.03)
Own Economic Situation	.35 (.03)***	.35 (.03)***
Women	.16 (.05)**	.16 (.05)**
Education (middle)	−.06 (.10)	−.06 (.10)
Education (high)	.11 (.10)	.11 (.10)
Age	−.00 (.00)*	−.00 (.00)*
State FE	Yes	Yes
No. Observations	3041	3041
No. Municipalities	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Incumbent Preference	.65*** (.05)	.65*** (.05)	.65*** (.05)	.65*** (.05)	.66*** (.05)	.65*** (.05)	.65*** (.05)	.65*** (.05)	.65*** (.05)	.65*** (.03)
Interpersonal Trust	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)	.32*** (.03)
Political Interest	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)	-.01 (.03)
Own Economic Situation	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)	.35*** (.03)
Women	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)	.16*** (.05)
Education (middle)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)	-.06 (.10)
Education (high)	.11 (.10)	.12 (.10)	.12 (.10)	.12 (.10)	.11 (.10)	.12 (.10)	.12 (.10)	.12 (.10)	.12 (.10)	.12 (.10)
Age	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)	-.00* (.00)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual Level Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. Observations	3041	3041	3041	3041	3041	3041	3041	3041	3041	3041
No. Municipalities	149	149	149	149	149	149	149	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

III Rural, Urban, and Suburban

The main analyses raise the question whether the effects found are robust in different locations: rural, suburban, and urban (collective) municipalities. One would assume that respondents in urban areas should be well provided with public services, while suburban and rural neighborhoods are more heterogeneous and therefore the station effect should be particularly strong and robust in these areas. For the analyses, the original sample was divided into three groups (rural, suburban, and urban) based on a categorical measure provided by BBSR (2022). The typology classifies all municipalities into large, medium-sized, larger small towns, small small towns and rural municipalities according to the criteria of the number of inhabitants, central place function and the settlement structure. I classify urban areas as large cities, suburban as medium-sized and larger small towns, rural communities as small small towns and rural communities. As in the main analysis, linear multi-level regression models with a random intercept are estimated clustering the observations on the collective municipal level.

Table A11

Sample Split in Rural, Suburban, Urban

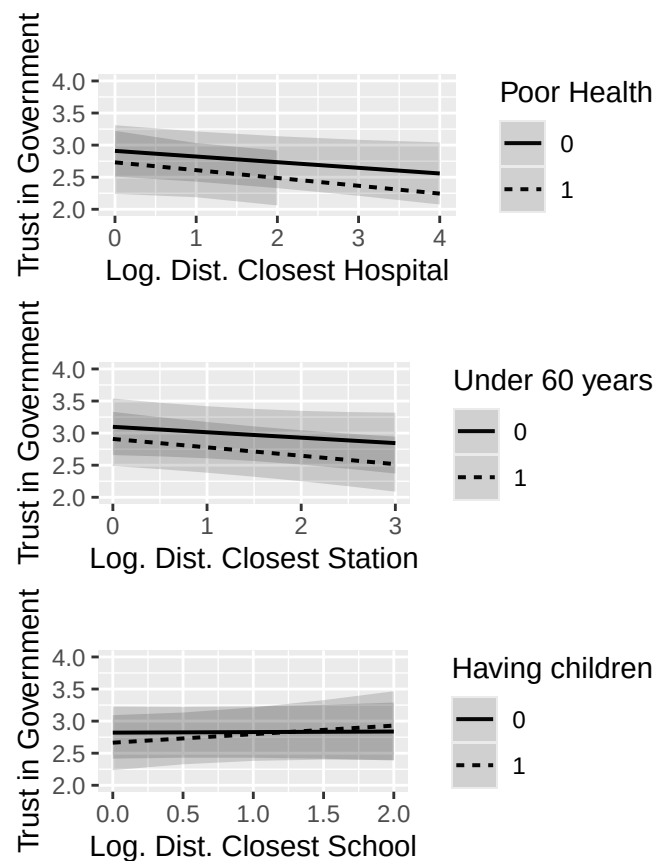
	MLV-1	MLV-2	MLV-3
Distance Closest Station (log)	-.15 (.08)	-.02 (.08)	-.19 (.13)
Individual Level			
Incumbent Preference	.76 (.09)***	.68 (.08)***	.53 (.11)***
Interpersonal Trust	.40 (.06)***	.22 (.05)***	.33 (.07)***
Political Interest	-.02 (.05)	-.05 (.05)	.01 (.06)
Own Economic Situation	.28 (.06)***	.41 (.05)***	.33 (.06)***
Women	.08 (.09)	.19 (.08)*	.21 (.10)*
Education (middle)	.05 (.17)	-.18 (.15)	.02 (.22)
Education (high)	.19 (.18)	-.11 (.16)	.34 (.23)
Age	-.00 (.00)	-.00 (.00)	-.00 (.00)
Municipality Level			
Tax Revenue (log)	.33 (.46)	-.54 (.55)	-.79 (1.79)
Population Density	1.65 (1.42)	.09 (.59)	-.64 (.51)
Share of Elderly (>65)	.68 (.36)	-.24 (.52)	-.30 (.90)
Unemployment Rate	-.03 (.60)	.33 (.42)	-1.04 (.93)
State FE	Yes	Yes	Yes
No. Observations	995	1261	785
No. Municipalities	44	69	36

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; *cdot* $p < 0.1$.

The results show that the p-value of train station accessibility does not reach the desired level of significance in any of those three groups. The lacking statistical power due to small (sub-)sample size ($N_{\text{Rural}}=995$, $N_{\text{Suburban}}=1261$, $N_{\text{Urban}}=758$) clearly contributes to this result. If one lowers the bar for the level of statistical significance, the effect of station accessibility within rural communities tends in the same direction as in the previous analysis only (p-value < 0.1).

IV Social Groups Relying on Specific Services

Focusing on the provision of services ultimately raises the subsequent question if the accessibility of these services is perceived to be equally salient by all citizens. The (lack of) accessible infrastructure might become obvious only for those, who actually rely on these services. Concentrating on specific services has the advantage that we can investigate which social group should rely on each service and if they are more likely to be affected by the lack of them. On the one hand, such results strengthen the theoretical argument that individuals actually realize and follow through with the consequences - in this case withdraw their trust in the political system - when services are not accessible in their daily lives. On the other hand, one could argue that the (non-)findings of this article might be explained by only specific groups relying on the analyzed public services. Hospitals are, for example, more often frequented and accessed quickly by people in bad health or to deliver a child. Additionally, individuals vary in their level of mobility and their use of public transportation. The 2018 Eurobarometer reported that for “Europeans’ Satisfaction with Passenger Rail Services”, approximately 23 percent of German citizens under the age of 60 use rail for suburban or national trips at least once a week (European Commission 2018). In comparison, only 13 percent of the respondents over the age of 60 report to be such frequent travelers. Mobility is, of course, also influenced by financing and owning a car and the possibility of being within walking distance of a public transportation station. Alternatively, the location of schools should be more salient for parents with school-age children or couples who are starting a family. To analyze the varying relevance that public service facilities might have for different social groups, I included interaction effects for each of the three areas of health, transport, and education with the respective group belonging as a dummy variable. The group belongings are operationalized as following. The self-reported health condition is coded as poor if respondent describe their health in general as poor or bad. Lacking information on car ownership, commuting or traveling habits, the only available proxy for mobility is the age of citizens. While young and mobile people use trains regularly, citizens over the age of 60 travel and use the railway services less. The dummy variable for parenthood takes the value 1 if children under 18 are living in the same household.



Note. Predicted marginal Effects. Data Sources: GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect regression with state fixed effects. Survey weights are applied.

Figure A2. Interaction Plot Distances, Societal Group, and Trust in Government

As one can observe in the figures and table, none of the interaction models yields significant results (Figure A2, Table A12). When it comes to the distance to the closest schools comparing parents and non-parents, one encounters a slight difference in the slope of the regression lines, indicating that there might exist a positive relationship between school accessibility and political trust regarding parents but if effects appear there are very small and insignificant. All in all, the analysis yields no support for the assumption that effects depend on an individuals' characteristics. However, theses insights are limited due to a lack of further information on car ownership, mobility, and the individual's but also family's needs.

Table A12

Full Models, Interaction Models (see Figure A2)

	MLV-1	MLV-2	MLV-3
Distance Closest Hospital (log)	−.09 (.05)		
Poor Health	−.18 (.17)		
Distance Closest Hospital*Poor Health	−.03 (.10)		
Distance Closest Station (log)		−.08 (.07)	
Under 60 years		−.19 (.13)	
Distance Closest Station*Under 60 years		−.05 (.08)	
Distance Closest School (log)			.01 (.08)
Having children			−.16 (.10)
Distance Closest School*Having children			.12 (.14)
Individual Level			
Incumbent Preference	.65 (.05)***	.64 (.05)***	.65 (.05)***
Interpersonal Trust	.31 (.03)***	.31 (.03)***	.31 (.03)***
Political Interest	−.01 (.03)	−.01 (.03)	−.01 (.03)
Own Economic Situation	.33 (.03)***	.35 (.03)***	.35 (.03)***
Women	.16 (.05)**	.16 (.05)**	.16 (.05)**
Education (middle)	−.03 (.10)	−.01 (.10)	−.01 (.10)
Education (high)	.14 (.11)	.17 (.11)	.16 (.11)
Age	−.00 (.00)	−.01 (.00)***	−.00 (.00)**
Municipality Level			
Tax Revenue (log)	−.04 (.29)	.05 (.29)	−.00 (.29)
Population Density	−.23 (.22)	−.22 (.22)	−.05 (.22)
Share of Elderly (>65)	−.09 (.23)	−.07 (.23)	−.05 (.23)
Unemployment Rate	.09 (.24)	.10 (.24)	.11 (.25)
State FE	Yes	Yes	Yes
No. Observations	2970	2970	2970
No. Municipalities	149	149	149

GGSS 2018, Federal Statistical Office 2017, and BBSR 2022. Fitted Models: OLS multi-level random effect models with state fixed effects. Survey weights are applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Chapter 3: That’s Not Fair?! On the Interplay of Place-Based Deprivation and Perceptions of Deprivation on Political Trust¹³

Abstract: In Western democracies, spatial inequalities appear to contribute to declining levels of political trust, but empirical evidence at the individual level suggests a more complex mechanism behind the place-related trust divide than expected at the aggregate level. This article examines the distinction and, in particular, the interplay between (objective) place-based and (subjective) perceived deprivation in explaining variation in trust levels. Using a unique dataset from two georeferenced surveys conducted in Germany in 2021, which includes 10,000 respondents from 5,000 neighbourhoods across 300 municipalities, I perform spatially detailed analyses. This involves linking the survey data to indicators of economic hardship and access to public and private services. The results indicate that while place-based deprivation is only partially correlated with political trust, perceived deprivation amplifies its effects. These findings highlight the importance of addressing subjective feelings of neglect in order to mitigate the effects of objective place-based deprivation.

3.1 Introduction

Neglect in the allocation of resources is thought to create a sense of being left behind and, consequently, discontent towards those who are seen as having the power to allocate resources. Because of this link between place-based deprivation and political discontent, spatial divides shaping political attitudes and behaviour have re-emerged as a salient issue in Western democracies. Recent research suggests that being left behind contributes to a ‘crisis of trust’ (Cremaschi et al. 2024; Kenny and Luca 2021; McKay, Jennings, and Stoker 2021; Mitsch, Lee, and Ralph Morrow 2021; Stein, Buck, and Bjørnå 2019): Citizens living in less densely populated and peripheral areas with high levels of deprivation tend to experience a decrease in political trust. However, the relationship between place-based deprivation and political trust is not as straightforward as it might appear.

Empirical evidence increasingly suggests a more complex mechanism behind the place-

¹³This article has been submitted for consideration to the *European Political Science Review*.

trust divide. In some countries, rurality has little or no independent effect on political trust and related attitudes like radical-right sentiments and place resentment (Arzheimer and Bernemann 2024; de Lange, van der Brug, and Hartevelde 2023; Huijsmans 2023b; Stroppe 2023; Zumbrunn 2024). Moreover, individuals' perceptions and attitudes often outweigh the effects of objective living conditions when studying deprivation gaps (Arzheimer and Bernemann 2024). One reason is that living in a rural municipality does not necessarily mean living in a deprived neighbourhood. In Germany, for example, rural areas can include affluent neighbourhoods, particularly in the south (Deppisch, Osigus, and Klärner 2022; Küpper and Peters 2019; Lorenz and Pischtschan 2025; Weingarten and Steinführer 2020). Conversely, cities and small towns can have pronounced spatial disparities in economic opportunity, with the highest-income individuals living close to the lowest-income individuals. Besides this, place-related attitudes (de Lange, van der Brug, and Hartevelde 2023; Zumbrunn 2024) or socio-economic characteristics (Córdova and Layton 2016; Katsanidou and Mayne 2024; Lenzi and Perucca 2021) are often necessary to activate or amplify spatial divides. These studies demonstrate the need for a nuanced approach to studying place-based deprivation, perceptions of deprivation and political trust.

In this article, I focus on these critical nuances when asking whether and when place-based deprivation is related to political trust. I, therefore, distinguish between objective, place-based deprivation and subjective, individually perceived deprivation as drivers of political trust and investigate their interaction. I address two key research questions: (1) the relationship between place-based deprivation and political trust and (2) the influence of perceived deprivation on the relationship between place and trust. In doing so, I contribute to the study of spatial divides in trust by addressing the shortcomings of more aggregate approaches that focus on only one of these aspects, both theoretically and methodologically.

Theoretically, my work bridges the study of political trust and perceptions of deprivation by analysing the 'geography of discontent'. Previous research on place effects has examined factors such as objective levels of deprivation, primarily related to economics (Autor, Dorn, and Hanson 2016; Broz, Frieden, and Weymouth 2021; Colantone and Stanig 2018; Dijkstra, Poelman, and Rodríguez-Pose 2020). More recently, studies have also included public service provision to explain low trust and radical-right voting (Cremaschi et al. 2024; Nyholt 2024; Stroppe 2023). Additionally, researchers have investigated place-related attitudes, including rural resentment and place-based identity (Hegewald 2024; Huijsmans 2023b; Jacobs and Munis 2023; Munis 2022; Wuthnow 2018). However, these studies have often overlooked individuals' egocentric perceptions of their deprivation. In contrast, studies on political trust have examined the role of perceived deprivation on trust, primarily through cross-country comparisons, instead of investigating sub-national variations of objective, place-based deprivation (Loveless 2013; Marien and Werner 2019; Schnaudt, Hahn, and

Heppner 2021; Zmerli and Castillo 2015). This article addresses both gaps in the literature by analysing perceived deprivation at the sub-national level. I argue that individuals' perceptions of relative deprivation significantly influence whether they incorporate place conditions into their attitudes. Those who perceive an unfair distribution of resources are more likely to be sensitive to place-based deprivation, amplifying its effects.

Methodologically, I use particularly granular data to analyse place-based deprivation, perceived deprivation, and political trust across sub-national regions. By examining smaller neighbourhood units, it is possible to identify relationships that may be masked at a broader regional scale and to examine how place-based and perceived deprivation affect residents' political trust in rural, urban, and semi-urban municipalities. The study utilises a unique dataset consisting of two harmonised cross-sectional geocoded surveys conducted in Germany in 2021 (GESIS - Leibniz-Institut für Sozialwissenschaften 2022; GLES 2023), including approximately 10,000 respondents from 300 municipalities and around 5,000 1 km² grid cells to allow such a fine-grained analysis. Using the geocoordinates, I link the survey data to information on economic hardship, access to public services and infrastructure, and rurality provided by both private and public institutions (Bundesamt für Kartographie und Geodäsie 2022; Bundesinstitut für Bau-, Stadt- und Raumforschung 2023; Deutsche Bahn 2022; microm 2022).

Germany provides a useful example to study the place-trust relationship, representing a welfare state with average levels of political trust and regional disparities similar to those in other EU countries (Torcal 2017). In Germany, place-based factors have historically played a secondary role in attitude formation and voting behaviour, often overshadowed by the east-west divide (Träger 2022). However, public discourse on place-based deprivation has grown (Deppisch 2021), coinciding with the rise of the radical-right party Alternative for Germany (AfD) in smaller towns and villages, particularly in eastern Germany (Deppisch, Osigus, and Klärner 2022; Klärner and Osigus 2021). Although rural areas with negative demographic trends and low-income levels tend to show higher AfD vote shares, especially in eastern Germany, access to services is a stronger predictor of AfD support than rurality alone (Diermeier 2020). While areas characterized by economic hardship (Kurtenbach 2019) and lower income levels (Franz, Fratzscher, and Kritikos 2018) exhibit greater AfD support, the influence of economic dominance does not manifest uniformly across eastern and western districts (Nickel and Groß 2023). The empirical evidence is mixed, but place-based deprivation remains a salient issue, albeit not necessarily highly politicized, suggesting that these findings are likely transferable to other European contexts.

I find that place-based deprivation is not necessarily associated with low levels of political trust: economic hardship has a stable but small effect, while access to services

and infrastructure does not. Instead, perceived deprivation is strongly associated with political trust and moderates the effects of objective place-based deprivation. Citizens who perceive that they are not getting their fair share are more receptive to the condition of their residence, which amplifies the effects of place-based deprivation. Consistent with arguments of heterogeneity across the rural-urban divide, my results show that rurality alone has a weak and limited association with political trust.

3.2 Place-Based Deprivation and Political Trust

The idea that trust in representative institutions declines when citizens are dissatisfied with the outcomes of the political system is central to the study of political trust. Political trust can be defined as the extent to which individuals believe that government delivers outcomes in line with their expectations, reflecting a performance-based and outcome-oriented evaluation of the political system (Hetherington 2005). Within this performance-trust framework, political trust is strongly dependent on contextual performance factors. These performance factors form the basis of citizens' evaluations and are usually defined in terms of economy or social services and infrastructure (Kumlin and Haugsgjerd 2017; Luehiste 2014). Thus, the general hypothesis is that personal experience of poor performance on the part of the political system will reduce trust in political authorities. Many previous studies have focused on (perceived) economic performance, economic inequality, and corruption (Criado and Herreros 2007; Mishler and Rose 2005; van der Meer and Hakhverdian 2017; Wagner, Schneider, and Halla 2009) as well as satisfaction with public services (Goubin and Hooghe 2020; Haugsgjerd and Kumlin 2019; Kumlin, Nemčok, and van Hootehem 2024; van der Meer and Dekker 2011; Zmerli 2013) as antecedents of political trust on the individual and/or cross-country level. Additionally, the perceived neighbourhood quality of life and perceived peripherality contribute to trust in local and national institutions (Angelucci and Vittori 2023) and the more citizens feel that their place is not recognised, the more they trust local institutions over national ones (Hegewald 2024). With the recent rise and interest in the spatial divide of attitudes and voting behaviour observed in Western democracies, the number of political trust studies focusing on objective sub-national variations in economic and political performance in the neighbourhood is also rising.

Citizens' immediate neighbourhoods matter because political information and attitudes are embedded in individuals' places of residence, as they are inevitably confronted with their surroundings (Baybeck and McClurg 2005; Cho and Rudolph 2008). In addition, people gather valuable information about their neighbourhoods, including economic opportunities and available resources, through interpersonal encounters, experiences and observations (Bailey et al. 2013; Galster 2012). Consequently, lacking these resources may lead individuals to perceive that the state is failing to meet citizens' performance expectations, including

equal economic opportunities and the provision of public and private goods. As a result, political trust in these deprived places is expected to erode. Empirical studies on political trust as part of this ‘geography of discontent’ (McKay, Jennings, and Stoker 2021), which have emerged in recent years, have produced mixed results on this relationship. For example, trust is lower in peripheral areas of Norway (Stein, Buck, and Bjørnå 2019), while in the UK, residents of less central regions express more discontent and Euroscepticism but not less trust or democratic satisfaction (Jennings, Stoker, and Twyman 2016). There is some evidence for a gradient – rather than a dichotomy – with trust declining as one moves from urban to rural areas in Europe (Kenny and Luca 2021). However, individuals’ characteristics primarily drive the trust decline with a residual place-based effect (Mitsch, Lee, and Ralph Morrow 2021). Across the EU, regional economic inequalities and wealth disparities can undermine trust in both national and supranational institutions, such as the European Union and contribute to increased Euroscepticism (Dellmuth 2024; Lipps and Schraff 2021; Mayne and Katsanidou 2022). However, individuals’ socioeconomic status influences trust in the same extent and moderates the place effect (Katsanidou and Mayne 2024; Lenzi and Perucca 2021). While the rural-urban divide and economic inequalities remain at the centre of attention, the lack of public services and infrastructure has only recently received more academic attention as a source of deprivation, even though public services are crucial to citizens’ daily lives and an important indicator of whether policymakers are addressing the needs of a community (Vogler 2023). Empirical analyses in European countries show that reduced access to public services increases support for challenger parties (Cremaschi et al. 2024; Nyholt 2024), and the accessibility of public services partly contributes partially to a spatial trust gap (Stroppe 2023). In sum, individuals’ immediate neighbourhoods play a significant role in shaping their perceptions of state performance, which in turn are evaluated against their expectations of the welfare state. Factors such as access to resources, economic opportunities and the provision of public services in these neighbourhoods can influence citizens’ trust in political institutions. Against this background, I propose the following hypothesis:

H1: *Place-based deprivation is associated with lower levels of political trust.*

3.3 Perceptions of Deprivation and Political Trust

While actual place-based deprivation and individuals’ perceptions of deprivation are linked, they are often studied as separate mechanisms in trust research. For example, Tyler, Rasinski, and McGraw (1985) distinguishes between two approaches to explaining divergent levels of trust: 1) an outcome-oriented evaluation of the political system, e.g. place-based deprivation,

and 2) perceptions of the fairness of the political system, e.g. perceived deprivation¹⁴. According to the latter, individuals' perceptions of resource allocation function as psychological mechanisms that drive political dissatisfaction (Tyler, Rasinski, and McGraw 1985).

The perception of deprivation requires a negative evaluation between actual resources and expectations of what should be (Headey 1991: 582). From an egocentric perspective, individuals may arrive at 'the judgement that one is worse off compared to some standard' (H. J. Smith et al. 2012: 1) when they compare their own situation to what they used to have, what they think they should have, or what others have. Thus, perceptions of deprivation are often defined as relative deprivation because they are based on comparison and can vary widely between individuals according to their reference group. When citizens perceive an unfair distribution, they are likely to experience resentment, anger and dissatisfaction. As a result, citizens' grievances against other individuals, social groups, the political system and political authorities grow (Crosby and Gonzalez-Intal 1984; Runciman 1966; H. J. Smith et al. 2012). A prerequisite for the latter is that citizens ascribe responsibility for distribution to the relevant political authority. This can be a challenging task due to the complexities inherent in a multilevel government, often resulting in interdependencies of trust evaluations (Muñoz 2017; Proszowska, Jansen, and Denters 2023). The assumption is thus consistent with the premises of political trust research that citizens judge the political system as meeting their expectations, including a fair distribution of resources. If citizens personally perceive that the distribution of resources is unfair to them, trust in political institutions and authorities should erode.

Several studies have shown the negative relationship between perceptions of relative deprivation and political trust, although the contexts and objects of deprivation and fairness evaluations differ. Tyler, Rasinski, and McGraw (1985) find in two studies that fairness evaluations are more important than outcome evaluations. More recent examples show that perceptions of fairness matter for citizens' political trust in a cross-country comparison and often explain political trust levels better than an objective measure of resource distribution (Loveless 2013; Marien and Werner 2019; Schnaudt, Hahn, and Heppner 2021; Zmerli and Castillo 2015). These studies identify different effects and effect strengths when comparing procedural and distributive as well as egocentric (individual-centred) and sociotropic (group-centred) fairness evaluations. The present analysis complements these studies by focusing on the sub-national level and relating more general, egocentric fairness evaluations to political trust. Even in relatively affluent neighbourhoods, individuals may feel (even more)

¹⁴In previous research, several terms have been used to describe the perception of an unfair allocation of resources: distributive injustice, distributive unfairness and relative deprivation. However, the terms can be used interchangeably because they describe essentially the same phenomena (Crosby and Gonzalez-Intal 1984: p. 142). For the sake of clarity and shortness, I use the term perceived deprivation throughout this article.

disadvantaged compared to their peers, which may significantly affect their trust in political institutions. The hypothesis is as follows:

H2: *The perception of relative deprivation is associated with lower levels of political trust.*

Some researchers argue that perceptions of relative deprivation stem directly from individuals' experiences with resource distribution at personal, neighbourhood, or national levels (Salomo 2019). However, studies comparing individuals' perceived inequality with actual inequality find inconsistencies: there is a robust misperception of the inequality and wealth of one's place of residence, its change, and one's own position in f.e. the income distribution (Gimpelson and Treisman 2018; Hauser and Norton 2017; Lilly et al. 2024).

One reason for this mismatch may be that the causal direction can be reversed: Individuals perceive and evaluate their own socio-economic situation and everyday access to resources differently depending on their perceptions of relative deprivation. Thus, perceptions of deprivation shape how people perceive facts about their situation (Headey 1991). In line with this argument, I assume in this article that individuals who perceive egocentric deprivation become more sensitive to local place-based deprivation. They may pay more attention to their economic hardship and access to public services and infrastructure, exacerbating existing disparities. Conversely, if citizens do not perceive deprivation, they are more likely to develop coping strategies when they receive contradictory information, by ignoring contextual information or shifting the blame for deprivation onto individuals (Jost 2019).

Previous studies have examined the amplifying relationship between resource distribution and perceptions of fairness in cross-country comparisons. Results show that a significant part of the association between country-level income inequality and political trust is influenced by individual-level perceptions of deprivation, especially in societies characterised by lower levels of inequality (Zmerli and Castillo 2015). Goubin and Hooghe (2020) find that differences in levels of political trust across social classes are more pronounced in more equal societies. Contrary to these findings, Schnaudt, Hahn, and Heppner (2021) conclude that fairness evaluations are most important in countries with high levels of inequality. However, national inequality measures overlook local economic conditions and service access, which directly impact citizens' daily lives. Following the few sub-national studies, the trust evaluations of the poor are more affected by neighbourhood inequality (Córdova and Layton 2016) and social benefits increase trust more for those who feel relatively worse off (Kosec and Mo 2024). I build on these findings and hypothesise that:

H3: *The negative association between place-based deprivation and political trust*

is amplified when citizens perceive themselves to be relatively deprived.

3.4 The Rural-Urban Divide

In this study I make a distinction between the rural-urban divide and the deprivation divide. While the rural-urban divide has a long history of explaining spatial differences based on population density and remoteness, the deprivation divide refers to differences in access to resources that lead to different levels of deprivation between different places. In the past, studies of ‘left-behind places’ have often focused on a single geographical continuum, ranging from less densely populated, economically deprived areas at one end to more densely populated, economically prosperous areas at the other (Rodríguez-Pose 2018).

However, the geographical reality in many Western countries requires a more nuanced approach, as deprivation and rurality do not necessarily always overlap (McKay, Jennings, and Stoker 2021). This is particularly true in the case of Germany, where there is no clear evidence of a rural-urban divide due to the heterogeneity within rural and urban areas and the additional east-west divide (Träger 2022). For example, eastern rural districts and western urban areas are experiencing economic hardship, while many rural districts in the southern part of the country are economically prosperous. As a result, studies of the rural-urban divide in Germany have produced mixed results (Arzheimer and Bernemann 2024; Haffert and Mitteregger 2023).

Beyond economic and infrastructural disparities, political preferences and attitudes may differ between rural and urban areas as a form of cultural deprivation (Cramer 2016; Gimpel et al. 2020; Maxwell 2019; Munis 2022). Rural resentment reflects the belief that those in power neglect rural areas, distribute resources unfairly, and misunderstand rural values and lifestyles (Cramer 2016; Fitzgerald 2018). As a result, rural residents may feel particular marginalised and overlooked by policymakers. Building on this argument, recent studies argue that rural resentment may function as a socio-structural cleavage that contributes to the complex relationship between place, perceptions and political discontent (de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a; Jacobs and Munis 2023). Against this backdrop, I also examine whether living in rural, semi-urban, and urban areas influences political trust and interacts with place-based and perceived deprivation.

3.5 Methods

3.5.1 Data

To test the formulated hypotheses, I use geocoded survey data from three German surveys, each based on a two-stage stratified random sample representative of the German

population.

The German General Social Survey (GGSS) 2021 (GESIS - Leibniz-Institut für Sozialwissenschaften 2022) was conducted in spring 2021, and the two cross-sectional surveys of the German Longitudinal Election Study (GLES) were conducted immediately before and after the 2021 federal election (GLES 2023). In both cases, municipalities are selected in the first sampling stage with probability proportional to the number of adult inhabitants, and in the second stage the municipal registration offices provide a random address sample of individuals for the interviews. The geocoding of respondents' addresses was facilitated by 'bkggeocoder', an R package based on data provided by the German Federal Institute for Cartography and Geodesy (Bundesamt für Kartographie und Geodäsie (BKG)). This method accurately locates respondents within 1km x 1km grid cells, allowing survey data to be linked to spatial information.¹⁵ This approach has the advantage of capturing significant spatial disparities in Germany, particularly considering that mixed findings on the rural-urban divide in Germany may be partly related to different levels of aggregation of rurality. For example, the population of municipalities in Germany varies widely, from a minimum of 9 inhabitants in Dierfeld (equivalent to 6 inhabitants per square kilometre) in the state of Rhineland-Palatinate to a maximum of 3.6 million inhabitants in the city-state of Berlin (equivalent to 4,127 inhabitants per square kilometre). Furthermore, the combination of data sources increases the number of sampled (rural) municipalities and, therefore, the regional variance. The final dataset comprises approximately 10,000 respondents from 300 municipalities and around 5,000 1 km² grid cells.

The spatial data used in this study is obtained from four sources. First, data is provided from Micromarketing-Systeme und Consult GmbH (microm), a company that typically provides indicators for target group marketing and location analysis, including data on income groups and social milieus (microm 2022). Microm works with various partners to collect household-level data that can be aggregated to different spatial levels and units. Although details of the data generation processes are limited, such fine-grained spatial data are invaluable for scientific analysis and are not available to a comparable extent from public institutions (Breidenbach and Eilers 2018; Dittmann and Goebel 2010). To construct measures of infrastructure and service accessibility, the point coordinates of railway stations were obtained from the Deutsche Bahn Open Data Portal (Deutsche Bahn 2022), and the locations of other public services and infrastructure were obtained from the 'Points of Interest' dataset curated by the BKG (Bundesamt für Kartographie und Geodäsie 2022). Finally, the categorisation of municipalities into rural, suburban and urban locations

¹⁵For both survey datasets, an extension to the publicly available scientific use files is published containing information on the spatial units (GESIS-Leibniz Institute for the Social Sciences 2021; GLES 2022). The access to the sensitive data is subject to access restriction but data can be linked and analyzed onsite.

is based on data provided by the German Federal Institute for Research on Building, Urban Affairs and Spatial Development (Bundesinstitut für Bau-, Stadt- und Raumforschung 2023)

3.5.2 Operationalisation

The dependent variable of this study is **political trust** in German regulative and representative institutions and authorities. Due to the limitations of matching variables across datasets, I construct an additive index for trust in the government, the parliament, political parties, the police and the judicial system. Initially, the two datasets used two different Likert scales to measure trust in each of these institutions, ranging from *I do not trust at all* to *I trust completely*: a 7-point Likert scale from the GGSS dataset and an 11-point Likert scale from the GLES dataset. As both datasets are from the same year and sample the same population (adult Germans), observed score equating was chosen to harmonise these scales (Singh 2022). This equating process produced an empirically aligned measure across the two datasets, resulting in a variable with 11 scale points. Finally, the row mean was taken and the variable was recoded from 0 to 1.

Indicators of **place-based deprivation** include measures of *economic deprivation* and accessibility to public services and infrastructure (*service access*). To assess economic deprivation within a neighbourhood, I calculate the percentage of households falling into the low-income category for each grid cell using the microm data. This income threshold roughly corresponds to the definition of at-risk-of-poverty, as it is less than 70% of the median income of the whole population (Aehnelt et al. 2009). Based on the available income categories in the microm data and the median net monthly income in Germany, which according to the Federal Statistical Office was around 3,134 € in 2021 (70% = 2,193 €) (Federal Statistical Office 2009), this measure captures neighbourhoods with an average income below 2,000 €. For the accessibility of public services and infrastructure, I use the Euclidean (linear) distance in kilometres between a respondent and the nearest facility as an indicator ¹⁶. To derive a comprehensive measure, I compute the distances in kilometres from the centroid of the 1km x 1km grid cell where a respondent lives to the nearest general practitioner, pharmacy, railway station, post office and supermarket, and then calculate the mean. Since service provision and political trust might be dependent on population density, the number of households per grid cell is included in all models and provided by microm.

Perception of deprivation is measured as a categorical variable based on the question ‘*Compared to how others live here in Germany: Do you think you get your fair*

¹⁶In certain cases, the direct distance between two points may not accurately reflect the actual travel time required to reach a facility due to physical barriers and road networks. However, previous research has found a strong correlation between the two measurements, suggesting that more accurate travel time calculations do not significantly affect the results (Boscoe, Henry, and Zdeb 2012).

*share, more than your fair share, a little less or a lot less?*¹⁷. I constructed a binary variable that takes the value 1 if respondents think they get a little or a lot less than their *fair share*. This group of respondents is compared with respondents who believe they receive their fair share or more than the fair share (which take the value 0).

To account for **rurality**, I use a threefold categorical measure at the municipality level (Bundesinstitut für Bau-, Stadt- und Raumforschung 2023). The categorisation is based on the size of the municipality (population) and its central place function. The BBSR distinguishes between several types of cities (large, medium-sized and small cities) and rural municipalities. I group small cities with less than 10,000 inhabitants and without a central function and rural municipalities (*rural*), larger small and medium-sized cities (*semi-urban*) and large cities (*urban*).

To account for compositional effects, I include several **individual-level sociodemographics** as controls: age (squared), gender, education level and occupation status. The education measurement is based on the International Standard Classification of Education (ISCED) 2011 and recoded to three levels: lower secondary education and lower (1 *low*), upper secondary and post-secondary (2 *middle*), short-cycle tertiary and higher (3 *high*). To control for occupation status, I combine information on employment status with information on occupation type (Oesch 2014) in eight categories. Summary statistics of all variables can be found in the supplementary material (Table B1).

Another important place-based factor is residence in one of Germany’s ‘Bundesländer’ (i.e. federal states). Germany’s federal states are distinct and politically significant entities with strong administrative and fiscal powers according to the German constitution. They have diverse political landscapes and historical origins that continue to influence political attitudes and behaviour, including the German east-west divide. Therefore, I include fixed effects for the federal states in all models.

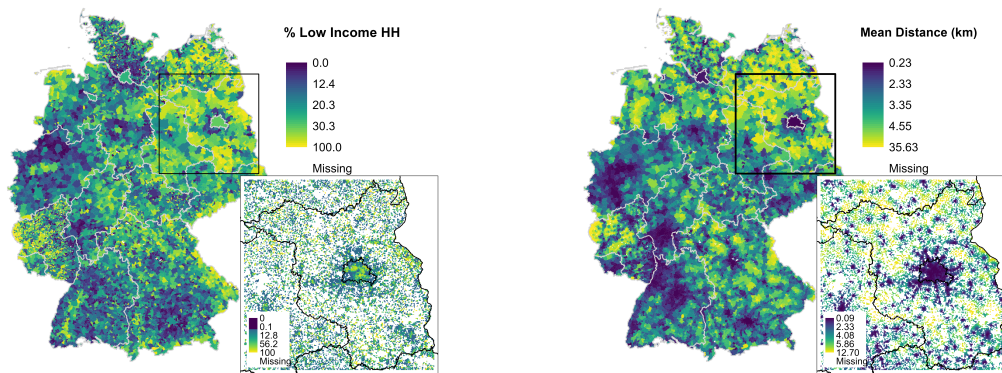
3.6 Results

3.6.1 Descriptives

To provide context, I initially examine the distribution of place-based deprivation in Germany (Figure 3.1). For better visualisation, the indicators were aggregated at the municipality level, with the inset maps illustrating the variance at the grid cell level. The

¹⁷The wording in the GLES is slightly different with the additional response option ‘much more than your fair share’: ‘Compared to how others live here in Germany: Do you think you get your fair share or don’t you? Do you get much less than your fair share, a little less than your fair share, a little more than your fair share or a lot more than your fair share? In order to harmonise the data, I have collapsed the response categories ‘much more than your fair share’ and ‘more than your fair share’.

two maps underscore the heterogeneity in income distribution and service provision across Germany, with some clusters emerging. In urban centres, well-developed infrastructure and services coexist with low-income households. The same pattern occurs in some southern regions like Rheinland-Pfalz, where economic disparities persist despite good service provision. In contrast, Bavaria shows high-income areas with limited service accessibility. Eastern Germany reveals overlapping economic hardship and lacking public and private services. These insights emphasise the importance of considering smaller neighbourhoods to understand place-based deprivation, perceived deprivation, and political trust. The initial exploration holds no clear indication of a rural-urban divide because of the heterogeneity both within and between urban and rural areas. Urban centres experience greater economic deprivation, while rural areas lack service access (Figure B1 and B2 in the supplementary material). Yet, political trust and perceived deprivation are evenly distributed across municipality types (Figure B3).



© Deutsche Bahn (2022), microm (2021) and GeoBasis-DE / BKG (2022)

Figure 3.1. Spatial Distribution of Low-Income Households and Service Distance on the Municipality and Grid Level

3.6.2 Place-Based and Perceived Deprivation

Turning to the multivariate models, I run OLS models with clustered robust standard errors at the grid level. All models include *Bundesland* fixed effects and, as I am pooling data from different sources, I also include dummy variables for survey origin to control for contextual effects and differences in the survey sampling and implementation. Design weights are included in all models to compensate for oversampling in eastern Germany. Descriptive statistics indicate that the variables can be included in a multivariate setting

without multicollinearity issues.¹⁸ After row-wise deletion of missing data, the models are based on the responses of 10178 individuals clustered into 4963 grid cells. To allow comparisons across measurement scales, variables in the main models are z-standardised.

Table 3.1

Explaining Political Trust: Linear Regression Models

	Model 1	Model 2	Model 3	Model 4
Municipality: Type (ref: urban)				
Rural				−0.07 (0.04)
Semi-Urban				−0.03 (0.03)
Grid: Place-based deprivation				
% Low income households	−0.07*** (0.01)	−0.05*** (0.01)	−0.03** (0.01)	−0.03** (0.01)
Mean distance services	−0.04*** (0.01)	−0.03* (0.01)	−0.02 (0.01)	−0.01 (0.01)
Survey: Perceived deprivation				
Not fair (ref: (more) fair)			−0.53*** (0.02)	−0.53*** (0.02)
Bundesland Fixed Effects	Yes	Yes	Yes	Yes
Sociodemographic Controls	No	Yes	Yes	Yes
R ²	0.02	0.05	0.12	0.12
Num. obs.	10178	10178	10178	10178
N Clusters	4963	4963	4963	4963

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

I find that respondents living in a deprived place have lower levels of trust, but the small effect size decreases further when sociodemographic characteristics are included in the model (Table 3.1, Table B2 for full reporting). The strength of the relationship between economic deprivation – as one of the two dimensions of place-based deprivation – and political trust is small but stable in all models. The higher the proportion of low-income households in the immediate neighbourhood, the less trust respondents have. There is a similar relationship between access to services and infrastructure and political trust: The further away respondents live on average from doctors, pharmacies, train stations and

¹⁸VIFs are not exceeding a factor of 2.9 (Table B3 in the supplementary material).

shops, the lower their political trust. However, this relationship is no longer significant after controlling for perceived deprivation. As expected, subjective perceived deprivation has a strong negative association with political trust. These associations do not change when controlling for respondents living in a rural or semi-urban municipality compared to those living in an urban municipality. Furthermore, the type of municipality is not significantly associated with trust in this model specification. In summary, the initial analyses support that objective place-based deprivation, particularly economic hardship, (H1) and subjectively perceived deprivation (H2) are associated with low levels of trust in political institutions and authorities. The models also suggest that the effects of place-based deprivation can be partly attributed to the sociodemographic composition of a place – e.g. age, education, occupational status – as the small effect sizes shrink even more once sociodemographic controls are included.

Focusing on the relationship between place-based and perceived deprivation, the models also suggest that perceived deprivation captures at least some of the variation in political trust attributed to place-based factors. Indeed, regressing perceived deprivation on place-based deprivation factors reveals an overall significant and positive relationship (Table B4), suggesting that place-based deprivation may also indirectly influence levels of political trust. Yet, individuals may perceive and value access to resources differently depending on their perception of deprivation, making them more vulnerable to the surrounding inequalities and, consequently, reinforcing place-based effects.

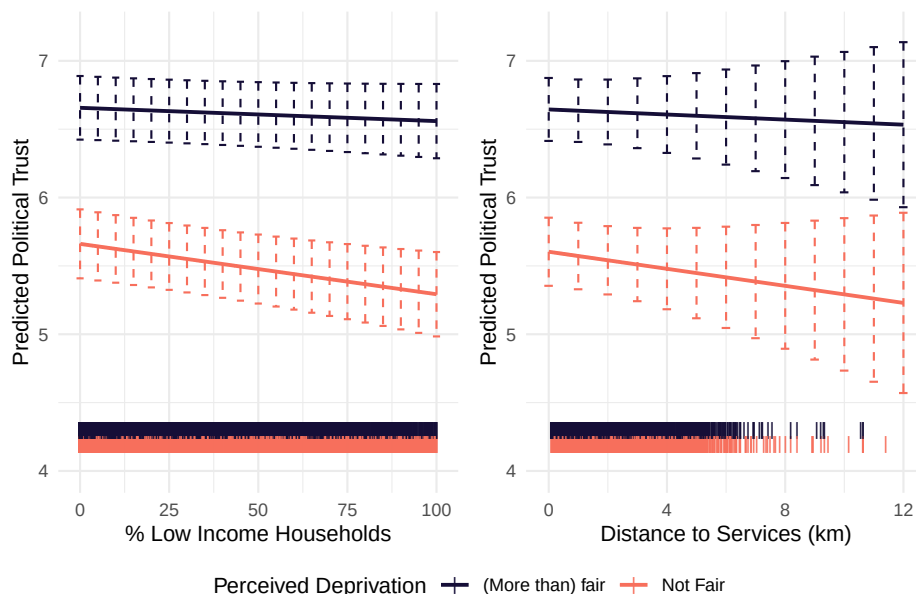


Figure 3.2. Predicted Values of Political Trust by Place-Based and Perceived Deprivation

Central to the findings of this article is the notable reinforcement observed between

objective place-based deprivation and subjective perceived deprivation. According to the interaction plot (Figure 3.2), the relationship between economic deprivation and political trust varies between the two groups: An increasing proportion of low-income households in the area affects political trust only for those who feel relatively deprived. The results are less pronounced for access to services and infrastructure. However, the regression models do not produce significant results in either case (Table B5). Thus, this finding supports the hypothesis (H3) that perceptions of deprivation can influence evaluations of state performance based on place-based conditions and, consequently, affect political trust. Since at least economic deprivation has a clear independent effect on political trust, the reinforced relationship cannot be attributed solely to people who feel deprived because they live in a deprived neighbourhood.

3.6.3 Comparisons Across Municipality Types

As an additional analyses, I address the rural-urban divide. In Table 3.1, Model 4, I reported that living in a rural and semi-urban municipality compared with living in an urban municipality has no significant effect on political trust in the fully controlled models. However, this result varies across models. First, when the models are run without sociodemographic controls – namely, age, gender, education and occupational status – living in a rural municipality is significantly and negatively correlated with political trust, suggesting that the neighbourhood composition at least partly drives the aggregate level patterns of the rural-urban divide (Table B6). Second, the coefficient of rurality remains significant when using other model specifications, such as multi-level models, which account more precisely for variance at different levels. However, this approach has its own limitations due to the specifics of the spatial distribution of respondents within grids in municipalities (see section 3.6.4). Although the direct effect of rural residence on political trust appears limited and inconsistent, it cannot be ruled out that the effects of place-based and perceived deprivation significantly differ across regions.

When comparing the effect of objective and perceived deprivation across different types of municipalities, there is no evidence that the effect of deprivation on trust is particularly nuanced in one particular area (Figure 3.3). None of the interaction effects are significant (Table B5) and the plotted differences give little indication. In terms of economic deprivation, the models even suggest that a higher proportion of low-income households in the immediate neighbourhood affects the political trust of residents in semi-urban municipalities (and cities) first and foremost.

This may be because people in urban areas are more directly exposed to economic inequalities when low and high income neighbourhoods are in close proximity. As a result,

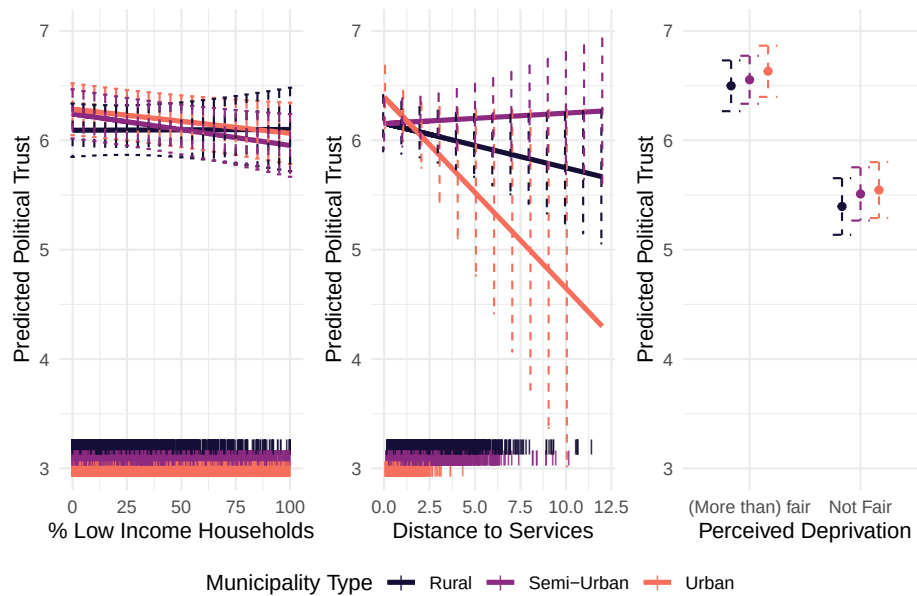


Figure 3.3. Predicted Values of Political Trust by Municipality Type and Deprivation

this information is more noticeable and likely to influence citizens' opinion formation and trust in political institutions. In rural areas, political trust remains relatively stable despite varying levels of economic deprivation in the neighbourhood. However, political trust decreases as the distance to services increases in rural areas.

The graph shows a similar relationship in urban areas, but the graph is distorted because the maximum mean distance to public services does not exceed 4.34 km in cities (compared to 11.40 km in rural municipalities). Political trust is consistently lower for people who perceive deprivation in urban, semi-urban and rural areas. Overall, there is no clear evidence of heterogeneous effects of deprivation, whether place-based or perceived, across the rural-urban divide. Some dimensions of place-based deprivation might even have a stronger link with political trust in urban municipalities (e.g. economic deprivation) and others in rural (e.g. service access).

3.6.4 Robustness Checks

The main results in Table 3.1 were subject to several robustness checks regarding variable operationalisations and model specifications reported in the supplementary material.

Regarding operationalisations of the dependent variable, first, I used an average index of political trust across multiple national institutions, despite different institutions and authorities being responsible for different tasks within the political system, and citizens may distinguish between them. When disaggregating trust in government, parliament, parties,

police, and judiciary, perceived deprivation remains negatively related to all (Table B7). However, economic hardship and rural residence are only significant for trust in government and parliament, suggesting that citizens primarily blame representative institutions for resource distribution. Second, one of the independent variables, service accessibility, was measured using the mean Euclidean distance to key facilities. However, a one-kilometre change in distance may affect individuals differently depending on the remoteness of a location. To address non-linearity, I log-transformed distances, yielding consistent results (Figure B4). Comparing the individual services, only proximity to a doctor's office significantly affects trust, underscoring the importance of healthcare access (Figure B5). Third, citizens who say they get more than their fair share have been combined with those who express they get their fair share when measuring perceived deprivation. The interaction effect plotted in Figure B6 and B7 justifies this decision by showing that the two groups behave similarly.

In terms of model specification, the nested data structure presents challenges due to spatial heterogeneity and dependencies. To address this, I specify three-level OLS regression with fixed effects. Still, results remain consistent, except that rural residence retains a significant negative association with political trust (Table B8). However, convergence errors occur due to municipalities with few grids and few respondents, leading to singular boundaries and difficulties in estimating the model parameters accurately. Despite its advantages, the multi-level approach does not fully capture spatial dependencies. Moran's I statistics indicate significant spatial autocorrelation, though estimated values are near zero (Table B9). Spatial error models confirm the previous findings: economic hardship and perceived deprivation correlate with political trust (Table B10). To account for bias due to the definition of the geographical neighbourhood, I recalibrate neighbourhood delineations using buffer zones from 2 to 50 km. Figure B8 illustrates that economic hardship remains stable across models, while service distance effects vary with scale but stay insignificant. The aggregation of place-based deprivation also influences the results of living in a rural or semi-urban municipality. The effects maintain effect direction, but significance levels diverge.

Finally, Germany's east-west divide is historically an essential spatial conflict line that partly overlaps with the rural-urban divide. Further analysis shows that living in western Germany correlates positively with political trust (Table B11, Figure B9). Yet, prior findings remain robust across eastern and western Germany.

3.7 Discussion and Conclusion

This article analyses the heterogeneous effects of place-based objective deprivation and perceived subjective deprivation on political trust in Germany. By linking survey data with

information on respondents' immediate neighbourhoods, the results extend our knowledge of the relationship between place and trust – both theoretically and methodologically.

The analysis confirms that place-based deprivation is associated with trust in national institutions, consistent with hypothesis 1. However, the effect is primarily observed for economic deprivation, in support of previous findings (Dellmuth 2024; Katsanidou and Mayne 2024; Lipps and Schraff 2021; Mayne and Katsanidou 2022). Nonetheless, the effect of place-based deprivation on trust remains relatively weak compared to individual-level factors, suggesting that addressing place-based deprivation alone cannot alleviate the trust crisis. This relation can be partially attributed to the sociodemographic composition of these areas, where individuals with similar predispositions tend to cluster, leading to observed spatial divides in values and attitudes (Gimpel and Hui 2015; Maxwell 2019). The analyses show that place effects diminish or become insignificant when sociodemographic controls are included, suggesting the presence of self-selection mechanisms and composition rather than contextual effects.

Furthermore, I have challenged the assumption that citizens consistently use place-based information and translate it directly into corresponding attitudes. The analysis shows that perceptions of deprivation matter more for political trust and reinforce place-based deprivation effects, supporting hypotheses 2 and 3. The reinforcing effect of place and perceptions at the subnational level extends political trust research, which has previously demonstrated similar effects in cross-national studies of inequality and injustice (Schnaudt, Hahn, and Heppner 2021; Zmerli and Castillo 2015). However, egocentric, distributive fairness perceptions reflect only one part of the concept of relative deprivation, and the cited studies of political trust have also considered the influence of procedural and sociotropic fairness judgements on political trust. Even if citizens are not deprived from an egocentric perspective, they may still believe that economic hardship and lack of access to services are societal problems the state is failing to address as part of its welfare responsibilities. The mentioned studies have shown that sociotropic judgements of fairness have a greater direct and interactive influence on political trust than egocentric judgements. Future studies should examine other perceptions of fairness at the sub-national level.

The finding on perceived deprivation also adds new insights to the discourse on the geography of discontent: Perceived deprivation reinforces the place-based effects. This adds to the list of individual-level factors, including place-related attitudes (de Lange, van der Brug, and Harteveld 2023; Zumbrunn 2024) or socio-economic characteristics (Córdova and Layton 2016; Katsanidou and Mayne 2024; Lenzi and Perucca 2021) that condition the effect of place-based deprivation. Consequently, place-based deprivation alone might not be sufficient to understand the trust divide, but the reinforcement with feelings of unfairness

contributes to low levels of political trust.

Despite the prevailing narrative of rural discontent, I find this reinforcing relationship only for place-based deprivation, not for living in a rural municipality. In sum, rurality has some effect on political trust, but it is not significant across models. In addition, place-based deprivation does not affect political trust for rural residents in particular. The models remain rather inconclusive, leaving only some room for speculation: Place-based economic deprivation may be even more important in cities, while rural citizens may lack trust if they lack access to services. These findings highlight the necessity to distinguish between the conceptualisation and measurement of rurality and place-based deprivation also call for further methodological contributions in this area.

First, rurality refers to the spatial distribution of the population, with rural areas typically characterised by lower population density, distance from urban centres or land use patterns. Deprivation extends between rurality and urbanity, encompassing economic and social dimensions. In this article I have used two of these dimensions – economic and access to public and private services – although the specific manifestations of deprivation may include more characteristics (e.g. digital connectivity, employment opportunities). Future research should therefore build on these findings to clarify which aspects of place matter.

Second, I use fine-grained grid-level data to define small neighbourhoods in order to overcome previous methodological shortcomings and to test whether previous (non)findings were the result of an unfit definition of neighbourhood. I find that the effect of deprivation remains stable over the neighbourhood scale, while the uncertainty of the service access effect further increases with larger neighbourhoods. Thus, previous findings are not systematically biased by relying on more aggregated data and misspecifying neighbourhoods. Nevertheless, there is potential for future research to improve its understanding of regional inequalities by looking beyond aggregate differences. The focus on disaggregated data also has its drawbacks. By choosing a small geographical resolution for the data, I was not able to account for changes in neighbourhoods over time. Therefore, changes that may be more noticeable to citizens than the current situation, such as an increase in economic deprivation or the closure of public facilities, are not analysed, which limits this study.

In conclusion, this study highlights the importance of the nuanced effects of place-based deprivation, which vary according to individual subjective perceptions of deprivation. I also find that there are only small effects of place. These findings suggest that policy interventions should not only address economic hardship and accessibility of services, but should focus more on reducing perceived inequalities and fostering a sense of fairness to increase political trust across regions and neighbourhoods.

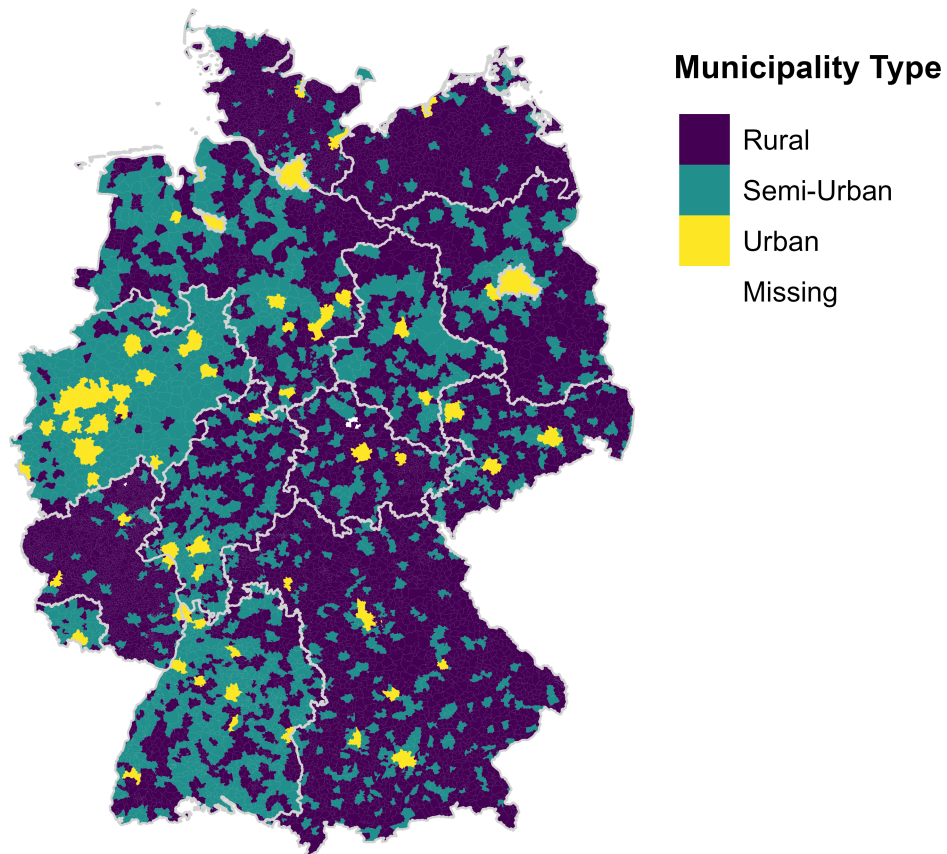
Supplementary Material

Table B1

Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Political Trust	10,179	5.54	1.99	0.00	10.22
Urban (ref: semi-urban)	10,179	0.26	0.44	0	1
Rural (ref: semi-urban)	10,179	0.42	0.49	0	1
Mean distance services (km)	10,179	1.43	1.26	0.09	11.40
Number households in grid	10,179	1,644.27	2,104.46	1	15,740
Perceived deprivation (ref: fair)	10,179	0.40	0.49	0	1
Female	10,179	0.49	0.50	0	1
Age	10,179	53.55	18.15	16	99
Education: Low	10,179	0.08	0.28	0	1
Education: Middle	10,179	0.48	0.50	0	1
Education: High	10,179	0.43	0.50	0	1
Oesch: Unemployed	10,179	0.02	0.13	0	1
Oesch: Temporarily inactive	10,179	0.06	0.24	0	1
Oesch: Permanently inactive	10,179	0.34	0.48	0	1
Oesch: Lower-grade service class	10,179	0.19	0.40	0	1
Oesch: Small business owners	10,179	0.03	0.17	0	1
Oesch: Skilled workers	10,179	0.13	0.34	0	1
Oesch: Unskilled workers	10,179	0.04	0.19	0	1

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, microm, Deutsche Bahn Open Data, and BKG 2022. Reporting of unstandardized variables after row-wise deletion of missing values for main regression models. ref = reference category.



Data: © BBSR Bonn (2021) and GeoBasis-DE / BKG (2022).

Figure B1. Spatial Distribution of Municipality Types

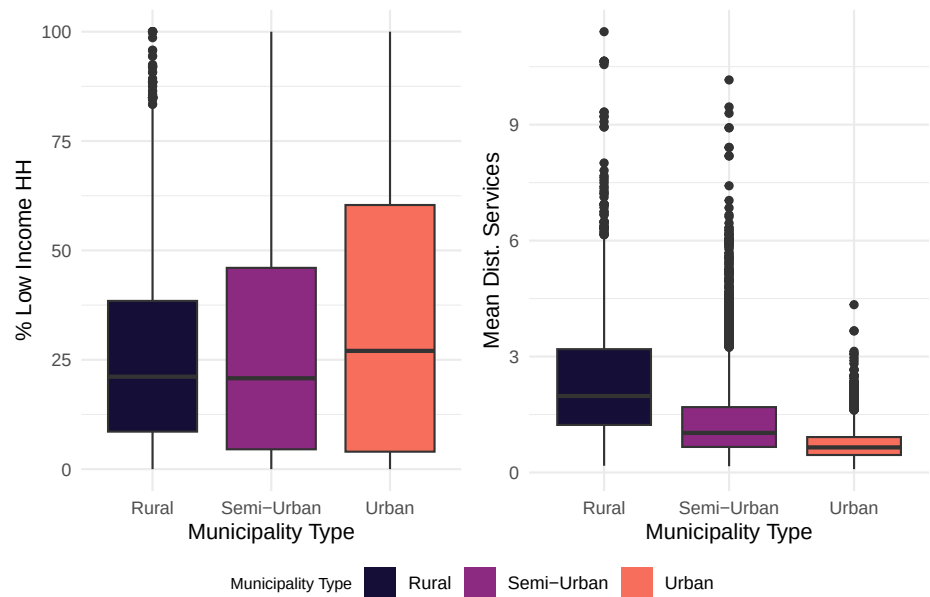


Figure B2. Distribution of Spatial Indicators Across Municipality Types

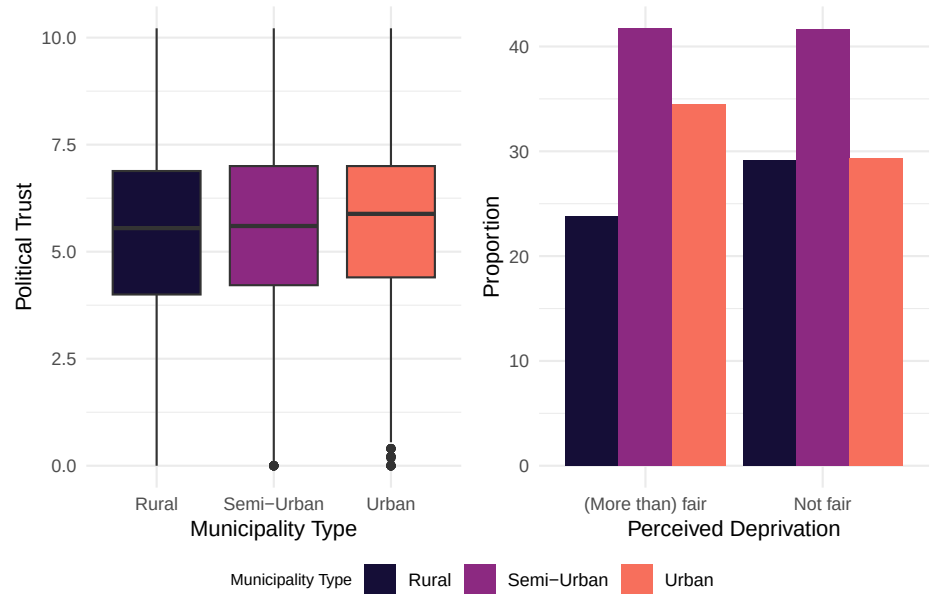


Figure B3. Distribution of Attitudinal Indicators Across Municipality Types

Table B2

Explaining Political Trust: Complete Reporting of Table 1

	Model 1	Model 2	Model 3	Model 4
Municipality type (ref: urban)				
Rural				−.07 (.04)
Semi-Urban				−.03 (.03)
Place-based deprivation				
% Low income households	−.07 (.01)***	−.05 (.01)***	−.03 (.01)**	−.03 (.01)**
Mean distance services	−.04 (.01)***	−.03 (.01)*	−.02 (.01)	−.01 (.01)
Perceived deprivation				
Not fair (ref: (more) fair)			−.53 (.02)***	−.53 (.02)***
Female		.03 (.02)	.05 (.02)*	.05 (.02)*
Age		.15 (.01)***	.13 (.01)***	.13 (.01)***
Education: Low		−.12 (.04)**	−.11 (.04)**	−.11 (.04)**
Education: High		.11 (.02)***	.07 (.02)**	.07 (.02)**
Oesch: Unemployed		−.41 (.08)***	−.27 (.08)***	−.27 (.08)***
Oesch: Temporarily inactive		−.00 (.05)	−.04 (.05)	−.04 (.05)
Oesch: Permanently inactive		−.31 (.04)***	−.23 (.04)***	−.23 (.04)***
Oesch: Lower-grade service class		−.18 (.03)***	−.11 (.03)***	−.11 (.03)***
Oesch: Small business owners		−.32 (.06)***	−.25 (.06)***	−.25 (.06)***
Oesch: Skilled workers		−.34 (.04)***	−.24 (.04)***	−.24 (.04)***
Oesch: Unskilled workers		−.50 (.06)***	−.36 (.06)***	−.36 (.06)***
GLÉS Pre-election (ref: GGSS)	.01 (.02)	.01 (.02)	.01 (.02)	.00 (.02)
GLÉS Post-election (ref: GGSS)	.02 (.03)	.04 (.03)	.02 (.03)	.02 (.03)
Number households in grid	.02 (.01)*	.02 (.01)	.01 (.01)	.01 (.01)
Bundesland Fixed Effects	Yes	Yes	Yes	Yes
Survey Controls	No	Yes	Yes	Yes
R ²	.02	.05	.12	.12
Num. obs.	10178	10178	10178	10178
N Clusters	4963	4963	4963	4963

Data: ALLBUS/GGSS 2021, GLÉS Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category.

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

Table B3

Variance Inflation Factor (VIF) Results (Table 1, Model 4)

	GVIF	Df	$\sqrt{\text{GVIF}/(2 \cdot \text{Df})}$
Municipality Type	2.474919	2	1.254268
% Low income households	1.166021	1	1.079824
Mean distance services	1.535213	1	1.239037
Population per grid	1.908119	1	1.381347
Perceived deprivation (not fair)	1.069093	1	1.033970
Female	1.043108	1	1.021327
Age	2.349204	1	1.532712
Education: Low	1.123263	1	1.059841
Education: High	1.245294	1	1.115927
Oesch Classes	2.882901	7	1.078562
Survey Dummies	1.067635	2	1.016496
Bundesland Dummies	2.043319	15	1.024105

Table B4

Explaining Perceived Deprivation: Logit Model

	Model 1
Municipality: Type (ref: urban)	
Rural	1.17 (.08)
Semi-Urban	1.01 (.07)
Grid: Place-based deprivation	
% Low income households	1.17 (.02)***
Mean distance services	1.06 (.03)*
Bundesland Fixed Effects	Yes
Sociodemographic Controls	No
AIC	13000.40
BIC	13246.15
Log Likelihood	−6466.20
Deviance	12852.20
Num. obs.	10178

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: Logit model with clustered robust standard errors on the grid level and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. Odds ratios are reported. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table B5

Explaining Political Trust, Interaction Models: Complete Reporting of Figure 2 and 3

	Model 1	Model 2	Model 3	Model 4	Model 5
Municipality type (ref: urban)					
Rural	-.14 (.07)	-.14 (.07)	-.19 (.09)*	-.24 (.13)	-.13 (.08)
Semi-Urban	-.06 (.05)	-.06 (.05)	-.04 (.07)	-.24 (.10)*	-.08 (.06)
Place-based deprivation					
% Low income households	-.00 (.00)	-.00 (.00)**	-.00 (.00)*	-.00 (.00)**	-.00 (.00)**
Mean distance services	-.02 (.02)	-.01 (.03)	-.02 (.02)	-.17 (.09)	-.02 (.02)
Perceived deprivation					
Not fair (ref: (more) fair)	-1.00 (.06)***	-1.04 (.06)***	-1.07 (.04)***	-1.07 (.04)***	-1.09 (.07)***
Interaction perceived deprivation					
% Low income households*Not fair	-.00 (.00)				
Mean distance services*Not fair		-.02 (.03)			
Interaction municipality type					
% Low income households*Rural			.00 (.00)		
% Low income households*Semi-Urban			-.00 (.00)		
Mean distance services*Rural				.13 (.09)	
Mean distance services*Semi-Urban				.18 (.09)*	
Not fair*Rural					-.02 (.11)
Not fair*Semi-Urban					.04 (.10)
Bundesland Fixed Effects	Yes	Yes	Yes	Yes	Yes
Survey Controls	Yes	Yes	Yes	Yes	Yes
R ²	.12	.12	.12	.12	.12
Num. obs.	10178	10178	10178	10178	10178
N Clusters	4963	4963	4963	4963	4963

Data: ALBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, micron 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table B6

Explaining Political Trust without Sociodemographic Controls: Linear Regression Models

	Model 1	Model 2	Model 3	Model 4
Municipality type (ref: urban)				
Rural	−.15*** (.03)	−.12** (.04)	−.11*** (.03)	−.09* (.04)
Semi-Urban	−.07** (.03)	−.06* (.03)	−.05* (.02)	−.05 (.03)
Place-based deprivation				
% Low income households		−.07*** (.01)		−.04*** (.01)
Mean distance services		−.03* (.01)		−.02 (.01)
Perceived deprivation				
Not fair (ref: (more) fair)			−.58*** (.02)	−.57*** (.02)
GLS Pre-election (ref: GGSS)	.00 (.02)	.00 (.02)	−.00 (.02)	−.00 (.02)
GLS Post-election (ref: GGSS)	.02 (.03)	.02 (.03)	.01 (.03)	.01 (.03)
Number households in grid		.01 (.01)		.00 (.01)
Bundesland Fixed Effects	Yes	Yes	Yes	Yes
Survey Controls	No	No	No	No
R ²	.02	.02	.10	.10
Num. obs.	10178	10178	10178	10178
N Clusters	4963	4963	4963	4963

Data: ALLBUS/GGSS 2021, GLS Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table B7

Explaining Political Trust in Several Institutions: Linear Regression Models

	Government	Parliament	Parties	Police	Judiciary
Municipality: Type (ref: urban)					
Rural	-.09 (.04)*	-.21 (.10)*	-.16 (.08)	-.00 (.09)	-.10 (.09)
Semi-Urban	-.06 (.03)*	-.14 (.07)	-.05 (.06)	.02 (.07)	-.07 (.07)
Grid: Place-based deprivation					
% Low income households	-.04 (.01)***	-.11 (.03)***	-.04 (.02)	.00 (.03)	-.05 (.03)
Mean distance services	-.01 (.01)	-.06 (.04)	-.02 (.03)	-.05 (.03)	-.00 (.04)
Survey: Perceived deprivation					
Not fair (ref: fair)	-.51 (.02)***	-1.29 (.06)***	-.92 (.05)***	-.76 (.05)***	-1.09 (.06)***
Bundesland Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes
R ²	.12	.12	.07	.05	.09
Num. obs.	9820	9820	9820	9820	9820
N Clusters	4834	4834	4834	4834	4834

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level and Bundesland fixed effects.

Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

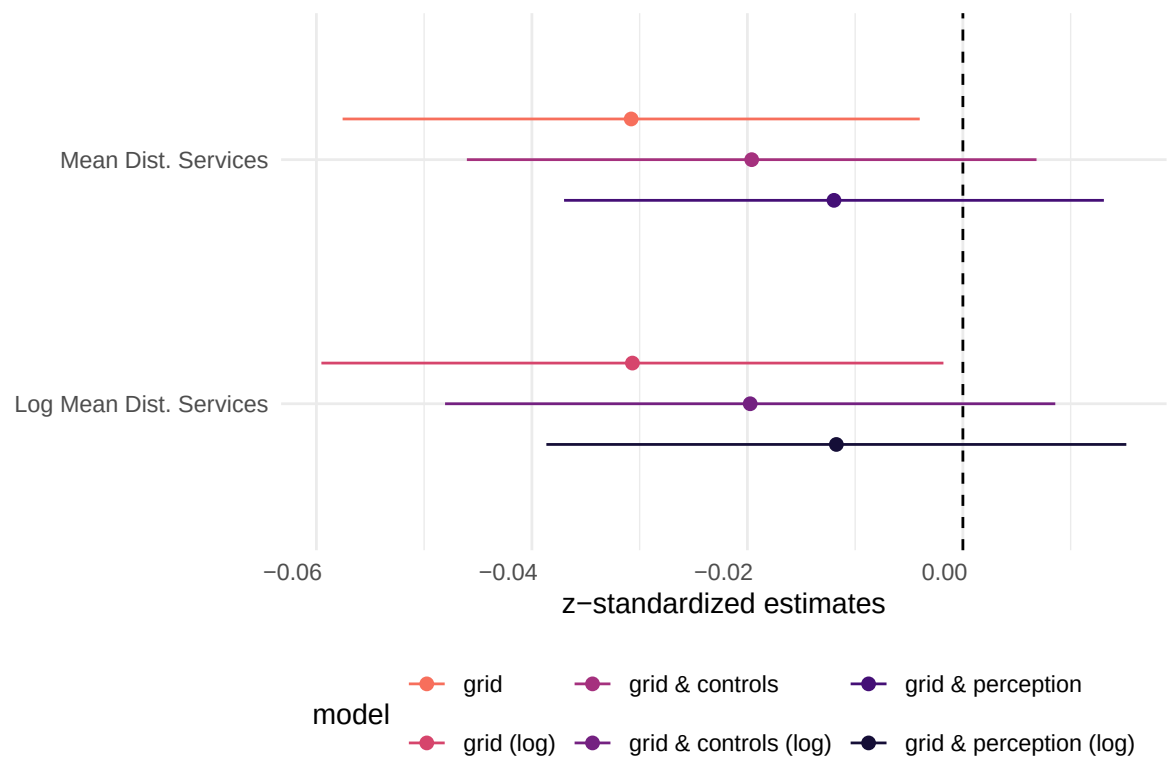


Figure B4. Coefficient Plot: Model Comparison Distance Measurement in km and Log of Distance Measure

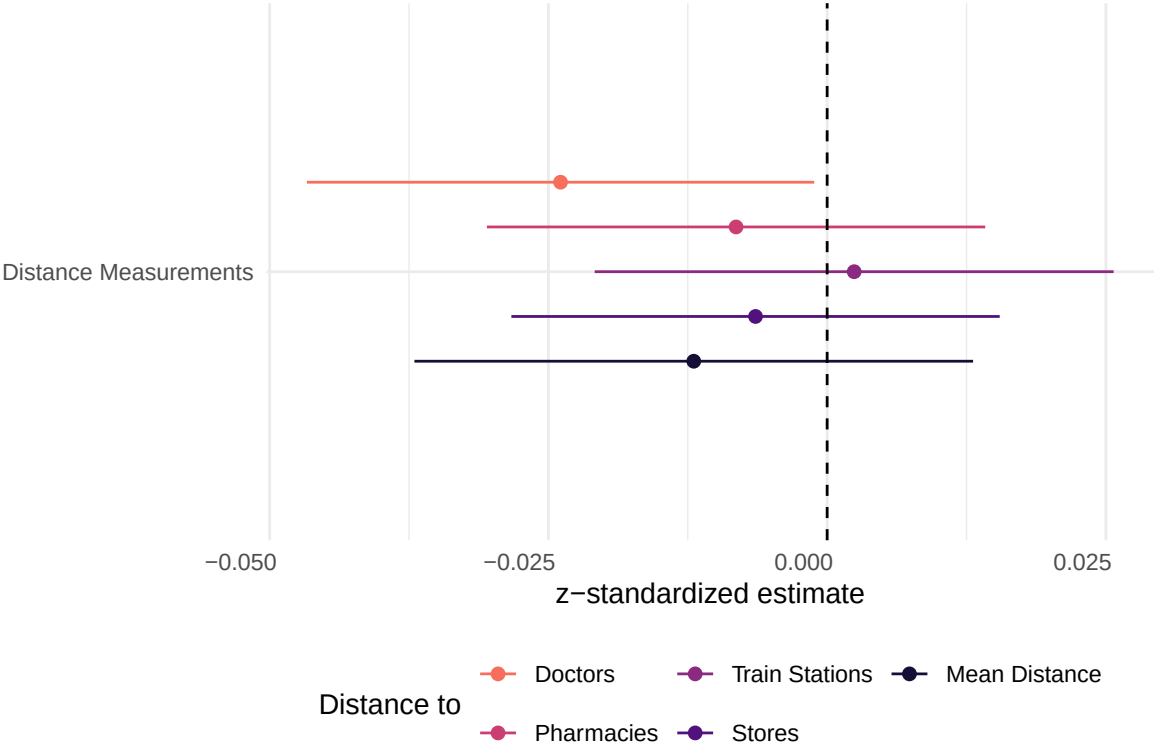


Figure B5. Coefficient Plot: Model Comparison of Service Facilities

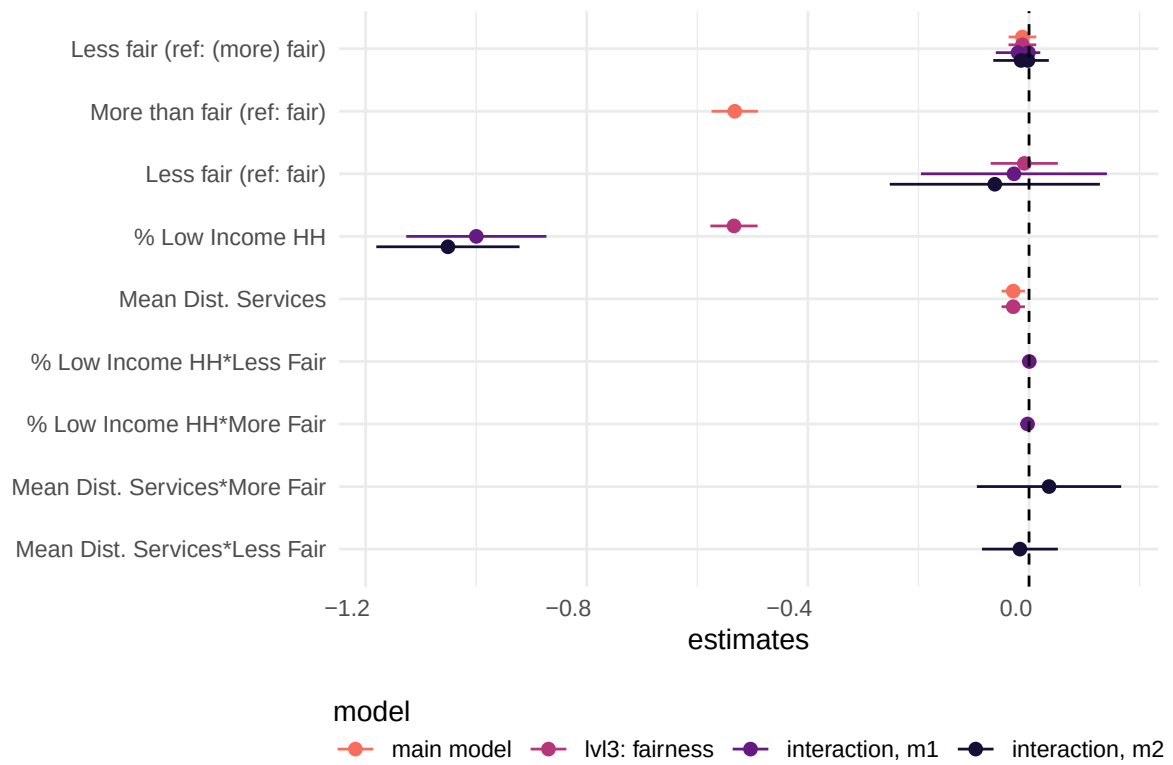


Figure B6. Coefficient Plot: Model Comparison of Binary and 3-Level Operationalization of Perceived Deprivation

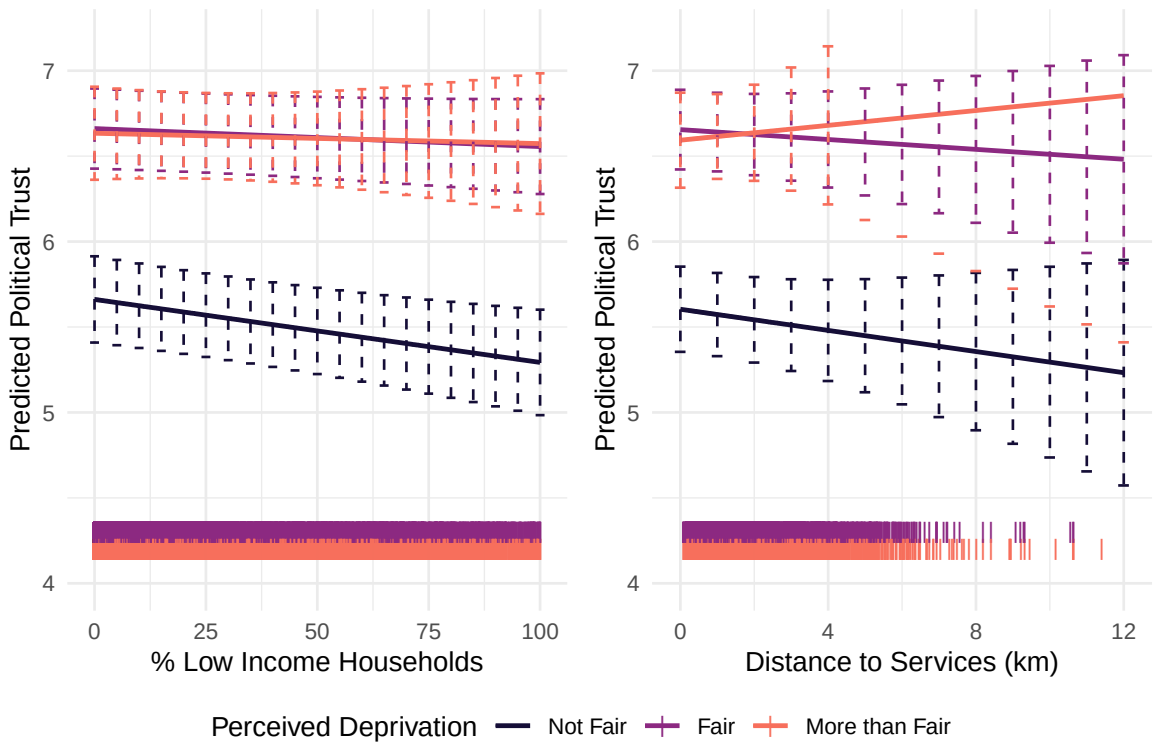


Figure B7. Predicted Values of Political Trust by Place-Based and Perceived Deprivation (3 Levels)

Table B8

Explaining Political Trust: Multi-Level Linear Regression Model

	Model 1	Model 2
LVL-3, Municipality: Type (ref: urban)		
Rural	−.07 (.04)*	−.10 (.03)**
Semi-Urban	−.03 (.03)	−.03 (.03)
LVL-2, Grid: Place-based deprivation		
% Low income households	−.03 (.01)**	−.04 (.01)***
Mean distance services	−.01 (.01)	−.00 (.01)
LVL-1, Perceived deprivation		
Not fair (ref: (more) fair)	−.53 (.02)***	−.54 (.02)***
Bundesland Fixed Effects	No	Yes
Sociodemographic Controls	Yes	Yes
AIC	27874.99	27858.65
BIC	28149.65	28024.90
Num. obs.	10178	10178
Num. groups: inspid_1km:agsys	4966	4966
Num. groups: agsys	308	308
Var: inspid_1km:agsys (Intercept)	.03	.03
Var: agsys (Intercept)	.00	.00
Var: Residual	.81	.81

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: Multi-level OLS with individuals (level 1), clustered in 1 km² grid (level 2), clustered in municipalities (level 3) and Bundesland fixed effects. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table B9

Test Results: Spatial Autocorrelation

	Estimate	PValue
Moran I statistic	0.0454483	0.0000678
Geary C statistic	0.9825033	0.1746194

Table B10

Explaining Political Trust: Spatial Error Model

	Model 1
Municipality type (ref: urban)	
Rural	.03 (.03)
Semi-Urban	−.04 (.03)
Grid: Place-based deprivation	
% Low income households	−.03 (.01)**
Mean distance services	−.01 (.01)
Perceived deprivation	
Not fair (ref: (more) fair)	−.53 (.02)***
Bundesland Fixed Effects	Yes
Sociodemographic Controls	Yes
Num. obs.	10178
Parameters	37
AIC (Linear model)	27718.21
AIC (Spatial model)	27715.72
LR test: statistic	4.48
LR test: p-value	.03

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: Spatial error model (OLS) with an row-standardized inverse distance weight of k=10 neighbors and Bundesland fixed effects. Points within a grid cell are jittered. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

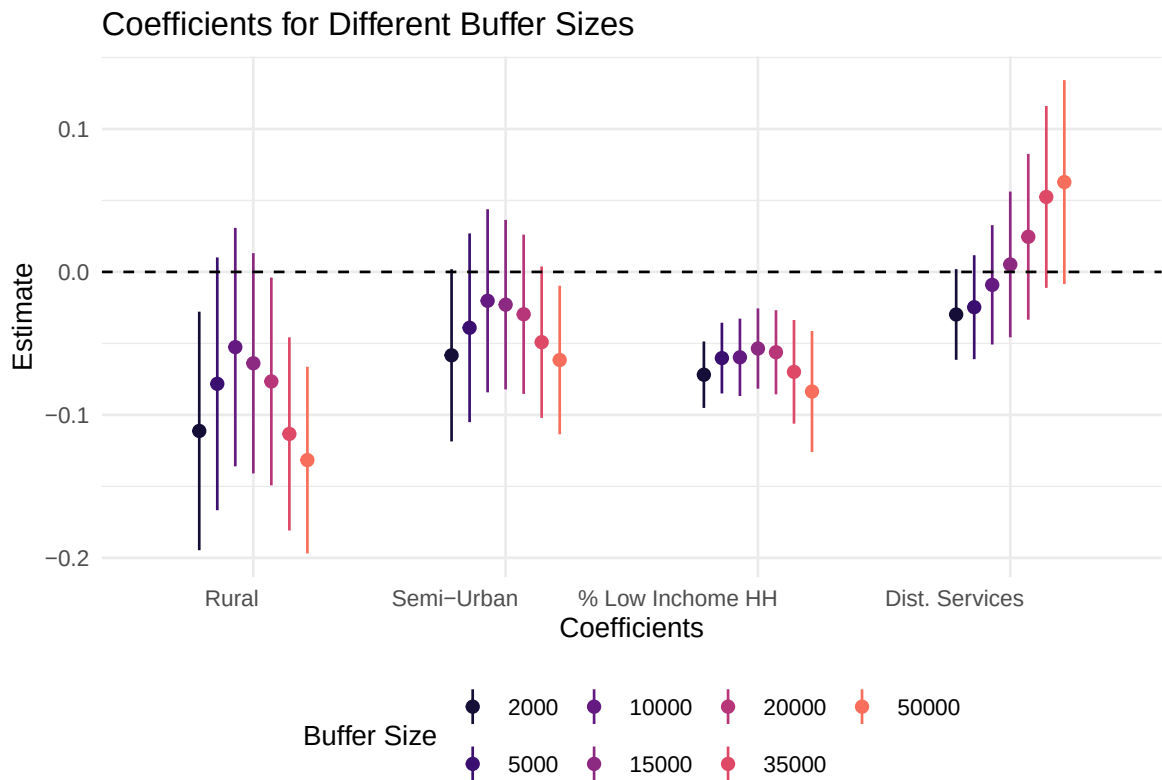


Figure B8. Coefficient Plot: Varying Neighbourhood Scalings

Table B11

Explaining Political Trust: German East-West Divide

	Model 1	Model 2	Model 3	Model 4	Model 5
West Germany	.16 (.02)***	.15 (.04)***	.17 (.02)***	.16 (.02)***	.16 (.03)***
Municipality type (ref: urban)					
Rural	-.08 (.03)*	-.06 (.05)	-.08 (.03)*	-.08 (.03)*	-.08 (.03)*
Semi-Urban	-.02 (.03)	-.06 (.04)	-.03 (.03)	-.02 (.03)	-.02 (.03)
Place-based deprivation					
% Low income households	-.03 (.01)*	-.02 (.01)*	-.01 (.02)	-.02 (.01)*	-.02 (.01)*
Mean distance services	-.00 (.01)	-.01 (.01)	-.00 (.01)	.01 (.02)	-.00 (.01)
Perceived deprivation					
Not fair (ref: (more) fair)	-.53 (.02)***	-.53 (.02)***	-.53 (.02)***	-.53 (.02)***	-.55 (.03)***
Interaction effects					
Rural*West Germany		-.02 (.06)			
Semi-Urban*West Germany		.05 (.05)			
% Low income households*West Germany			-.02 (.02)		
Mean distance services*West Germany				-.03 (.02)	
Not fair*West Germany					.02 (.04)
Bundesland Fixed Effects	No	No	No	No	No
Survey Controls	Yes	Yes	Yes	Yes	Yes
R ²	.12	.12	.12	.12	.12
Num. obs.	10178	10178	10178	10178	10178
N Clusters	4963	4963	4963	4963	4963

Data: ALLBUS/GGSS 2021, GLES Cross-Section 2021, BBSR 2021, microm 2021, Deutsche Bahn 2020 and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level. Controls: gender (ref: male), age squared, education in 3 categories (ref: middle), occupation status based on Oesch (ref: higher-grade service class), number of households per grid cell and survey origin. Standard errors reported in parentheses. ref = reference category. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

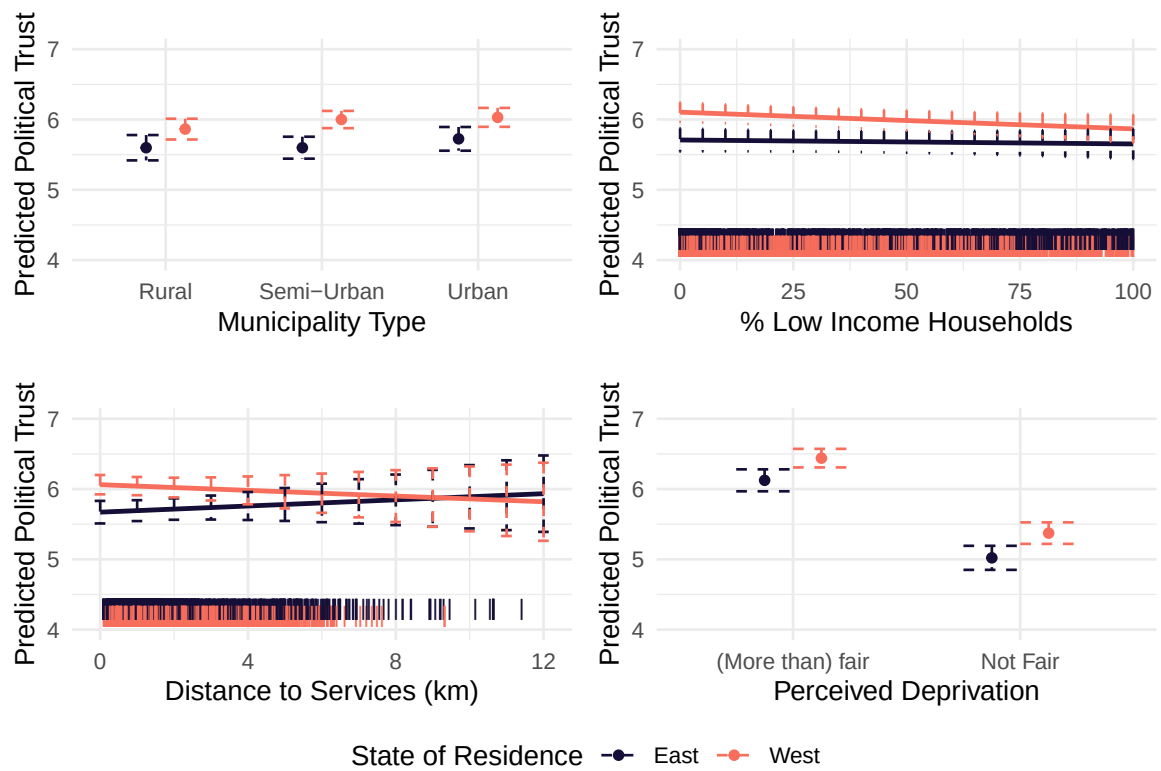


Figure B9. Predicted Values of Political Trust by East-West Residence

Chapter 4: Where You Live and How You Feel: The Reinforcing Impact of Place and Perception on Radical-Right Party Preferences¹⁹

Abstract: The discourse on left-behind places has received considerable attention in recent years, highlighting the role of place-based inequalities in shaping political attitudes in Western democracies. In particular, spatial clusters represent the emergence of the 'revenge of the places that don't matter', acting as breeding grounds for political discontent and the rise of radical-right voting patterns. With previous research focusing either on people feeling left behind or on places being left behind, a gap remains in understanding how individuals who feel left behind - encompassing a broader sense of frustration and abandonment beyond place - react towards their living environment differently. This study addresses two key research questions: first, whether place-based factors and/or feelings of being left behind are associated with preferences for radical-right parties, and second, whether the two factors reinforce each other. To answer these questions, I use a unique data set comprising geocoded survey data from the 2021 German Longitudinal Election Study (GLES) linked with grid-level information. The results indicate that living in a left-behind place and feeling left behind are positively associated with radical-right support. The findings confirm a reinforcing relationship between living in a left-behind place and feeling left behind, particularly for rurality as one dimension of left-behind places. Residents who feel left behind tend to rate radical-right parties more positively in areas of lower population density compared to those in higher population density areas. However, for citizens who feel respected and recognized, population density makes no difference to whether they support an radical-right party.

4.1 Introduction

Spatial divides have re-emerged as a shaping force of party preferences in European democracies. Place-based disparities can serve as a catalyst for political discontent and radical-right voting behaviour (Broz, Frieden, and Weymouth 2021; Carreras 2019; Harteveld et al. 2022;

¹⁹This article has been submitted for consideration to *West European Politics*.

Rooduijn and Burgoon 2018; Schraff and Pontusson 2024), also known as the ‘revenge of the places that don’t matter’ (Rodríguez-Pose 2018: 189). The presumed mechanism linking left-behind places to radical-right party (RRP) preferences is that citizens’ perceptions of their living environment generate dissatisfaction and grievances. These grievances include feelings of neglect, the perception of being denied fair resources, and a lack of societal recognition and respect (Cramer 2016). Consequently, radical-right parties gain support by arguing that the political establishment cannot address these grievances. However, the presumed link between residing in a left-behind place, one’s subjective feelings of being left behind, and support for RRPs is not as evident as it may initially appear.

A growing body of literature suggests that the effects of individuals’ perceptions and feelings often outweigh the effects of living in a left-behind place, characterised by weak economic conditions (Broz, Frieden, and Weymouth 2021; Dellmuth 2024), lack of access to public services and infrastructure (Cremaschi et al. 2024; Nyholt 2024; Stroppe 2023), and rurality (Mamonova, Franquesa, and Brooks 2020; Scala and Johnson 2017). The place-based effects that do occur are often conditioned by place-based identity (de Lange, van der Brug, and Harteveld 2023; Zumbrunn 2024) or socio-economic characteristics (Córdova and Layton 2016; Katsanidou and Mayne 2024; Lenzi and Perucca 2021). However, there is still an important gap in the literature regarding the interplay between subjective feelings of being left behind – not exclusively in terms of place, but as a general sense of frustration, neglect and abandonment of society – and living in an objectively speaking, left-behind place.

This study aims to address this gap by examining the relationship between structural characteristics of places being left behind, people’s feelings of being left behind, and preferences for RRPs. I ask whether place-based factors and/or feelings of being left behind are associated with preferences for RRPs and whether the two factors reinforce each other. The study enriches the existing literature by using a novel conceptualisation of feeling left behind (Bollwerk, Schlipphak, and Back 2022), defined as a subjective feeling that the needs of the in-group are not appropriately recognised and respected by society. The study contributes a new perspective by arguing that if feelings of being left behind are not necessarily rooted in structural conditions of the place of residence, they nevertheless influence the formation of political preferences and reinforce place-based information cues.

A unique feature of this article is its fine-grained spatial analysis. I use geocoded survey data from the 2021 German Longitudinal Election Study (GLES 2023). Using the geo-coordinates, more than 6,500 interviews were linked to fine-grained structural data on 1km*1km grid cells creating a unique data set including various place-based indicators from different sources for living in a left-behind place: economic conditions, service provision, and rurality. This level of spatial granularity permits a nuanced analysis of how small-scale

variations in living conditions affect preferences for RRP. This approach distinguishes this study from previous research that relies on data covering larger geographic units.

The results support and extend previous findings that rurality and lack of access to public services and infrastructure are positively associated with positive RRP ratings, suggesting that place can shape RRP support. In contrast to previous studies, I do not detect an association between economic hardship and RRP support at this fine-grained spatial scale. However, I do find a significant association at higher levels of aggregation, suggesting that the correlations depend on the level of spatial aggregation. My analysis also reveals that individuals feeling left behind, regardless of the origin of this feeling, tend to have stronger preferences for RRPs. I find reinforcing effects between living in sparsely populated areas and feeling unrecognised and disrespected by society, which eventually leads to increased RRP support. Feeling left behind can be a crucial factor in conditioning the place-based effects, especially when studying rural-urban divides of party preferences.

4.2 Left-Behind Places, Left-Behind People – or Both?

4.2.1 Places Being Left Behind

The explanations for individuals' support for RRPs can be understood in terms of demand-side arguments, suggesting that support for RRPs is motivated by grievances related to perceived economic and cultural losses (Arzheimer 2018; Golder 2016; Koopmans et al. 2005; Mudde 2007; Rydgren 2007). The role of place as a distinct demand-side dimension has been increasingly researched over the past decade (Broz, Frieden, and Weymouth 2021; Gimpel et al. 2020; Golder 2016; Rodríguez-Pose 2018). Recent studies analysing spatial patterns concerning EU scepticism and trust (Dellmuth 2024; Katsanidou and Mayne 2024; Vasilopoulou and Talving 2024), as well as anti-EU and radical right voting in European countries (Dijkstra, Poelman, and Rodríguez-Pose 2020; Harteveld et al. 2022; Rooduijn and Burgoon 2018; Schraff and Pontusson 2024), indicate that place is a conflict line that divides society. Researchers typically concentrate on a single spectrum that ranges from prosperous, easily accessible urban regions to the culturally and economically isolated, shrinking peripheral areas (Ford and Jennings 2020; Rodríguez-Pose 2018), even though the number of indicators describing a left-behind place can be numerous (Pike et al. 2023). The theoretical mechanism driving this observation is closely related to other grievance-based explanations of RRP, with three distinct characteristics of places associated with RRP party preference: economic hardship, service access, and rurality.

Economic hardship: The socio-economic and socio-cultural situation in one's living environment can elicit perceptions of economic threat. Studies in the past decade have

identified economic shocks (Autor, Dorn, and Hanson 2016; Colantone and Stanig 2018; Dippel, Gold, and Heblich 2015) and short- and long-term income decline (Broz, Frieden, and Weymouth 2021; Greve, Fritsch, and Wyrwich 2023; Mayne and Katsanidou 2022) as drivers of populist party and candidate support. However, empirical findings on the association between the unemployment rate and support for RRP have been mixed (for a meta-analysis, see Sipma and Lubbers (2020)), low incomes are strongly linked to populist attitudes in urban areas (Harteveld et al. 2022), and recent analyses show an indication of a non-linear relationship between economic growth and EU trust (Vasilopoulou and Talving 2024).

Service access: Citizens in Western democracies expect the state to provide them with public services and infrastructure (Dalton 2004; Luehiste 2014), and the provision of services is crucial to citizens' lives (Vogler 2023). If this provision is lacking, the livelihood of an area, and thus its social and cultural capital, is threatened – a development also known as local or rural marginalisation (Bock 2016). Although a lack of access to infrastructure and public services can be seen as a consequence of economic deterioration, recent studies have found that it is not always correlated with economic factors and that it contributes to more populism, distrust and RRP voting (Cremaschi et al. 2024; Nyholt 2024; Stroppe 2023).

Rurality: The rural-urban continuum serves as a third explanatory factor for two reasons. Rural communities have strong ties to tradition and conservative values that stand in contrast to the multiculturalism and cosmopolitanism of cities. In larger, densely populated cities, interactions are more superficial, fostering tolerance for deviance and progressive ideologies, whereas in smaller rural communities with lower density, interactions are more direct and frequent, leading to interdependent values often associated with conservatism and the preservation of traditional morality (Gimpel et al. 2020; Kenny and Luca 2021). Another mechanism that leads to the spatial divide of attitudes, values and partisanship along the rural-urban continuum is residential sorting: low-wage and low-skilled jobs in less densely populated areas cause better-educated individuals to move to cities, and movers tend to prefer co-partisan neighbourhoods (Gallego 2016; Gimpel and Hui 2015; Maxwell 2019, 2020). As such, the rural-urban divide overlaps with perceptions of political underrepresentation, stronger place-based identity, and feelings of resentment. As a result, it serves as its own socio-structural cleavage that can lead to polarised views on cultural values and political preferences (Cramer 2016; de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a; Jacobs and Munis 2023; Munis 2022).

We assume that RRP receive support from citizens residing in rural areas with poor economic conditions and a lack of service provision when they effectively argue that the political establishment is failing to address the needs of these communities. By presenting

themselves as outsiders opposing the political elite, RRPs tap into these grievances and the belief of being politically underrepresented, offering an alternative voice that appears more attuned to the specific issues faced by these places. Based on these assumptions, I formulate the following hypothesis:

H1: *Citizens who live in places that are left behind are more likely to support a radical-right party.*

4.2.2 People Who Feel Left Behind

Even though the argument is intuitively convincing, the empirical findings from recent electoral geography studies are not as conclusive as they might appear at first glance. First, although economic hardship is one of the most important indicators for measuring economic threat, some studies have failed to find directly significant effects of this variable on party preferences (e.g., Sipma and Lubbers (2020) on unemployment). Second, the few studies that have used place-based indicators have often found only small or negligible contextual-level effects compared with individual-level drivers (Arzheimer and Bernemann 2024; Gallego 2016; Koeppen et al. 2021), indicating a yet unresolved entanglement of context, sociodemographics, and attitudes, posing the questions: Are preferences for RRPs driven by the people who feel left behind, the left-behind place, or both?

The mixed empirical evidence also points to a conceptual inconclusiveness: The ‘feeling of being left behind’ that frequently resurfaces in scholarly and public debate still lacks a clear theoretical framework. Betz and Oswald (2022) describe the feeling of being left behind as “the perception of being treated unfairly, of being ignored and dismissed [...] and a panoply of fears of irretrievable loss, both economic and cultural, and anxieties and pessimism with respect to the future” (pp. 134–136). The term ‘feeling of being left behind’ has been used to describe a feeling or emotion that is experienced by frustrated and deprived citizens who feel threatened by economic and social change and have the impression that society does not care about their struggles. Thus, the construct draws heavily on several grievance-based approaches that have dominated the analysis of RRP support in the past, highlighting (a) the relative lack of resources and needs of one’s in-group (relative deprivation theory) and (b) the perception that these needs are not recognized and respected by society (the concepts of subjective social status and perceived social marginalization).

The concept of relative deprivation – that is, ‘the judgment that one is worse off compared to some standard accompanied by feelings of anger and resentment’ (H. J. Smith et al. 2012: 1) – encompasses egoistic (individual) and fraternal (group-based) relative deprivation (Runciman 1966). Regarding the latter, individuals compare their in-group’s

access to resources with what they used to possess, what think they ought to have, or what the out-group possesses. A sense of relative deprivation is known to induce grievances against social groups that are perceived to threaten the social status quo or hinder other groups from restoring their prosperity. Similarly, the political system and political elites can be blamed because they are suspected of creating and prolonging unfair conditions.

Still, social recognition of perceived economic or social threat is as important, if not more important, than relative material deprivation. This aspect is at the core of the concept of ‘subjective social status’, which ‘embodies a person’s sense of where she stands in relation to the full social assembly and [...] whether or not the person feels herself to be a fully recognized member of society’ (Gidron and Hall 2017: 61). Low subjective social status is rooted in an interaction between perceived economic disadvantage and exclusion from cultural change within society. Groups that perceive the increasing expansion of progressive values as a threat are anxious about their identity and their place in society (Inglehart and Norris 2016). The construct of perceived societal marginalization (PSM) places similar emphasis on individuals’ perceptions of insignificance and lack of recognition as part of a social group: ‘the subjective and cognitive perception that one’s own social group is unappreciated and treated as unimportant by society’ (Bollwerk, Schlipphak, and Back 2022: 4). Steiner, Schimpf, and Wuttke (2023) emphasized that the PSM may function as an umbrella, uniting citizens who feel left behind for very different reasons, for example their low incomes, their low-skilled jobs, their conservative values, or rural residence. Their study shows that different aspects of the lack of recognition stem from different social characteristics, but that lack of recognition in only one sub-dimension than can trigger populist attitudes among citizens. Thus, the shared experience of a lack of social recognition acts as a catalyst for populist sentiments across different segments of society.

Based on these approaches, I define the feeling of being left behind as a subjective feeling that the needs of one’s in-group are not recognized and respected by society. It encompasses a general sense of insecurity, anxiety, and marginalization on the part of members of social groups that is driven by the belief that (political) elites do not recognize and respect their values and interests during periods of rapid social, economic and cultural transformation. This feeling may arise from a variety of factors, such as income, jobs, values or living conditions, but the common experience of feeling left behind unites these diverse groups.

What is the appeal of RRP to citizens who feel that their in-group’s disadvantaged situation is not recognised by society? Moreover, feeling left behind is expressed ‘in terms of abandonment or neglect, fuelling discontent and dissatisfaction (...)’ (Pike et al. 2023: 1172). Early studies on political dissatisfaction and its mobilising impacts indicate that when

this discontent is paired with political efficacy, it can result in increased political activism or support for populist parties (Craig 1980). Moreover, the RRP's messaging resonates with those who feel excluded, positioning RRP as advocates for the self-perceived underprivileged and promising a more inclusive society while excluding those groups that are not considered ordinary people. Hence, feeling excluded from society should be positively associated with RRP support (Sachweh 2020; Versteegen 2023). I hypothesize:

H2: *Citizens who feel left behind are more likely to support a radical-right party.*

4.2.3 Being and Feeling Left Behind: A Moderation Approach

The interplay of places being left behind, individuals feeling left behind, and preferences for RRP has not yet been the focus of previous studies. Some studies have argued that living in a left-behind place has a one-directional effect on feeling left behind, which translates into RRP support (e.g., Salomo (2019)). Others have examined whether contextual factors (i.e., regional unemployment rate) or individual-level characteristics (e.g., being unemployed) are more significant drivers of party preferences (Koeppen et al. 2021). However, place contributes to varying degrees to different facets of feeling left behind, and the feeling of being left behind has multiple roots (Steiner, Schimpf, and Wuttke 2023). Therefore, instead of a one-directional effect whereby living in a left-behind place automatically leads to feeling left behind, I argue here in favour of a reinforcing relationship.

Feelings can significantly shape individuals' perceptions of their living environment and consequently impact the way their living conditions influence their political attitudes and preferences. A broad research strand has demonstrated that emotions play a pivotal role in the way individuals process political cues and the resulting behavioural consequences (Brader, Valentino, and Suhay 2008; Danckert, Dinesen, and Sønderskov 2017). For example, anxious individuals may experience heightened sensitivity to certain information cues, leading to selective attention and altered perceptions of political cues (Brader, Valentino, and Suhay 2008).

In the context of these studies, political cues are commonly found in media environments and political rhetoric. However, a foundational assumption in political geography is that the living place itself serves as a political cue. Political information and attitudes are embedded in individuals' living places, as individuals inevitably engage with their geographic environment (Baybeck and McClurg 2005; Cho and Rudolph 2008). Through interpersonal encounters, experiences and observations, people gather valuable information about their neighbourhoods, including factors such as economic status and infrastructure accessibility (Bailey et al. 2013; Galster 2012). When citizens feel that their in-group's needs and

situation are disregarded by society, I assume that they are more likely to integrate the grievances that stem from unjust living conditions into the political decision-making process.

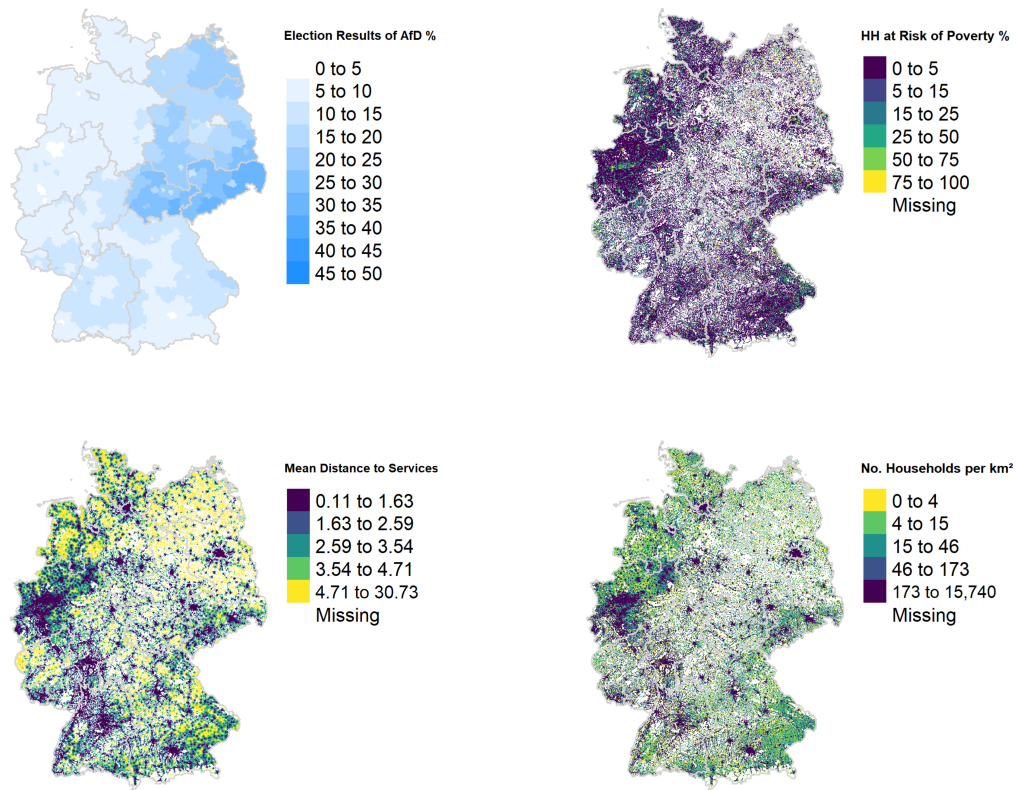
Thus, I contend that place and feelings reciprocally reinforce RRP preferences:

H3: Citizens who live in left-behind places are more likely to support a radical-right party if they feel left behind.

4.3 The German Case

In Germany, the rise of the RRP Alternative for Germany (AfD) mirrors a broader trend in western Europe towards an upsurge of parties at the right end of the ideological spectrum (Arzheimer and Berning 2019; Klein and Kühling 2022). In the 2021 election, attention focused on AfD's performance after its first legislative period in opposition at the federal level and as the parliamentary voice of the Corona protests (Rensmann and Zee 2022). A spatial examination of the 2021 federal election (Figure 4.1) shows that the AfD achieved its best results in eastern German districts that were at least partially rural Stroppe and Jungmann (2022). Nevertheless, research on the relationship between supporting AfD and spatial explanatory factors in previous elections has yielded mixed results. Rural areas with demographic decline and low incomes tend to have higher AfD vote shares, though rural-urban differences alone do not fully explain voting patterns (Franz, Fratzscher, and Kritikos 2018; Schröder 2018). In eastern Germany, more rural municipalities show higher AfD support, while in the west, rural and non-rural areas exhibit similar patterns (Deppisch, Osigus, and Klärner 2022). Lacking access to services correlates with AfD support but not necessarily rurality (Diermeier 2020). Economic hardship plays a role, but its impact varies between eastern and western districts (Franz, Fratzscher, and Kritikos 2018; Kurtenbach 2019; Nickel and Groß 2023).

The mixed results are less surprising given Germany's rural-urban dynamics. Economic prosperity, such as income levels and unemployment, remains divided between east and west, with rural counties in eastern Germany and metropolitan areas in western Germany having the highest unemployment rates. In contrast, many rural counties in southern Germany are comparatively prosperous. In addition, accessibility to services such as public transportation, primary care physicians, pharmacies, and supermarkets is a challenge in particularly remote areas but is not a problem for all rural areas (Deppisch, Osigus, and Klärner 2022; Küpper 2016). Besides the historically rooted still existing regional disparities, social disintegration and lack of recognition are identified as critical factors in the rise of the radical right, particularly in eastern Germany (Arzheimer 2022; Hildebrandt and Trüdinger 2021; Manow and Schwander 2022; Weisskircher 2020). Consequently, one needs to take into account the prevalence of such an overlapping spatial divide when analysing the association(s) between



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Figure 4.1. AfD Vote Share and Neighbourhood Attributes in the 2021 German Federal Election

feeling left behind, being left behind, and RRP support.

4.4 Methodological Approach

4.4.1 Data

For this study, I use survey data from the 2021 GLES Cross-Section, Pre- and Post-Election (GLES 2023), a probabilistic survey conducted between 26 August and 25 September 2021 (pre-election) and 27 September and 11 November 2021 (post-election). To link survey data to respondents' neighbourhood information, respondents' addresses were geocoded, locating respondents in 1km*1km grid cells to link. This approach offers advantages over using administrative units (e.g., electoral districts or municipalities), as it captures more

significant spatial differences in Germany, especially within cities.²⁰ For example, population sizes of municipalities range from 9 inhabitants in Dierfeld (6 inhabitants/km²) in the state of Rhineland-Palatinate to 3.6 million inhabitants in the city state of Berlin (4,127 inhabitants/km²).

The contextual data for the present study are drawn from three sources: first, from Micromarketing-Systeme und Consult GmbH (microm), which typically provides indicators for target group marketing and location analyses (microm 2022). Such fine-scale spatial data are valuable for scientific analysis and are not widely available from public institutions to a comparable extent (Breidenbach and Eilers 2018). To construct measures for infrastructure and service accessibility, I use point coordinates of train stations from the Deutsche Bahn Open Data Portal (Deutsche Bahn 2022) and locations of other public services from the ‘Points of Interest’ data set curated by the Federal Agency for Cartography and Geodesy (BKG) (Bundesamt für Kartographie und Geodäsie 2022).

4.4.2 Operationalisation

RRP Support: I use party ratings to measure support for the AfD to avoid social desirability effects that can skew self-reported voting decisions and turnout, and to minimize item nonresponse, since a significant number of respondents choose not to disclose their voting intention or choice.

Left-Behind Places: The contextual indicators for this variable cover economic hardship, service access, and rurality. To measure economic hardship in a neighbourhood, I calculate the share of households with a monthly net income of less than 1,500 euros for each grid cell based on microm data.²¹ The income threshold roughly corresponds to the definition of ‘at risk of poverty’ as an income that is less than 60% of the median income of the total population. Based on the available income categories in the microm data and the monthly German median net income of about 2000 euros in 2021, the measurement captures neighbourhoods with an average income below that.

For service access, the Euclidean (straight-line) distance in kilometres between a respondent and the nearest facility serves as a proxy for the accessibility of services and

²⁰An extension to the publicly available scientific use file is published containing information on the spatial units (GLES 2022). The access to the sensitive data is subject to access restriction but data can be linked and analysed onsite.

²¹Grid cells coded as industrial buildings only or without microgeographic information were coded as missing.

infrastructure.²² To obtain a single measure, I calculate the distance in kilometres to the nearest general practitioner, pharmacy, primary school, train station, post office and supermarket, and take the mean value.

In addition, the number of households per grid cell acts as a continuous measure of rurality and is also provided by microm.

Feeling Left Behind: The measurement of feeling left behind is grounded in the definition applied in this paper – namely, the subjective perception that the needs of one’s in-group are not recognized and respected by society. The 3-item scale used is adapted from the Perceived Societal Marginalization Scale (PSM; Bollwerk, Schlipphak, and Back (2022)) and covers three dimensions: economic situation, work esteem, and service access. All items refer to a not further defined reference group (‘people like me’) that might differ in the roots of feelings between the topics referred to economy, work, infrastructure. As such, the three dimensions should be related to place to a greater (in the case of infrastructure provision) or lesser degree (in the case of work esteem). To analyse the overall concept of feeling left behind, some of the analyses rely on a composite measure obtained by taking the row means of all three items.

Controls: The presence of local immigration has consistently been considered a crucial factor in analysing RRP voting (Arzheimer 2009; Lubbers, Gijsberts, and Scheepers 2002; Mudde 2007) and covaries with population density. To address potential biases, the share of foreigners is included as a control variable in this study, and is based on microm data. Additionally, all models include core sociodemographics drawn from the survey data: age (squared), gender, education level (ISCED) and occupation status (Oesch 2014). Each measure included in the analyses was rescaled to range from 0 to 1. Summary statistics can be found in the supplementary material (Table C1 and Figure C1). The VIF statistics are not exceeding a value of 3.07, indicating that the variables can be included in a multivariate setting without multicollinearity issues (Table C2).

4.5 Empirical Analyses

For the analyses, I run ordinary least squares (OLS) models with clustered robust standard errors at the 1km x 1km grid cells level to account for the spatial clusters and heteroscedacity. All models include *Bundesland* (i.e., federal state) fixed effects, the individual-level socio-demographic controls, and the expected share of foreigners per grid cell. As I pool data

²²In certain cases, the direct distance between two points may not accurately reflect the actual travel time required to reach a facility due to physical barriers and road networks. However, previous research has found a strong correlation between the two measurements, suggesting that more accurate travel time calculations do not significantly affect the results (Boscoe, Henry, and Zdeb 2012).

collected in the weeks before and after the 2021 federal election, I also control for effects related to election outcomes with a dummy variable that takes the value of 1 for all post-election interviews. Except in split-sample analyses, design weights are included in all models to compensate for oversampling in eastern Germany. After row-wise deletion of missing data, the models are based on the responses of 6501 individuals clustered into 3184 grid cells.

4.5.1 Investigating Place and Perception

Model 1 in Table 4.1 examines the direct effects of economic hardship, service access, and rurality – living in a left-behind place – on RRP support (Table C3 for full reporting in supplementary material). The results indicate that higher poverty rates, greater distances to services, and lower population density are significantly associated with increased RRP support, confirming H1.

Table 4.1

Regression Analyses: AfD Rating

	Model 1	Model 2	Model 3	Model 4
Places Being Left Behind				
% HHs at risk of poverty	0.04 (0.02)*		0.02 (0.02)	0.02 (0.02)
Mean distance to services	0.14 (0.04)**		0.12 (0.04)**	0.12 (0.04)**
Population density	−0.09 (0.03)**		−0.08 (0.03)*	−0.08 (0.03)*
People Feeling Left Behind				
Economic situation		0.08 (0.02)***	0.08 (0.02)***	
Work esteem		0.03 (0.01)*	0.03 (0.01)*	
Service access		0.05 (0.01)***	0.04 (0.01)**	
Mean index				0.15 (0.01)***
Bundesland FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Adj. R ²	0.07	0.08	0.09	0.09
Num. obs.	6501	6501	6501	6501
N Clusters	3184	3184	3184	3184

Own calculations based on data from GLES Cross-Section (2021), microm (2021), Deutsche Bahn (2020) and BKG (2022). Fitted models: OLS with clustered robust standard errors on the grid level. Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses.

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

Moving to Model 2, which focuses on the subjective indicators for ‘people feeling left behind,’ all measures point in the expected direction: Individuals who feel their economic situation, work, and service access are neglected by society are more likely to support the AfD, supporting H2. The perception of economic neglect is the strongest predictor. Including feelings of being left behind renders age and low education statistically insignificant,

suggesting these factors are mediated by feelings of neglect. In Models 3 and 4, I consider both objective, place-based and subjective indicators together. The results align with previous findings, except for place-based effects. When accounting for feelings of being left behind, only the mean distance to services and population density remains significant. Living in a high-poverty area is no longer significantly associated with RRP support. Model 4 shows consistent effect sizes when including the mean index of feeling left behind.

For the models in Table 4.1, I conduct additional robustness checks. Fixed effect logit models are used, and odds ratios are reported for intended and actual AfD voting in the 2021 election (Table C4 in the supplementary material). The effects remain consistent, though at the grid level, population density is the only significant robust factor. At the individual level, perceptions of economic neglect and poor service access remain significant.

To address potential biases due to neighbourhood size, I replicate the analyses using buffer zones of varying sizes (1 to 10 km). Results remain robust for buffer zones up to 5 km but change at the 10 km level, where the economic indicator (share of households at risk of poverty) becomes significant, although with a negligible effect size (Table C5). Population density and service access lose significance, suggesting their impact is more localized, while the broader regional economic situation becomes visible at larger scales. Additionally, I present results from two models that include either municipality or district fixed effects to control for unobserved effects at higher hierarchical levels (Table C6). It is less surprising that significance levels are not reached in this model specification, as few grid cells are clustered within municipalities and districts, reducing the amount of variance. However, access to services remains significant when district fixed effects are introduced into the model, suggesting that even with few observations per cluster, heterogeneity within districts contributes to explaining RRP support. To account for the hierarchical data structure – respondents nested in grid cells and grid cells in municipalities – I also use multi-level models. However, this approach leads to convergence errors due to areas with few respondents and grid cells, and was therefore not reported in the main part. Nevertheless, the results are consistent with the original model (Table C7). Although the multilevel model has advantages, it doesn't take spatial dependencies into account. Nevertheless, spatial autocorrelation analysis reveals significant Moran's I and Geary's C statistics, but the actual autocorrelation is negligible (Table C8). Lastly, I include additional individual-level controls – left-right self-placement, assessment of personal economic prospects, anti-EU sentiments, and anti-immigrant sentiments – to safeguard against omitted variable bias and test the robustness of the feeling left behind measure (Table C9). Results show that service access and the mean score of feeling left behind significantly explain AfD support, while the subjective evaluation of one's economic prospects correlates with the economic dimension of feeling left behind and renders it insignificant. At the grid level, the relationship between

AfD support and service access remains significant.

Overall, the first set of analyses shows that both living in a left-behind place and feeling left behind are positively associated with positive RRP ratings, thus supporting H1 and H2. However, I also find some limitations to this support. Regarding place-based effects (H1), the association between neighbourhood income levels and RRP support appears to be the least robust compared with service access and population density on this small neighbourhood scale. Additionally, the categorized measurement of foreigner households did not show a statistically significant association with RRP ratings when the other contextual measures were included. This lack of significance might be due to migrants settling in densely populated areas, making the effect indistinguishable from the rural–urban divide. Regarding the feeling of being left behind (H2), feeling that the economic situation of one’s in-group does not receive sufficient attention from society appears to have the strongest and most robust association with RRP support, followed by service access.

4.5.2 Left-Behind People in Left-Behind Places

Central to this article, I hypothesized that the effects of living in a left behind place and feeling left behind would mutually reinforce each other (H3). Specifically, I expected that living in a neighbourhood with a higher proportion of households at risk of poverty, lack of services, and lower population density would have a stronger association with RRP support if the individuals felt that society did not recognize and respect the needs of their in-group.

Figure 4.2 displays the interaction effects between the respective dimensions of places being left behind and the row mean index of feeling left behind, while controlling for all other contextual measures (see Table C10). To interpret these interaction effects, the estimated marginal means are plotted for three levels of feeling left behind: the average of the row mean index, as well as one standard deviation below (low levels of feeling left behind) and above the mean (high levels of feeling left behind).

The panel on the left of Figure 4.2 displays the interaction between the share of households at risk of poverty and the feeling of being left behind. The graph shows no evidence of an interaction effect, and it replicates the earlier finding that local income levels are barely related to AfD ratings. The picture differs for the provision of public services and infrastructure. Regardless of feeling left behind, RRP support increases with increasing distance to services, but the differences in the strength of the association are determined in part by feeling left behind, as indicated by the slightly steeper slope of the predicted marginal means. However, the confidence intervals are rather large, and the interaction effect

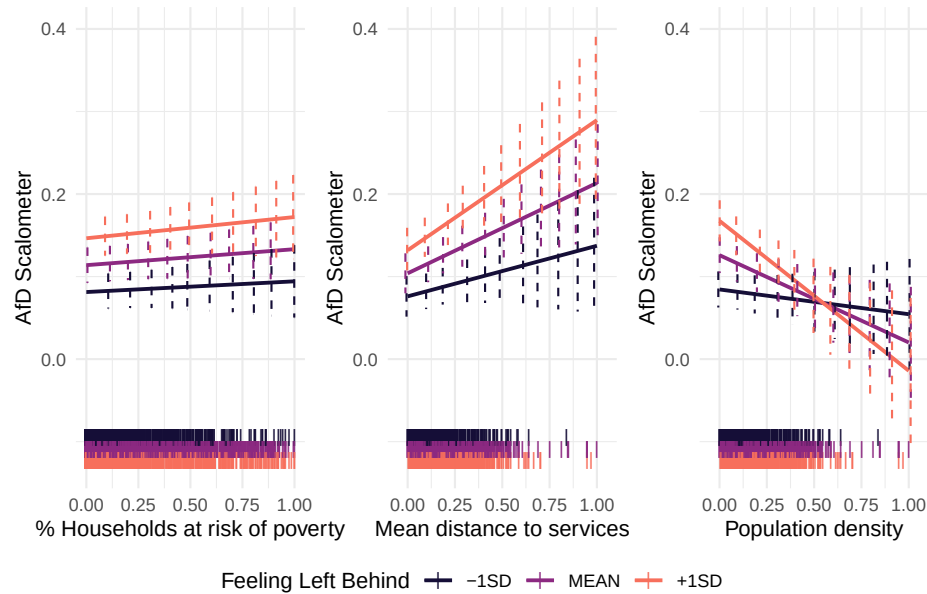


Figure 4.2. Estimated Marginal Means of AfD Rating by Place-Based Factors and Feeling Left Behind

is not statistically significant. A similar, but more pronounced and significant, interaction occurs for rurality and feeling left behind. People in more urban neighbourhoods rate the AfD less positively, and this association appears to be stronger among those who feel left behind. For people who do not feel left behind, the rurality of their place of residence seems to make almost no difference to their RRP ratings.

When distinguishing the various dimensions of feeling left behind rather than relying on a mean index score, the results remain unchanged (see Figures C2, C3 and C4 in the supplementary material). The reinforcing effects appear to be driven not by one specific dimension but rather by a general perception of a non-caring society. The finding that there are no pronounced differences is particularly interesting in light of the fact that on the conceptual level the dimensions of feeling left behind should be more (in the case of service access) or less (in the case of work esteem) related to place. Overall, the hypothesized interactions between living in a left-behind place and feeling left behind (H3) do not appear for the economic dimension but are indicated for service access and are observed for rurality.

4.6 Discussion and Conclusion

This study asked whether living in a left-behind place and feeling left behind drives support for RRP and whether place-based factors and feelings mutually reinforce each other. The results of this study contribute to the existing literature in several ways. First, they show

that a lack of service access and rurality is generally positively associated with RRP ratings, implying that place plays a role in preferences for the AfD in Germany on a fine-grained spatial scale. However, economic hardship does not have the same association on this scale. The robustness tests point to an explanation of this finding that contrasts the previous studies highlighting economic effects (Broz, Frieden, and Weymouth 2021; Colantone and Stanig 2018; Dippel, Gold, and Heblich 2015; Greve, Fritsch, and Wyrwich 2023): the definition of the neighbourhood and level of aggregation has its own impact on the findings. Results seem to depend on the geographical delineation of the neighbourhood and on the level of spatial aggregation (for a methodological discussion, see Kwan, 2012). Access to services and population density may be more directly experienced at the place of residence and more relevant to the daily lives of all individuals than the level of poverty, which becomes apparent when analysing the usually unobserved heterogeneity by relying on smaller regional units. By contrast, the share of households at risk of poverty represents a more indirect measurement of the economic hardship of a region and is more strongly correlated with socioeconomic indicators than other place-based factors. To capture the heterogeneity of associations, future studies of left-behind places should not only consider further characteristics of place (McKay, Jennings, and Stoker 2021) but also use different levels of aggregation to test the robustness of results.

Second, I relied on a novel conceptualisation and operationalisation of feeling left behind and showed its added value in the theoretical discussion and empirical study of left-behind people and places. The conceptualisation of feeling left behind enhances previous research by drawing on several grievance-based concepts (Bollwerk, Schlipphak, and Back 2022; Gidron and Hall 2017; Runciman 1966) to define the feeling as a subjective sense that the needs of one's in-group are not recognised and respected by society. Moreover, it acknowledges the construct's umbrella function, uniting diverse groups that experience this feeling for different reasons, such as income, job, values, and living situations. Based on this definition, the empirical results indicate that people who feel left behind across all dimensions of the construct rate the AfD more positively, even when controlling for a set of relevant political attitudes. However, to deepen the understanding of the relationship between living in an (objectively) left-behind place and (subjectively) feeling left behind, and of the mechanism underlying this relationship, future research should explicitly examine the entities that experience this feeling – from individuals, through social groups to neighbourhoods – matching subjective perceptions with objective measurements. The results of the present study suggest that such feelings referencing one entity (social group) are interdependent with the objective situation referencing another (neighbourhood). However, the available data did not allow for further analyses of this phenomenon.

Third, a key contribution of this article is that it analysed whether living in a left-

behind place and feeling left behind mutually reinforce each other in their effect on RRP support, an aspect which has received limited attention in previous research. I argued that citizens' feelings could affect the selection and processing of information, making place-based information cues crucial in their political attitude formation. These attitudes may, in turn, reinforce feelings of being left behind. I found that the impact of living in a sparsely populated area is especially strongly interdependent with the feeling of being left behind, thereby increasing RRP support. For citizens who do not feel left behind, the level of rurality of their living place makes no difference to whether they support an RRP or not. Recent studies have discussed several approaches to investigate further when and where place affects attitude formation and behaviour and have looked into place-based identity (de Lange, van der Brug, and Harteveld 2023), place-based grievances (McKay, Jennings, and Stoker 2021) and individual socioeconomic disadvantage (Lenzi and Perucca 2021). The present study contributes to this research by showing that feelings of being left behind – even if they are not directly associated with place – interact with place-based conditions. Furthermore, the fact that the dimension of the feeling of being left behind made no difference to its reinforcing properties underlines once again that feeling left behind functions as an umbrella concept and reflects a general sense of unfairness, lack of recognition, and anxiety.

This study also contributes to our knowledge about the spatial divide in party support in a country affected by historical boundaries, such as the east-west divide in Germany. The results from the additional analyses indicate that there are only few differences in the direct and interaction effects of living in a left-behind place and feeling left behind (see supplementary material Table C11 and Figure C5). Service access and feeling left behind show a stronger reinforcement tendency in western Germany, whereas the interaction between rurality and feeling left behind is particularly pronounced in eastern Germany. This finding implies that the measurement of feeling left behind neither probes post-reunification resentments (Manow and Schwander 2022), a shared and historically grown form of embitterment (Hannemann, Henn, and Schäfer 2023), nor can be directly derived from objectively worse living conditions. This suggests that the findings are likely transferable to other European contexts.

Despite these contributions, my study has certain limitations that point to avenues for future research. One limitation stems from the data allowing analyses on a small spatial scale but lacking temporal variation at both the contextual and individual levels. Other studies have shown that changes in the place-based conditions, rather than the status quo, are crucial (Broz, Frieden, and Weymouth 2021; Colantone and Stanig 2018; Dippel, Gold, and Heblich 2015; Greve, Fritsch, and Wyrwich 2023). I would, therefore, expect to find stronger – and more robust – relationships in neighbourhoods with declining economic prospects and services. At the individual level, the lack of a time perspective makes it difficult to

resolve endogeneity issues arising from respondents' self-selection into neighbourhoods (Cho, Gimpel, and Hui 2013; Gimpel and Hui 2015; Maxwell 2019). Although the present study includes several individual and contextual variables to mitigate omitted variable bias, existing neighbourhood composition may still (partially) drive the observed associations. Further, the existing literature has identified various explanations for spatial divisions, including the role of place-based identities (Fitzgerald 2018; Munis 2021), cultural divisions (Bolet 2021; Carreras 2019; Maxwell 2020) and historical legacies (Haffert 2021; Pepinsky, Goodman, and Ziller 2020; Ziblatt, Hilbig, and Bischof 2024) as alternative mechanisms. The fact that associations in the present study were robust when controlling for district fixed effects but not when controlling for municipality fixed effects may indicate that cultural and historical place effects are at play alongside the context. However, the higher level fixed effects also account for variation in the smaller scale direct neighbourhood effects, and it was not possible to disentangle these complex relationships within the scope of this study. As georeferenced data become more widely available, future research may be able to overcome these limitations and provide a more robust understanding of the mechanisms at work.

In this article, I focused on the resentment in left-behind places over economic and infrastructural displacement and (perceived) marginalisation, assuming that citizens would be more susceptible to the promises of RRPs. But do RRPs actively mobilise people around these grievances to maximise support and votes? Unravelling the mechanisms behind potential instrumentalisation by RRPs, mainly by measuring RRP rhetoric on feeling left behind and place-based resentment, could provide critical insights into this mechanism. Investigating whether these grievances can be instrumentalised helps also to learn how they can be mitigated.

In summary, this study highlights that residence in a place that is being left behind and feeling left behind mutually reinforce support for the AfD in Germany. It shows that even when individuals live in areas that have characteristics typically associated with support for RRPs, such as economic hardship or limited access to services, the strength of their support for such parties is influenced by the sense that their in-group group is being left behind. In other words, people who do not feel neglected or unrecognised despite living in a deprived area are less likely to prefer RRPs than their direct neighbours who perceive a lack of recognition and respect for their in-group. The findings suggest that beyond improving living conditions, addressing citizens' sense of being left behind is key to understanding and bridging the spatial divide in RRP support.

Supplementary Material

I Descriptives

Table C1

Survey Data Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Max
AfD Rating	8,300	0.15	0.27	0.00	1.00
Feel: Economic Situation	8,435	0.48	0.28	0.00	1.00
Feel: Work Esteem	8,398	0.49	0.30	0.00	1.00
Feel: Service Access	8,401	0.30	0.28	0.00	1.00
Feel: Mean Index	8,461	0.42	0.23	0.00	1.00
Female	8,454	0.48	0.50	0	1
Age	8,369	0.44	0.22	0.00	1.00
Age ²	8,369	0.24	0.19	0.00	1.00
Education: Low	8,268	0.17	0.38	0	1
Education: Middle	8,268	0.31	0.46	0	1
Education: High	8,268	0.51	0.50	0	1
Oesch: Unemployed	7,686	0.02	0.13	0	1
Oesch: Temporarily Inactive	7,686	0.07	0.25	0	1
Oesch: Permanently Inactive	7,686	0.33	0.47	0	1
Oesch: Lower-grade service class	7,686	0.20	0.40	0	1
Oesch: Intermediate service class	7,686	0.03	0.18	0	1
Oesch: Small business owners	7,686	0.14	0.34	0	1
Oesch: Skilled workers	7,686	0.03	0.18	0	1
Oesch: Unskilled workers	7,861	0.44	0.20	0.00	1.00
Left-Right Self-Placement	8,489	0.51	0.19	0.00	1.00
Own Prospective Economic Situaton	8,440	0.29	0.27	0.00	1.00
Anti-European Sentiment	8,433	0.54	0.28	0.00	1.00
Anti-Immigration Sentiment	7,241	0.07	0.25	0	1

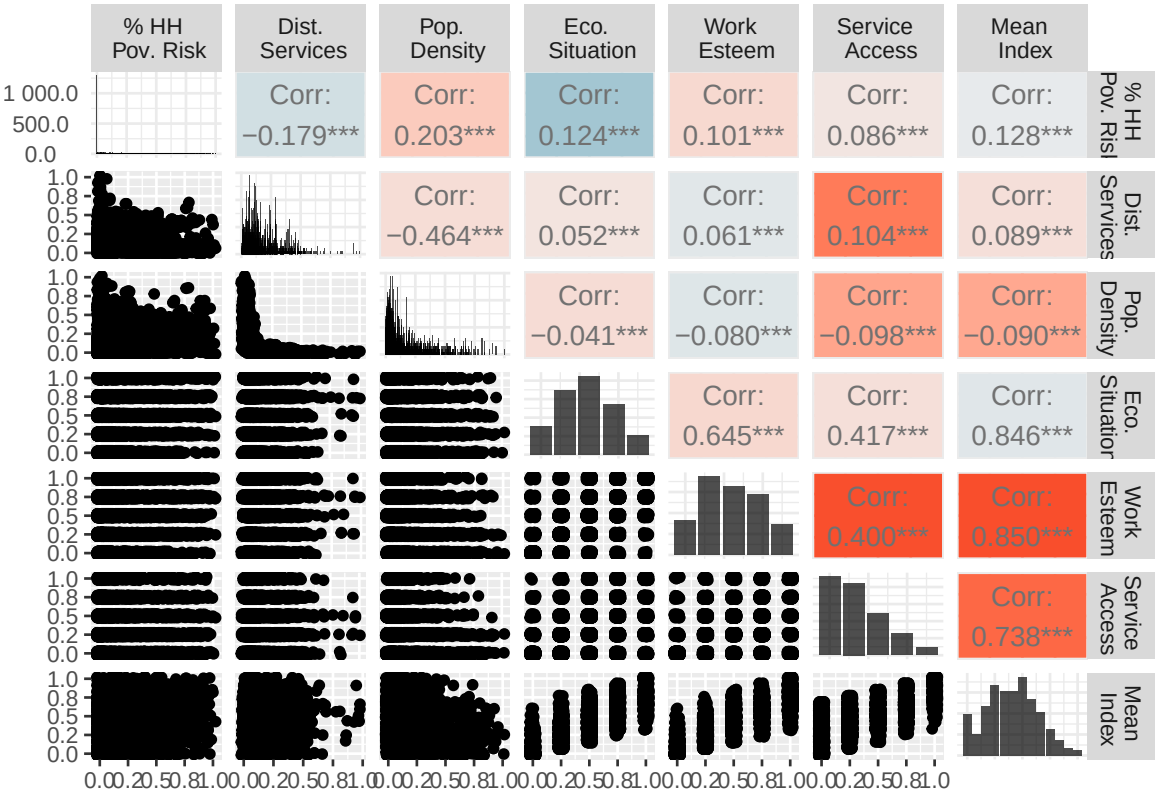


Figure C1. Distribution and Correlation of Main Variables

Table C2

Variance Inflation Factor (VIF) Results (Table 1, Model 3)

	GVIF	Df	$\widehat{GVIF}(1/(2 \cdot Df))$
% HH at Poverty Risk	1.258907	1	1.122010
Mean Dist. Services	1.600191	1	1.264986
Population Density	1.960787	1	1.400281
Economic Situation	1.849629	1	1.360011
Work Esteem	1.862834	1	1.364857
Service Access	1.331823	1	1.154046
Female	1.033320	1	1.016524
Age ²	2.476130	1	1.573572
Education: Low	1.427490	1	1.194776
Education: High	1.559102	1	1.248640
Oesch Classes	3.071850	7	1.083463
Share of Foreigners (Grid)	2.764113	1	1.662562
Survey Dummy	1.007413	1	1.003700
Bundesland Dummies	2.519763	15	1.031285

II Complete Tables and Robustness Tests

Table C3

Regression Analyses: AfD Rating (Table 1, full results)

	Model 1	Model 2	Model 3	Model 4
Places Being Left Behind				
% HH at Poverty Risk	.04 (.02)*		.02 (.02)	.02 (.02)
Mean Dist. Services	.14 (.04)**		.12 (.04)**	.12 (.04)**
Population Density	-.09 (.03)**		-.08 (.03)*	-.08 (.03)*
People Feeling Left Behind				
Economic Situation		.08 (.02)***	.08 (.02)***	
Work Esteem		.03 (.01)*	.03 (.01)*	
Service Access		.05 (.01)***	.04 (.01)**	
Mean Index				.15 (.01)***
Controls				
Female	-.04 (.01)***	-.04 (.01)***	-.04 (.01)***	-.04 (.01)***
Age ²	-.12 (.03)***	-.10 (.03)***	-.10 (.03)***	-.10 (.03)***
Education: Low	.02 (.01)*	.02 (.01)	.02 (.01)	.02 (.01)
Education: High	-.04 (.01)***	-.03 (.01)***	-.03 (.01)***	-.03 (.01)***
Oesch: Unemployed	.04 (.03)	.02 (.03)	.02 (.03)	.02 (.03)
Oesch: Temporarily Inactive	-.06 (.01)***	-.06 (.01)***	-.06 (.01)***	-.06 (.01)***
Oesch: Permanently Inactive	.03 (.01)**	.02 (.01)	.02 (.01)	.02 (.01)
Oesch: Lower-grade service class	.01 (.01)	-.00 (.01)	-.01 (.01)	-.01 (.01)
Oesch: Small business owners	.03 (.02)	.02 (.02)	.02 (.02)	.02 (.02)
Oesch: Skilled workers	.05 (.01)***	.03 (.01)**	.03 (.01)**	.03 (.01)**
Oesch: Unskilled workers	.12 (.03)***	.11 (.03)***	.10 (.03)***	.10 (.03)***
Share of Foreigners (Grid)	.01 (.02)	-.03 (.01)*	.01 (.02)	.01 (.02)
Post	-.00 (.01)	-.01 (.01)	-.00 (.01)	-.00 (.01)
Bundesland FE	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes
Adj. R ²	.07	.08	.09	.09
Num. obs.	6501	6501	6501	6501
N Clusters	3184	3184	3184	3184

Data: GLES 2022, microm, Deutsche Bahn Open Data and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level. Design weights applied. Standard errors reported in parentheses.

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

Table C4

Logit Models: AfD Vote (Odds Ratios)

	Model 1	Model 2	Model 3	Model 4
Places Being Left Behind				
% HH at Poverty Risk	1.53 (.29)		1.20 (.30)	1.21 (.30)
Mean Dist. Services	1.27 (.58)		1.03 (.58)	1.05 (.59)
Population Density	.08 (1.14)*		.10 (1.13)*	.10 (1.13)*
Feeling Left Behind				
Economic Situation		3.92 (.31)***	3.87 (.31)***	
Work Esteem		1.17 (.29)	1.17 (.29)	
Service Access		1.74 (.23)*	1.68 (.23)*	
Mean Index				7.26 (.26)***
Controls				
Female	.53 (.12)***	.52 (.13)***	.52 (.13)***	.51 (.13)***
Age ²	.25 (.52)**	.41 (.51)	.39 (.51)	.39 (.51)
Education: Low	1.40 (.17)*	1.25 (.17)	1.24 (.17)	1.23 (.17)
Education: High	.55 (.15)***	.61 (.15)***	.62 (.15)**	.61 (.15)***
Oesch: Unemployed	1.46 (.45)	1.07 (.45)	1.05 (.45)	1.09 (.46)
Oesch: Temporarily Inactive	.40 (.48)	.35 (.48)*	.35 (.48)*	.37 (.48)*
Oesch: Permanently Inactive	1.47 (.25)	1.19 (.25)	1.16 (.25)	1.18 (.25)
Oesch: Lower-grade service class	1.19 (.22)	1.06 (.22)	1.02 (.22)	1.02 (.22)
Oesch: Small business owners	1.87 (.33)	1.56 (.33)	1.51 (.33)	1.56 (.32)
Oesch: Skilled workers	1.71 (.23)*	1.37 (.23)	1.33 (.23)	1.33 (.23)
Oesch: Unskilled workers	4.22 (.29)***	3.21 (.30)***	3.12 (.30)***	3.17 (.30)***
Share of Foreigners (Grid)	.97 (.38)	.55 (.28)*	.88 (.38)	.91 (.38)
Post	.92 (.12)	.94 (.12)	.94 (.12)	.94 (.12)
Bundesland FE	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes
Num. obs.	5879	5879	5879	5879
Num. groups: as.character(bula)	16	16	16	16
Log Likelihood	-1232.26	-1203.02	-1198.38	-1202.81
Pseudo R ²	-.00	.02	.02	.02

Data: GLES 2022, microm, Deutsche Bahn Open Data and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level. Controls: post-election survey, gender, age squared, education in 3 categories (reference: middle), Oesch classes in 8 categories (reference: Higher-grade service class). Design weights applied. Odds Ratios reported. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table C5

Regression Analyses: Buffer Zones

	Model 1	Model 2	Model 3	Model 4
Places Being Left Behind (Buffersize)				
% HH at Poverty Risk (1km)	.00 (.00)			
Mean Dist. Services (1km)	.36 (.12)**			
Population Density (1km)	−.00 (.00)**			
% HH at Poverty Risk (2.5km)		.00 (.00)		
Mean Dist. Services (2.5km)		.38 (.12)**		
Population Density (2.5km)		−.00 (.00)**		
% HH at Poverty Risk (5km)			.00 (.00)	
Mean Dist. Services (5km)			.35 (.14)**	
Population Density (5km)			−.00 (.00)*	
% HH at Poverty Risk (10km)				.00 (.00)*
Mean Dist. Services (10km)				.19 (.15)
Population Density (10km)				−.00 (.00)
People Feeling Left Behind				
Economic Situation	.07 (.01)***	.07 (.01)***	.07 (.01)***	.07 (.02)***
Work Esteem	.03 (.01)*	.03 (.01)*	.03 (.01)*	.03 (.01)*
Service Access	.04 (.01)**	.04 (.01)**	.04 (.01)**	.04 (.01)**
Bundesland FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Adj. R ²	.09	.09	.09	.09
Num. obs.	7112	7112	7112	7112
N Clusters	3370	3370	3370	3370

Own calculations based on data from GLES Cross-Section (2021), microm (2021), Deutsche Bahn (2020) and BKG (2022). Fitted models: OLS with clustered robust standard errors on the grid level. Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table C6

Regression Analyses: Robustness District and Municipality Fixed Effects

	Model 1	Model 2
Places Being Left Behind		
% HH at Poverty Risk	.01 (.02)	.01 (.02)
Mean Dist. Services	.09 (.05)	.09 (.05)*
Population Density	−.04 (.03)	−.04 (.03)
People Feeling Left Behind		
Economic Situation	.07 (.02)***	.07 (.02)***
Work Esteem	.03 (.01)	.03 (.01)
Service Access	.04 (.01)**	.04 (.01)**
Bundesland FE	No	No
Municipality FE	Yes	No
District FE	No	Yes
Controls	Yes	Yes
Adj. R ²	.09	.09
Num. obs.	7035	7035
N Clusters	3346	3346

Own calculations based on data from GLES Cross-Section (2021), microm (2021), Deutsche Bahn (2020) and BKG (2022). Fitted models: OLS with clustered robust standard errors on the grid level. Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table C7

Explaining AfD Rating: Multi-level Linear Regression Model

	Model 1	Model 2	Model 3
LVL-2: Places being left behind			
% HHs at risk of poverty	.03 (.02)*		.02 (.02)
Mean distance to services	.13 (.04)***		.12 (.04)**
Population density	-.08 (.03)*		-.07 (.03)*
LVL-1: People feeling left behind			
Economic situation		.08 (.01)***	.08 (.01)***
Work esteem		.03 (.01)*	.03 (.01)*
Service access		.05 (.01)***	.04 (.01)***
Bundesland Fixed Effects	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes
AIC	510.39	416.99	420.57
BIC	747.68	654.28	678.20
Num. obs.	6501	6501	6501
Num. groups: inspid_1km:vbgem17rs	3186	3186	3186
Num. groups: vbgem17rs	167	167	167
Var: inspid_1km:vbgem17rs (Intercept)	.00	.00	.00
Var: vbgem17rs (Intercept)	.00	.00	.00
Var: Residual	.06	.06	.06

Own calculations based on data from GLES (2023), microm (2019), Deutsche Bahn (2017), and BKG (2022). Fitted models: Multi-level OLS with individuals (level 1), clustered in 1 km² grid (level 2), clustered in municipalities (level 3) and Bundesland fixed effects (if applicable). Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table C8

Test Results: Spatial Autocorrelation

	Estimate	PValue
Moran I statistic	0.0362746	0.0007180
Geary C statistic	0.9629123	0.0834393

To assess spatial autocorrelation, coordinates for each respondent were derived from the grid cell. A small random jitter was added to the points to avoid duplicate points in grid cells with more than one respondent. Spatial weights were calculated using the 10 nearest neighbours with inverse distance weighting.

Table C9

Regression Analyses: Additional Attitudinal Controls

	Model 1	Model 2	Model 3	Model 4
Places Being Left Behind				
% HH at Poverty Risk	.02 (.01)		.01 (.01)	.01 (.01)
Mean Dist. Services	.09 (.04)*		.08 (.04)*	.08 (.04)*
Population Density	.01 (.03)		.01 (.03)	.01 (.03)
People Feeling Left Behind				
Economic Situation		.02 (.01)	.02 (.01)	
Work Esteem		.02 (.01)	.02 (.01)	
Service Access		.03 (.01)**	.03 (.01)**	
Mean Index				.07 (.01)***
Controls				
Female	-.04 (.01)***	-.04 (.01)***	-.04 (.01)***	-.04 (.01)***
Age ²	-.17 (.02)***	-.16 (.02)***	-.16 (.02)***	-.16 (.02)***
Education: Low	.01 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Education: High	.01 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Oesch: Unemployed	.04 (.02)	.03 (.02)	.03 (.02)	.03 (.02)
Oesch: Temporarily Inactive	.01 (.01)	.00 (.01)	.00 (.01)	.00 (.01)
Oesch: Permanently Inactive	.02 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Oesch: Lower-grade service class	.00 (.01)	-.00 (.01)	-.00 (.01)	-.00 (.01)
Oesch: Small business owners	.02 (.02)	.02 (.02)	.02 (.02)	.02 (.02)
Oesch: Skilled workers	.02 (.01)	.01 (.01)	.01 (.01)	.01 (.01)
Oesch: Unskilled workers	.07 (.02)**	.06 (.02)**	.06 (.02)**	.06 (.02)**
Left-Right Self-Placement	.20 (.02)***	.21 (.02)***	.21 (.02)***	.21 (.02)***
Own Prosp. Eco. Situaton	.08 (.02)***	.08 (.02)***	.08 (.02)***	.08 (.02)***
Anti-European Sentiment	.23 (.01)***	.23 (.01)***	.23 (.01)***	.23 (.01)***
Anti-Immigration Sentiment	.25 (.01)***	.24 (.01)***	.24 (.01)***	.24 (.01)***
Share of Foreigners (Grid)	.01 (.01)	.00 (.01)	.01 (.01)	.01 (.01)
Post	-.00 (.01)	-.00 (.01)	-.00 (.01)	-.00 (.01)
Bundesland FE	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes
Adj. R ²	.31	.31	.31	.32
Num. obs.	6501	6501	6501	6501
N Clusters	3184	3184	3184	3184

Data: GLES 2022, microm, Deutsche Bahn Open Data and BKG 2022. Fitted Models: OLS with clustered robust standard errors on the grid-level. Design weights applied. Standard errors reported in parentheses.

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

Table C10

Regression Analyses with Interactions: Places Being and People Feeling Left Behind

	Model 1	Model 2	Model 3
Places Being Left Behind			
% HH at Poverty Risk	.01 (.03)	.02 (.02)	.02 (.02)
Mean Dist. Services	.12 (.04)**	.02 (.06)	.11 (.04)**
Population Density	-.08 (.03)*	-.08 (.03)*	.03 (.04)
People Feeling Left Behind			
Feeling LB (Mean)	.14 (.02)***	.12 (.02)***	.18 (.02)***
Interactions			
Poverty Risk*Feeling LB	.03 (.08)		
Mean Dist.*Feeling LB		.21 (.14)	
Pop. Density*Feeling LB			-.33 (.10)**
Bundesland FE	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes
Adj. R ²	.09	.09	.09
Num. obs.	6501	6501	6501
RMSE	.24	.24	.24
N Clusters	3184	3184	3184

Own calculations based on data from GLES Cross-Section (2021), microm (2021), Deutsche Bahn (2020) and BKG (2022). Fitted models: OLS with clustered robust standard errors on the grid level. Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

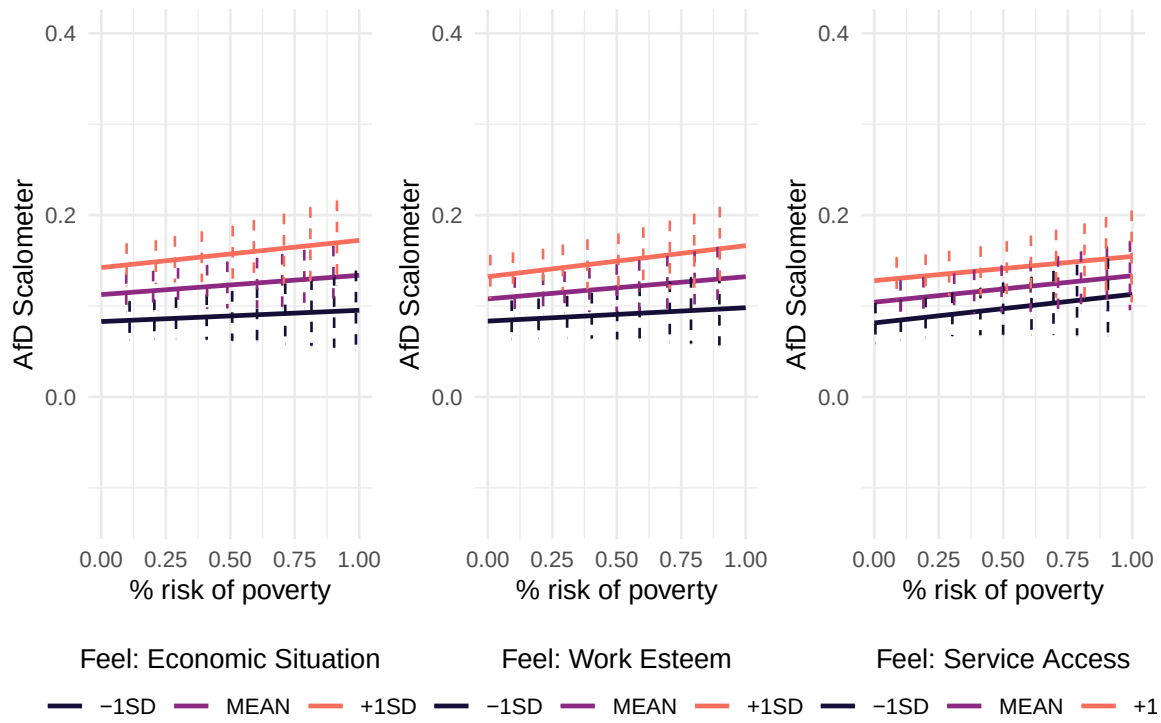


Figure C2. Estimated Marginal Means of AfD Rating by Households at Poverty Risk and Dimensions of Feeling Left Behind

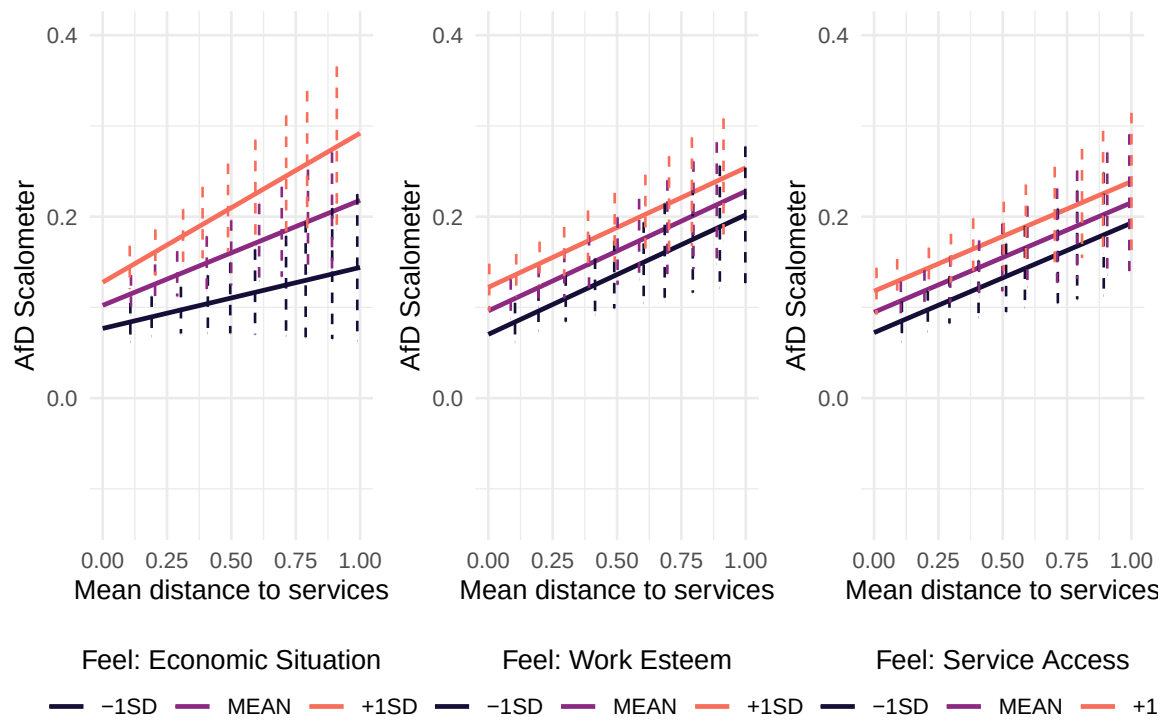


Figure C3. Estimated Marginal Means of AfD Rating by Service Distance and Dimensions of Feeling Left Behind

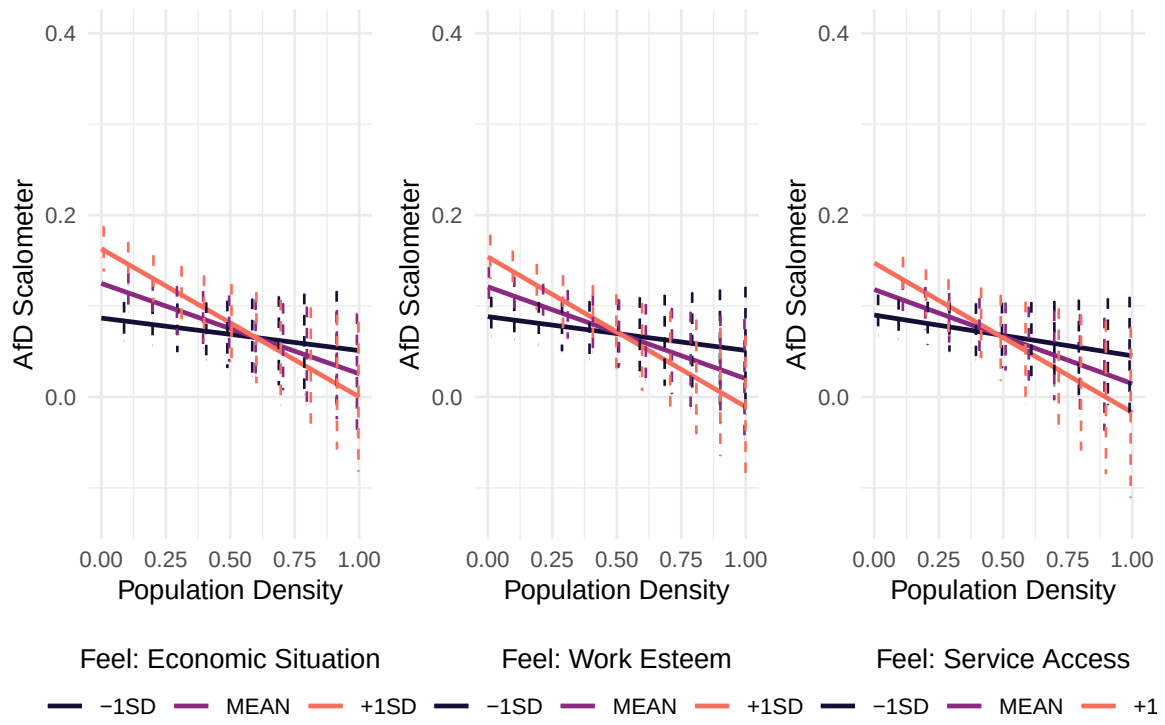


Figure C4. Estimated Marginal Means of AfD Rating by Rurality and Dimensions of Feeling Left Behind

III Additional Analyses: Comparisons Between Eastern and Western Germany

Based on the theoretical discussion and the empirical evidence, there is reason to believe that the effects found for Germany as a whole may not apply equally to eastern and western Germany. The conjecture is that both living in a left-behind place and feeling left behind – and their interaction – should be more pronounced in eastern than in western German regions. To examine the similarities and differences between eastern and western Germany in terms of the associations found, I split the sample by region and re-ran the main models. Table A9 presents the results of these models. Regarding places being left behind, none of the place-based associations is statistically significant in eastern Germany.

In western Germany, only service access is positively associated with AfD ratings. Regarding the feeling of being left behind, lack of societal attention for the economic situation of one's in-group has a robust positive effect in both regions. By contrast, societal esteem for the work of one's in-group contributes to explaining high AfD ratings only for eastern German respondents, and the lack of access to services contributes to explaining high AfD ratings only for western Germans.

Different main effects also indicate the possibility of different interaction effects, which are shown in Figure 4 (see Figure A5). The upper panels display the interactions of places being left behind and feeling left behind in western Germany; the lower panels display these interactions in eastern Germany. As in Germany as a whole, the proportion of households at risk of poverty in a neighbourhood differs only negligibly between citizens with strong and weak feelings of being left behind in an area. Regarding service access, feeling left behind indicates a reinforcement of the positive association between lack of infrastructure and a positive AfD rating in western Germany. However, the interaction effect is not significant in either region. The interaction effect of rurality and feeling left behind found for Germany as a whole is found in both regions but is more pronounced in eastern German neighbourhoods. Citizens who feel that their situation is not sufficiently recognized by society rate the AfD more positively in neighbourhoods with a lower population density (more rural) than in places with a higher population density (more urban). Overall, I find some differences when comparing eastern and western German neighbourhoods, but these differences are very subtle and cannot support the assumption that living in a left-behind place and feeling left behind plays a more crucial role in eastern Germany.

Table C11

Regression Analyses: East-West Comparison Places Being and People Feeling Left Behind

	East	West
Places Being Left Behind		
% HH at risk of poverty	.01 (.03)	.03 (.02)
Mean distance to services	.07 (.07)	.15 (.05)**
Population density	-.07 (.06)	-.06 (.04)
People Feeling Left Behind		
Economic situation	.12 (.03)***	.07 (.02)***
Work esteem	.09 (.03)**	.01 (.01)
Service access	.03 (.03)	.04 (.02)**
Bundesland fixed effects	Yes	Yes
Controls	Yes	Yes
Adj. R ²	.12	.06
Num. obs.	1919	4582
N Clusters	949	2239

Own calculations based on data from GLES (2023), microm (2019), Deutsche Bahn (2017) and BKG (2022). Fitted models: Ordinary least squares with clustered robust standard errors on the grid level. Controls: post-election survey, gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

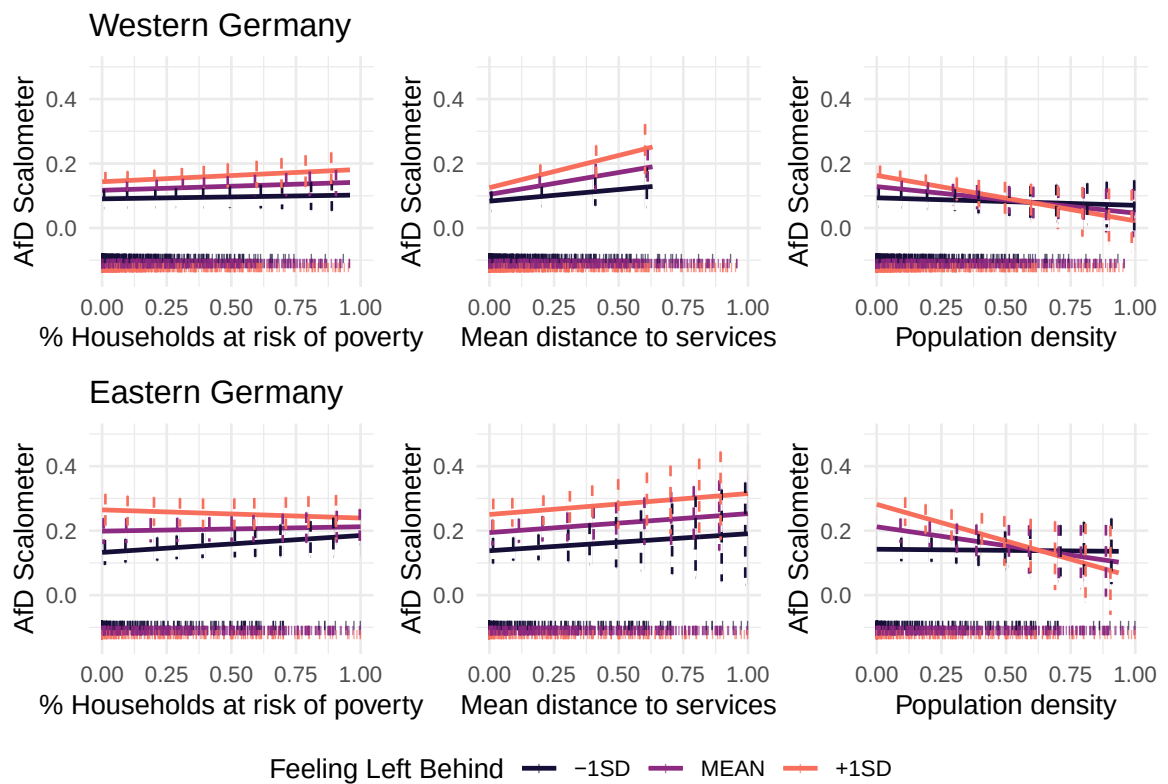


Figure C5. Estimated Marginal Means of AfD Rating by Place-Based Factors and Feelings of Being Left Behind in Eastern and Western Germany

Table C12

Regression Analyses with Interactions: East-West Comparison

	East-M1	East-M2	East-M3	West-M1	West-M2	West-M3
Places Being Left Behind						
% HH at Poverty Risk	.09 (.06)	.01 (.03)	.01 (.03)	.00 (.04)	.03 (.02)	.03 (.02)
Mean Dist. Services	.06 (.07)	.05 (.13)	.05 (.07)	.15 (.05)**	.03 (.07)	.14 (.05)**
Population Density	-.07 (.06)	-.06 (.06)	.10 (.07)	-.06 (.04)	-.07 (.04)	.02 (.05)
People Feeling Left Behind						
Feeling LB (Mean)	.29 (.04)***	.24 (.04)***	.30 (.04)***	.12 (.02)***	.09 (.02)***	.15 (.02)***
Interactions						
Poverty Risk*Feeling LB	-.17 (.12)			.06 (.09)		
Mean Dist.*Feeling LB		.03 (.24)			.28 (.18)	
Pop. Density*Feeling LB			-.48 (.15)**			-.26 (.11)*
Bundesland FE	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	.12	.12	.12	.06	.06	.06
Num. obs.	1919	1919	1919	4582	4582	4582
RMSE	.29	.29	.29	.22	.22	.22
N Clusters	949	949	949	2239	2239	2239

Own calculations based on data from GLES Cross-Section (2021), microm (2021), Deutsche Bahn (2020) and BKG (2022). Fitted models: OLS with clustered robust standard errors on the grid level. Controls: post-election survey; gender, age squared, education in three categories (reference: middle), Oesch classes in eight categories (reference: higher-grade service class), share of foreigners. Design weights applied. Standard errors reported in parentheses. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Chapter 5: Conclusion

5.1 Key Findings

“The identities, values, and preferences that inspire particular kinds of political action [...] are embedded in the places or geographical contexts where people live their lives” (Agnew 2002: 3). This continuing importance of place in the shaping of political attitudes and behaviour lies at the heart of the ‘geography of discontent’. A growing body of literature suggests that place plays a significant role in political discontent and the success of the radical right. Nevertheless, the mixed and sometimes lacking empirical evidence leaves plenty of room to ask which place-based factors contribute to political discontent and its manifestations, and why some people are more affected by these factors than others. Within this broader framework, I focused on the role of public service provision, the relationship between place and trust compared to RRP preferences, and the reinforcing relationship between objective, place-based deprivation and subjective perceptions of deprivation. The findings of the three articles of this dissertation contribute to the existing literature by reinforcing and refining key debates within the geography of discontent.

The first article highlights the importance of public service provision for political trust, challenging the assumption that economic hardship alone is the main place-based driver of discontent. The results suggest that shorter distances to train stations are associated with increased trust in government. All other results, such as changes in service provision, are inconclusive. This finding is in line with recent research that emphasises the role of service accessibility as a political cue in welfare states (Cremaschi et al. 2024; Nyholt 2024). The accessibility of public services affects citizens’ daily lives and their lack is often highlighted in public debates. Thus, my study on ‘public services wastelands’ is one of the first to bridge the literature on the performance-trust framework with place-based approaches, presenting theoretically driven evidence on how different services - and their absence or decline - correlate with political trust. The findings suggest that studies of the geography of discontent need to consider and differentiate between different place-based factors in order to fully understand the relationship between place and trust.

The second article shows that political trust is not primarily determined by objective place-based conditions but is strongly influenced by subjective perceptions of deprivation. While objective place-based deprivation correlates only partially with trust, the relationship is amplified when individuals perceive themselves as relatively deprived. In contrast to the first study, the results for economic deprivation and trust are robust, while the results for public service provision are less pronounced. Furthermore, political trust does not

significantly differ between urban and rural areas, nor do place-based factors exhibit distinct patterns in these contexts. These findings leave room for interpretation. Subjective feelings of deprivation likely shape how political information embedded in place is processed: whether it is considered relevant, which aspects are emphasised, and how it is interpreted. These insights underscore the complex interplay between objective and subjective factors known from other research contexts. This subjective-objective nexus could also explain why I do not find rural-urban differences. At first glance, this result challenges the conventional rural-urban divide narrative. However, consistent with research on place resentment and polarisation (de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a; Jacobs and Munis 2023), I assume that the rural-urban divide operates as a subjective identity rather than a set of objective conditions.

The third article advances the debate on place-based explanations of radical-right preferences by showing that subjective feelings of being left behind are stronger predictors than objective local factors. The subjective perceptions reinforce certain place-based factors, in particular rurality. Residents who feel left behind give higher ratings to RRPs in less densely populated areas than in more densely populated areas. However, for people who feel socially recognised and respected, population density does not significantly affect their support for RRPs. Similar to the second article, these results show that the link between place and (manifestations of) political discontent depends on subjective perceptions. Thus, the reinforcing role of perceived social marginalisation seems to hold across conceptualisations and manifestations of political discontent. In contrast to the second study, this study uses a group-based conceptualisation of feeling left behind that emphasises the importance of social marginalisation rather than material deprivation. Furthermore, I find a clear amplifying relationship only for rurality. There is no similar relationship for economic hardship and, to a limited extent, for the provision of public services. These discrepancies suggest that radical-right parties may actively mobilise grievances related to the feeling of being left behind, and that this approach is particularly successful in rural areas. Although the general trends are consistent, the results underscore the importance of distinguishing between different forms of political discontent. While political trust and RRP support may share common roots, their manifestations can follow distinct trajectories.

Taken together, I illustrate in the three studies of this dissertation the complexity of the relationship between place and discontent. While the link between place-based factors and (manifestations of) political discontent exists, it is generally weak and varies based on specific neighbourhood characteristics, studied outcomes, and individuals' subjective perceptions of deprivation.

These substantive findings are only possible because of the methodological advances

made in this dissertation. By using georeferencing, spatial linkage method, and fine-grained geospatial data from multiple sources, I go beyond the traditional reliance on administrative boundaries. Integrating survey responses with high-resolution data at the 1km x 1km grid level has several advantages. It ensures a more accurate measurement of place-based deprivation, reveals spatial variation that may be overlooked by broader geographic units, and increases the robustness of findings across different spatial aggregations. My findings, especially in the second and third articles, show that effect sizes and significance levels can vary according to spatial scale and place-based factors. This highlights the need for precise, context-sensitive methodologies in political geography. Still, it also points to the challenge of comparing and synthesising findings across studies.

5.2 Limitations

While this dissertation provides insights into the relationship between place-based deprivation, subjective perceptions, and political discontent, several limitations must be acknowledged. While each study comes with its own shortcomings, I want to address three limitations that span all three empirical studies. They concern conceptualisation of place-based deprivation, the spatial and temporal scope of the research, and the dependence on observational and secondary data.

First, defining what constitutes a ‘left-behind place’ remains a complex challenge, particularly as the concept still lacks a common framework (MacKinnon, Béal, and Leibert 2024; Pike et al. 2023). This challenge revolves around two key issues: the selection of indicators and the construction of measurements. While economic deprivation is a core element, other factors are more contested in their relevance to the deprivation divide. As discussed in study two, the rural-urban divide might intersect but not consistently overlap with the deprivation divide (see also McKay, Jennings, and Stoker (2021)). One of this dissertation’s key contributions is including public service provision as an additional crucial indicator. However, other factors may also play a role. For instance, demographic change (Salomo 2019), housing costs (Abou-Chadi, Cohen, and Kurer 2024), and socio-cultural dynamics (Bolet 2021) may be (as) significant. Therefore, my findings should be interpreted accordingly: the observed effects are relative to the selected indicators of deprived places. The issue with including more indicators is the threat of multicollinearity, which is asking for a more complex construction of indices. However, certain indicators may hold particular salience in specific areas - for example, housing affordability in urban contexts - speaking against the construction of such indices. Beyond selecting indicators, this dissertation conceptualises deprivation in absolute terms, focusing on the sustained lack of public service provision and the established share of low-income households. It does not account for relative deprivation across space, changes over time, or comparisons to salient out-groups. A

more nuanced approach that integrates absolute and relative measures could help prevent overlooking effects driven by relative deprivation.

Second, this dissertation provides evidence for Germany, leveraging access to geocoded survey data and high-resolution place-based information. While this methodological approach ensures new and relevant findings, it limits the generalisability of the results to other national contexts or time points. Economic disparities and public service provision vary considerably across countries, meaning that the relationships identified in this dissertation may manifest differently elsewhere. Similarly, the findings reflect a specific moment in time and shifts in political dynamics could alter the salience of the place relationships over time. Many other studies suffer from the same limitation due to the substantial data requirements in the field, but a growing number of studies suggest that the findings of this dissertation extend to other European countries (Dellmuth 2024; Katsanidou and Mayne 2024; Lipps and Schraff 2021; Mayne and Katsanidou 2022). Still, we observe differences between countries regarding place-based divides on the attitudinal level (Hegewald and Schraff 2022; Huijsmans and Rodden 2025). Factors such as electoral institutions, voting systems, and power distribution among regional administrations could be critical in explaining why place-based divides emerge more strongly in some countries and less so in others.

A third limitation of this dissertation is that I rely on cross-sectional secondary survey data originally collected for other purposes. The potential for spatial representation bias and undercoverage of certain geographic regions cannot be entirely ruled out. The German Longitudinal Election Study (GLES) and the German General Social Survey (GGS) were not designed for place-based analysis. They use random register samples to represent the German population without ensuring comprehensive spatial coverage, particularly in low-population-density areas. In the second article, I addressed this issue by pooling multiple surveys to increase the sample size of rural municipalities. However, this strategy was only feasible because I could harmonise relevant indicators across surveys. I cannot exclude the possibility that some areas will remain systematically underrepresented. Such underrepresentation could be problematic if place-based deprivation simultaneously affects survey response rates and political discontent. This potential bias should be considered in the design of future studies exploring similar relationships. While the three articles in this dissertation demonstrate significant relationships between place-based factors, subjective perceptions, and political discontent, establishing causality remains a challenge. For example, whether observed effects are merely compositional (e.g., neighbourhood sorting based on sociodemographic traits) cannot be conclusively determined. Nevertheless, by leveraging large, representative samples and geocoding respondents' addresses, I have shown that public service provision are part of the place-based deprivation divide and that the relationship between place-based factors and political outcomes varies across contexts and perceptions. .

5.3 Implications for Future Research

This dissertation evolved around how place contributes to the (manifestation of) political discontent. Based on the results and the limitations of this dissertation, I identify four main avenues for future research dealing with place-based explanations of political attitudes and behaviour.

First, this dissertation highlights the advantages of incorporating spatial variation at a fine-grained level. At the individual level, citizens may self-select into neighbourhoods based on their predispositions, including political attitudes (Cho, Gimpel, and Hui 2013; Gimpel and Hui 2015), as well as their needs for public services and lifestyle preferences (e.g., residential self-selection in Germany (Rössel and Hoelscher 2012; Scheiner 2014)). Therefore, one of the next steps would be to incorporate a longitudinal approach that tracks individual-level and place-based changes over time, enabling the investigation of temporal sequences and, ultimately, causal identification.

While the studies in this dissertation include several individual and contextual variables to address omitted variable bias, future research could follow examples that track attitudinal and behavioural changes before and after residential moves to disentangle the self-selection and compositional effects from the contextual effects (Gallego 2016; Maxwell 2019). At the place-based level, incorporating changes such as economic decline (Broz, Frieden, and Weymouth 2021), shocks (Autor, Dorn, and Hanson 2016), or the closure of service facilities (Nyholt 2024) would be an important step toward modelling the temporal dynamics that drive discontent. However, as seen in the first study of this dissertation, such changes might produce inconclusive results if they occur infrequently. Moreover, including changes and time lags does not address reverse causality. The relationship between economic development and, in particular, public services and electoral choices is circular: people's voting decisions influence policies that shape public service provision, while public services, in turn, influence how people vote. To establish causal identification, future research would need to introduce a treatment that is as independent as possible of (local) electoral outcomes and attitude formation. For example, the 2010 national reform in Italy that cut public spending directly affecting public service provision in small towns, as exploited by Cremaschi et al. (2024), provides such a valuable case study. Political economy studies of the feedback effects of place-based policies establish causal effects by employing a design-based approach but often do not incorporate individual-level data because they are not sufficiently large numbers of respondents at the local level (as an exception, see Lang, Redeker, and Bischof (2023)). A joint approach in which a causal identification strategy guides the collection of representative surveys would be ideal.

A second promising avenue for future research is redefining neighbourhoods based on

residents' mobility patterns and activity spaces instead of static boundaries (Hasanzadeh et al. 2024). This dissertation has demonstrated that spatially fine-grained data provide a more flexible way to define neighbourhoods and test robustness across different aggregation levels. However, static boundaries do not reflect the heterogeneous mobility spaces of citizens and what they perceive as their neighbourhood (Wong et al. 2020). GIS-based approaches help to overcome at least partially the uncertain geographic context problem (Kwan 2012a; G. Smith et al. 2010). Such individualised measurements have become more accessible due to the increased collection of survey data via smartphones enhanced with GPS information (Elevelt et al. 2021; York Cornwell and Cagney 2017) but have not yet spread to the study of the geography of discontent. Incorporating personalised neighbourhood boundaries offers a more precise representation of respondents' social environments and better captures these areas' social and spatial heterogeneity.

Three, an important avenue for future research is understanding how RRP (and other parties) mobilise support by addressing grievances related to place-based deprivation. Elite rhetoric has proven a powerful tool to influence citizens' interpretation of reality (Chong and Druckman 2007; Czymara 2020) and activate underlying group identities (May and Czymara 2024), particularly when framing migration issues. There is first evidence that this strategy likely also applies to place-based group appeals by framing local issues, being a local candidate, or campaigning on rural grievances (Auerbach, Eidheim, and Fimreite 2024; Bischof and Kurer 2023; Haffert, Palmtag, and Schraff 2024; Munis 2021; Schulte-Cloos and Bauer 2023). RRP are also linking place-based deprivation to the fears regarding the financial burden of immigration, e.g. by exploiting misconceptions about immigrants overusing public services (Cremaschi et al. 2024). Future research can build on these findings to investigate the psychological underpinnings that influence and activate place-based conditions for voting behaviour. This research avenue would also allow shedding light on the question under which conditions discontented citizens are drawn to extreme or radical parties as an active manifestation of political discontent.

Fourth, future research should explore the objective-subjective nexus between place-based effects and their outcomes. The study of place effects is grounded in the assumption that geographical context shapes political attitudes and behaviour. This implies that citizens accurately perceive contextual cues in their neighbourhood and translate them into grievances that influence political discontent. However, few studies have established this causal mechanism, and empirical evidence remains mixed when linking objective conditions to subjective perceptions and subsequent political attitudes. This phenomenon is not unique to the geography of discontent but also applies to the (mis)perception of the level of democracy and quality of elections on the national level (Bedock and Panel 2017; Cantú and García-Ponce 2015; Kruse, Ravlik, and Welzel 2019; Mauk and Grömping 2024). On the

local level, evidence shows that place-based contextual factors shape perceptions of national economic performance and immigration (Bisgaard, Dinesen, and Sønderskov 2016; Newman et al. 2015; Reeves and Gimpel 2012). Even in studies examining the relationship between objective context and subjective perceptions of this context, findings indicate that individuals process neighbourhood information differently (Danckert, Dinesen, and Sønderskov 2017; Gimpelson and Treisman 2018; Hauser and Norton 2017; Lilly et al. 2024). Moreover, while the place of residence does influence rural resentment, the effects are moderated by place-based identities (de Lange, van der Brug, and Harteveld 2023; Huijsmans 2023a). Rural resentment can also emerge in contexts where rural voters are not economically disadvantaged (Auerbach, Eidheim, and Fimreite 2024), and people in deprived places can feel left behind for different reasons (McKay, Jennings, and Stoker 2021). In this dissertation, I have shown that emotions and feelings that are not necessarily rooted in place reinforce the effect of place-based deprivation on political trust and RRP support. However, the lack of measures capturing place-based perceptions and grievances did not allow for disentangling the underlying mechanism. The group levels to which the perceptions refer should match more clearly with the spatial areas under consideration, overcoming some of the limitations of this study. Against this background, future research should further investigate individual differences in perceiving and processing neighbourhood information, including exploring the roles of emotions, cognitive biases, media exposure, and political socialization. Such a research agenda would help to determine if, how, and when place truly matters for the (manifestation of) political discontent.

5.4 Concluding Remarks

This dissertation investigates which place-based factors contribute to political discontent and its manifestations and why some individuals are more affected by these factors. Specifically, it examines (1) how public service provision influences political discontent, (2) the relationship between place-based factors and political trust and support for radical-right parties, and (3) how subjective perceptions of deprivation reinforce these effects. To answer these questions, I investigate the relationship between various indicators of place-based deprivation and political trust and RRP support in Germany, presented in three articles. The analyses show that the relationship between static neighbourhood deprivation and (manifestations of) political discontent is generally weak and varies according to (a) specific neighbourhood characteristics and (b) individuals' subjective perceptions of deprivation. This dissertation highlights the role of public service provision in shaping political attitudes and behaviour and the methodological advances made by integrating fine-grained geospatial data with geocoded survey data. I also emphasise the need to distinguish between political trust and support for RRP, when studying political discontent.. Finally, I show that place is often not

enough to explain political discontent. Instead, subjective perceptions of deprivation are crucial for understanding place-based effects on political trust and radical-right support.

These findings and contributions have implications for policymaking. The studies underscore the need for investing in service infrastructure, particularly in historically underserved areas. Improving access to essential services, such as public transportation and healthcare, can help mitigate political discontent and enhance residents' quality of life. I also underline the heterogeneity of places and their populations, showing that place-based effects are significant only for some. Therefore, political strategies and policy programmes must be more inclusive and sensitive to the diverse experiences of residents across different regions, integrating place-based and people-based approaches (Iammarino, Rodriguez-Pose, and Storper 2019; Kenny and Luca 2021).

However, the findings contrast with place-sensitive policies that foster equal living conditions. The place-based effects identified in this dissertation are generally weak to moderate and particularly pronounced among those who perceive themselves as deprived. Subjective perceptions are key to understanding the relationship between place and political discontent. This challenges policymakers: While building infrastructure and implementing place-sensitive policies are essential, these measures alone are unlikely to resolve discontent. Addressing political discontent requires targeted policies, improved communication, and increased community engagement to tackle the emotional and psychological underpinnings of citizens. Reducing perceived deprivation and feelings of being left behind can directly alleviate political discontent and indirectly minimise place-based effects.

Ultimately, disparities tied to place can fuel conflicts over narratives, often exacerbated by oversimplifications. The claim that place plays an ever more influential role in shaping political attitudes and behaviours and that we live in a 'place era' is compelling but not absolute. The relationship between place and political discontent is more complex than previously assumed. As simple as the conclusion of this dissertation may seem, it is significant in its own right, as "beliefs and ideologies, especially when they are no longer substantially grounded in objective reality, take on their demonic, truly destructive nature" (Adorno 2019: p. 13, own translation). Resolving the tension between objective and subjective factors will remain a central agenda for scholars exploring and finding pathways to mitigate the geography of discontent in the future.

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