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Geographies of Dutch Discontent

A spatial understanding of anti-establishment voting

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A thesis submitted in partial fulfilment of the degree of Master of Science at Wageningen University and Research, The Netherlands.

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Abbreviations

APEP	Anti-Political Establishment Party
BBB	BoerBurgerBeweging [Farmer-Citizen Movement]
CBS	Centraal Bureau voor de Statistiek [Statistics Netherlands]
FVD	Forum Voor Democratie [Forum for Democracy]
ICC	Intra-class correlation coefficient
MAUP	Modifiable Areal Unit Problem
MLM	Multilevel model
OLS	Ordinary least squares
PVV	Partij Voor de Vrijheid [Party for Freedom]
RIVM	Rijksinstituut voor Volksgezondheid en Milieu [National Institute for Public Health and the Environment
VIF	Variance Inflation Factor

Abstract

The recent Dutch provincial elections saw an electoral victory of the new challenger party BBB [Farmer-Citizens Movement]. This victory fits in a longer trend of electoral successes of anti-establishment parties, which includes victories for the PVV [Party for Freedom] and FVD [Forum for Democracy]. This thesis contributes to the growing body of literature within regional and political science that investigates geographical electoral patterns of protest voting and the underlying discontent. It does so by comparing the electoral geographies of Dutch protest parties BBB, PVV and FVD on the neighborhood-level in the provincial elections of 2023 and 2019. The vote shares received by these parties are linked to a broad set of spatial determinants for regional discontent derived from literature. The results show that the three protest parties, or APEPs [Anti-Political Establishment Party], each have distinct electoral geographies and indicate different roots of discontent, even after controlling for a broad set of socioeconomic and demographic variables. Put briefly, the BBB electorate is characterized by a persisting urban-rural divide. The PVV electorate is defined by a relatively large influence of broader welfare variables on spatial voting patterns. FVD is the only party showing a more urban electorate and a lack of influence of income-related variables. Additionally, this thesis provides empirical evidence that factors related to broader welfare play an important role in electoral APEP voting patterns. Furthermore, it provides preliminary empirical evidence for a relationship between APEP voting and support for local candidates, establishing a new perspective on geographies of discontent. Lastly, this thesis provides methodological insight into spatial voting behavior studies through the use of small-scale neighborhood data and by investigating the impact of different spatial scales on analysis accuracy. It finds that smaller scales yield higher accuracies.

Samenvatting

Bij de recente Nederlandse provinciale verkiezingen behaalde de opkomende partij BoerBurgerBeweging een verkiezingsoverwinning. Deze overwinning past in een bredere trend van successen voor anti-establishment partijen, waaronder ook de Partij voor de Vrijheid en Forum voor Democratie kunnen worden gerekend. Deze scriptie draagt bij aan de regionale en politieke onderzoeksvelden die de geografische electorale patronen van proteststemmen en onderliggende ontevredenheid onderzoeken. Dit wordt gedaan door de electorale geografieën van de Nederlandse protestpartijen BBB, PVV en FVD op buurtniveau te vergelijken in de provinciale verkiezingen van 2023 en 2019. De behaalde stempercentages van deze partijen worden verbonden met verschillende ruimtelijke factoren voor regionale ontevredenheid, die gebaseerd zijn op eerdere bevindingen in wetenschappelijke literatuur. De resultaten tonen aan dat de drie protestpartijen, of APEP's [Anti-Political Establishment Party], elk hun eigen electorale geografie hebben en duiden op verschillende oorzaken van geografische ontevredenheid, ook nadat er gecontroleerd is voor een breed scala aan sociaaleconomische en demografische variabelen. Kort gezegd kenmerkt het electoraat van de BBB zich door een aanhoudende stad-platteland kloof. Het electoraat van de PVV wordt voornamelijk gedefinieerd door een relatief grote invloed van bredere welzijnsvariabelen op ruimtelijke stempatronen. FVD is de enige partij met een meer stedelijk electoraat. Naast deze bevindingen levert deze scriptie empirisch bewijs dat factoren gerelateerd aan bredere welvaart een belangrijke rol spelen in electorale APEP-patronen. Verder biedt het beginnend empirisch bewijs voor een verband tussen stemgedrag voor APEP's en steun voor lokale kandidaten, wat een nieuw perspectief biedt op electorale 'geographies of discontent'. Ten slotte biedt deze scriptie methodologisch inzicht in onderzoek naar ruimtelijk stemgedrag door het gebruik van het kleinschalige buurtniveau en door te onderzoeken wat de impact is van verschillende ruimtelijke schalen op de nauwkeurigheid van de analyse. Hierbij wordt vastgesteld dat kleinere schalen hogere nauwkeurigheden opleveren.

Contents

1 Introduction

The 2023 Dutch provincial elections witnessed the electoral rise of a new party in the Dutch Senate: the BoerBurgerBeweging [BBB or 'Farmer-Citizens Movement']. Founded in 2019, the party entered the Dutch House of Representatives only recently in 2021 with one seat. However, as of March 2023, the BBB has won the popular vote nationwide and has become the largest party in all twelve provincial assemblies. These election results appear to fit into a wider trend of successive electoral victories of anti-establishment parties in the Netherlands (De Jonge, 2021; Kessenich & Van der Burg, 2022), to which the recent electoral victory of PVV [Party for Freedom] is the latest addition (Holligan & Kirby, 2023b; Moses, 2023b). Other anti-establishment parties in this trend include Leefbaar Nederland, Partij voor de Vrijheid [PVV] and Forum for Democracy [FVD], which saw a remarkable electoral breakthrough in the preceding provincial elections of 2019 (De Jonge, 2021). Although international media portray it as an "earthquake in Dutch politics" (Holligan & Kirby, 2023a), the recent election results of BBB are perhaps less of a shock when positioned within this ongoing trend. Previous elections have seen a rise in support for parties labeled as populist, radical right-wing, or anti-establishment parties in general (De Jonge, 2021; Van Leeuwen, Halleck Vega & Hogenboom, 2021). Although these parties do not necessarily position themselves as far-right or populist parties, they do portray themselves as anti-establishment 'protest' parties (Moses, 2023a). These parties claim to represent "normal citizens" who do not feel represented and "can no longer be ignored", as illustrated by BBB party leader Caroline van der Plas (Holligan & Kirby, 2023a; Meijer, 2023; Moses, 2023a; Van Eijsden, 2023). As such, these parties position themselves as representatives of voters who are discontented with the current government (Kessenich & Van der Burg, 2022).

Looking at the electoral geography of votes for these anti-establishment parties, interesting patterns arise. One aspect that distinguishes BBB from the other anti-establishment parties is their focus on rural areas, underlining the importance of geography in the interpretation of voting behavior and anti-establishment attitudes (Huijsmans, 2023a). Most international news sources relate the recent BBB victory to their support in rural areas (Tanno, 2023; Crisp, 2023). However, not only rural or peripheral parts of the Netherlands show anti-establishment support. For example, almost one-third of BBB voters live in cities, according to exit polls, and BBB was the largest party in several midsize cities in the Randstad like Almere, Alkmaar, Nieuwegein and Woerden (Frijters, 2023; Lievisse Adriaanse, 2023). In other elections, the distribution of PVV and FVD support was similarly fragmented over urban, suburban and rural areas (Wassens, 2019; Harteveld et al., 2022). This suggests that the spatial configuration of anti-establishment party support can show complex patterns and can differ from party to party. Although a recent focus in regional and political science has put forward a growing set of explanatory variables for regional patterns in protest votes, distinct geographies of discontent and support for Anti-Political Establishment Parties [APEPs] are not yet fully understood (Harteveld et al., 2022). This thesis aims to gain insight into how spatial voting patterns for Dutch APEPs differ from each other. Furthermore, it investigates to what extent the relatively understudied determinants related to broader welfare and local political representation can help explain these patterns, as suggested by recent studies (Huijsmans, 2023b; Van Leeuwen et al., 2021; Van Vulpen, 2023). A better understanding of regional discontent and its relation to protest voting can provide the necessary insight to effectively address this discontent and help reconnect dissatisfied citizens with the government. Furthermore, this thesis can be seen as a continuation of earlier research by Van Leeuwen et al., 2021), who employ demographic and regional characteristics to explain geographical patterns in Dutch voting behavior, especially for populist parties.

This thesis investigates the determinants of protest voting in favor of BBB, PVV and FVD in the provincial elections of 2019 and 2023 by combining election data on the polling station level with a broad set of regional characteristics of protest voting. These determinants are derived from a literature study. It thereby contributes to the field of regional and political science by addressing three main research gaps. The first research gap relates to ‘broader welfare’, a concept of emerging interest in voting behavior studies that includes a broader perspective on well-being beyond economic and demographic factors, focusing on aspects like happiness, social cohesion or local livability. (Burger & Eiselt, 2023; Koeppen et al., 2021; Van Leeuwen & Halleck Vega, 2021). Further investigation into the role of ‘broader welfare’ factors in voting behavior has been called for scientific fields as well as in Dutch policy reports investigating discontent (e.g., Van de Berg & Kok, 2021; De Voogd & Cuperus, 2021). The inclusion of broader welfare, alongside more ‘conventional’ demographic and economic factors such as age, education and income (Dijkstra et al., 2020), can provide a more complete understanding of regional differences in protest voting.

Another unexplored aspect of voting behavior addressed in this thesis is the relationship between anti-establishment voting and people’s propensity to vote for local candidates from their municipality. Recent research in the Dutch context has shown that ‘place resentment’, the notion that one’s region is ignored by politicians and unfairly treated by the national government, is higher in regions with less local political representation, thereby fueling anti-establishment attitudes (Huijsmans, 2023b). Recently, Van Vulpen (2023) investigated the regional representation of MPs in the Dutch parliament and found that both central, urban regions and certain ‘vocal peripheries’ are overrepresented, while other regions are left underrepresented. Additionally, he finds that MPs are more likely to address issues that are related to their region, especially those from peripheral areas (Van Vulpen, 2023). All in all, these findings suggest that voters favor local candidates from their own area, especially in regions where people tend to feel unrepresented by mainstream parties. However, no studies currently investigate the relationship between (anti-establishment) voting and candidates’ places of residence, although this is suggested for future research by Huijsmans (2023a; b). This thesis includes the vote shares for local representatives as one of the determinants for anti-establishment voting. It is hypothesized that areas where people feel less represented by mainstream parties are more likely to favor local representatives, channeling their anti-establishment sentiments into ‘pro-local region’ votes.

This thesis employs small-scale, neighborhood data in a multilevel model to analyze electoral voting patterns and compares the effect of different spatial scales on analysis accuracy. Over the last years, increasing scholarly attention within regional science has been paid to the spatial aspects of voting patterns (Dijkstra et al., 2020; Harteveld et al., 2022; Rodríguez-Pose, 2018; Van Leeuwen & Halleck Vega, 2021). In this field, several authors have pointed toward a need for the inclusion of smaller geographical scales and a multi-scalar perspective (e.g., Harteveld et al., 2022; Lenzi & Perucca, 2021; Rodríguez-Pose et al., 2023). Rodríguez-Pose et al. (2023) state that the electoral ‘action’ of discontent “happens at a much finer geographical scale: at the level of regions or even communities, localities or electoral districts.” (p. 7). According to them, larger-scale spatial analysis is less suitable to understand certain aspects of discontent, since people base their attitudes on their experience of economic conditions and inequality in their immediate, small-scale geographic surroundings, like communities and neighborhoods. Similarly, both Gordon (2018) and McKay et al. (2021) argue that it is important to focus on geographical levels that reflect the environment in which people experience their lives to understand people’s anti-establishment attitudes. Aggregation to larger scales can mask diverging local trends and increasing local inequality (Dijkstra et al., 2015), which does not reflect the actual local context as experienced by people living there (Rodríguez-Pose et al., 2023). Additionally, it is important to recognize that drivers of APEP voting can have different meanings and consequences on different spatial scales, reflecting the importance of incorporating multilevel approaches (Lenzi & Perucca, 2021).

Paying attention to the influence of scale is also relevant from a geo-information perspective. In spatial analysis, fundamental issues like the boundary problem and the modifiable areal unit problem [MAUP] are associated with aggregated spatial data (Manley, 2014, further discussed in Chapter 3). Although not typically addressed in regional voting behavior studies, they can introduce serious bias depending on the shape and size of the used spatial units (Kwan, 2018; Openshaw, 1984). These analysis problems are especially relevant for electoral studies since the (re)drawing of administrative boundaries can be mobilized in politics for electoral gain, as illustrated in the work of Monmonier (2001). A deeper understanding and mitigation of these problems through the use of smaller geographic units, like neighborhoods, are called for in several spatial science papers (Flowerdew, Manley & Sabel, 2008; Kwan, 2018; Lenzi & Perucca, 2021). In summary, there is a call from multiple fields for electoral analysis at finer geographical scales and in a multilevel context, as well as for insight into the impact of scale on the analysis outcome. Scale *matters* in understanding voting behavior but remains relatively under-discussed in literature. Therefore, it is important to understand to what extent the choice for a particular spatial scale impacts the results and reliability of analysis. This is not only relevant for the analysis in this thesis but for future research into voting patterns as well. This thesis aims to address this research gap by structuring the mentioned concepts in a multilevel model, employing a fine geographical scale and analyzing the impact of different scales on analysis results.

1.1 Research aims and research questions

Looking at the problem statement and identified research gaps above, the main objective of this thesis is to get a deeper understanding of the geographical variation and determinants of voting behavior for Dutch anti-establishment parties. To do this, this thesis addresses four research questions:

- *How does the local geographical pattern in voting behavior for BBB in 2023 compare to the electoral geographical patterns of FVD and PVV in 2019?*
- *To what extent do neighborhoods with higher levels of 'broader welfare' correspond with lower levels of votes for APEPs, when controlling for regional and local socio-economic determinants?*
- *To what extent do higher shares of votes in favor of local representatives from all parties coincide with higher shares of votes for APEPs, when controlling for regional and local socio-economic determinants?*
- *How do different spatial scales influence the explanatory power of analyzing voting patterns for Dutch APEPs?*

2 Theoretical background

This chapter provides an overview of the current literature related to spatial patterns of anti-establishment voting. First, anti-political establishment parties [APEPs] will be defined, followed by a comprehensive overview of the drivers of APEP voting with the concept of place resentment as a novel explanation for regional discontent. These findings are then brought together in a conceptual framework. A brief overview of the Dutch political system and parties concludes the chapter.

2.1 Defining anti-political establishment parties and the 'protest vote'

This thesis follows the definition of APEPs as formulated by Schedler (1996) and Koeppen et al. (2021). According to Schedler (1996, p. 292), APEPs position themselves opposite of the established political class. This opposition is one of three criteria that Koeppen et al. (2021) connect to APEPs, the other two being: (ii) the assertion that there is a structural disconnect between the 'people' and established political parties, thus implying that the establishment is unable to represent the 'will of the people', and (iii) the tendency of APEPs to use specific salient policy issues to challenge the establishment.

One could argue that the parties investigated in this thesis can be categorized as 'populist' parties (Rooduijn et al., 2023a). Schedler (1996) argues that many terms can be found in literature that relate to anti-establishment parties, including 'populist', 'anti-mainstream', 'protest parties' or 'discontent parties'. This research chooses to define the investigated parties as anti-political establishment parties, rather than populist, for two main reasons. First, APEPs include a larger scope of parties than just populist ones because they comprise all parties that take an opposing position toward the establishment. They include newer parties, non-mainstream parties or independent local parties, as well as radical right or populist parties (Otjes, 2020; Otjes, Stroebe & Postmes, 2020). 'New challenger parties', as defined by Hobolt & Tilly (2016), have been one of the beneficiaries of protest votes in Europe since 2010 after the euro crisis, as affected voters have turned their backs on both the established ruling parties and traditional opposition parties (Hobolt & Tilly, 2016). They argue that these new challenger protest parties are defying existing party structures and raising new policy issues, similar to the definition of APEPs by Koeppen et al. (2021).

Secondly, to investigate discontented, 'protest' voting behavior, it is more straightforward to investigate parties that explicitly portray themselves as anti-establishment or 'protest parties'. Meanwhile, most parties given the label 'populist' do not particularly refer to themselves as 'populist parties' (Canovan, 2004). Additionally, the precise divide between populist and non-populist parties can be somewhat vague and is often contested, for example when leaders of mainstream parties adopt populist strategies from populist leaders (Inglehart & Norris, 2016; Norris, 2020; Rooduijn & Pauwels, 2011). Therefore, since this thesis aims to investigate protest voting behavior, APEPs is a more fitting definition.

What are the main drivers for people to cast a protest vote in favor of APEPs? Within the fields of political and regional sciences, two strands of determinants for protest voting can be discerned (Inglehart & Norris, 2016; Koeppen et al., 2021). One mainly focuses on the regional, mostly socio-economic aspects of protest voting and can roughly be grouped under the overarching concept of the 'geography of discontent' as coined by Rodríguez-Pose (2018). Although this strand discusses many determinants, the main drivers of protest votes are found to be an economic decline of 'left behind' areas and an unequal territorial spread of economic (dis)advantage (Rodríguez-Pose, 2018). These determinants mainly take place in a larger, regional context. Examples include processes like brain drain and economic stagnation, which can fuel feelings of one's region being 'left behind'. A second strand of literature addresses the relationship between cultural and psychological factors and (protest) voting behavior, focusing on broader welfare, political distrust and perceived (collective) disadvantage (Inglehart & Norris, 2016; Koeppen et al., 2021). This set of determinants is generally most relevant in the local immediate environment of daily life, where voters' daily experiences and perceptions can lead to feelings of discontent. Both sets of determinants will be discussed below. Finally, the concept of 'place resentment' will be discussed as an additional place-based explanation that focuses on perceived regional inequality as a driver for anti-establishment votes.

2.2 The regional context: Geography of (economic) discontent

In the field of regional science, a growing body of literature discusses the socio-economic aspects of the 'geography of discontent' in relation to voting behavior. An often-discussed author is Rodríguez-Pose (2018), who argues that the main territorial determinant for anti-establishment voting is regions having 'missed out' on the benefits of economic globalization, which are marked by economic stagnation and growing unemployment. He argues that these regional characteristics are unequally distributed over space and form a relatively ignored aspect of discontented voting in relation to interpersonal inequalities (Koeppen et al., 2021; Rodríguez-Pose, 2018; Rodríguez-Pose et al., 2023). Most of these studies focus their analysis on relatively larger regions in the EU, UK or USA, on the NUTS 3 or county level (Dijkstra et al., 2020; Rodríguez-Pose, 2018; Rodríguez-Pose et al., 2023).

Both Dijkstra et al. (2020) and Koeppen et al. (2021) provide an excellent overview of these territorial determinants of anti-establishment voting. In general, individual demographic characteristics are termed 'compositional' effects, while regional characteristics are 'contextual' effects (Van Leeuwen et al., 2021). The most important compositional regional determinants for anti-establishment voting behavior are older age, lower education levels and lower incomes, also called the "holy trinity" of anti-establishment voter characteristics (Dijkstra et al., 2020). Further compositional factors include unemployment, reduced mobility and having a job in the manufacturing sector (Dijkstra et al., 2020; Koeppen et al., 2021; Sipma & Lubbers, 2020). Contextual determinants include industrial and economic stagnation, a declining, low-skilled workforce, a lack of innovation and competitive advantages and unequal distribution of austerity policies and government investments (Dijkstra et al., 2020; Koeppen et al., 2021).

One point of critique on Rodríguez-Pose's thesis is that it focuses the explanation of the protest vote mainly on economic factors, especially on regional economic decline. However, other authors argue that this creates a 'flat' explanation of regional discontent, along a single gradient between places that are either economic 'success stories' or 'failures', thereby passing over important cultural, attitudinal and demographic aspects of anti-establishment sentiments (Gordon, 2018; McKay et al., 2021). In the Dutch context, Van Vulpen (2023) only finds limited evidence that economic decline is at the root of regional discontent and that demographic changes offer a better explanation. Critics of Rodríguez-Pose point toward the work of Inglehart & Norris (2016), who have presented convincing evidence that cultural and attitudinal drivers are strongly associated with populist voting in Europe, presenting a better explanation than economic factors. They provide a 'cultural backlash thesis', where anti-establishment voting is motivated by nostalgic feelings against progressive cultural changes (Inglehart & Norris, 2016). They connect these to so-called 'left behind' demographic groups: "This account predicts that support for populism will be especially strong among those holding traditional values and retro norms, including older generation and practically educated groups left behind by progressive cultural tides." (p. 13). Local identities can also play a role in motivating APEP support. This is exemplified in the works of Cramer (2016), who finds this to be the case for rural identities and lifestyles in the US, and Ziblatt et al. (2020), who stresses the importance of historical pathways in the formation of discontented local identities in Germany.

These researchers vouch for the importance of cultural and attitudinal factors in APEP support, such as anti-immigration or anti-EU attitudes, low levels of political trust and feelings of local marginalization. These attitudes are approached through a social psychology perspective rather than an economic perspective (McKay et al., 2021; Harteveld et al., 2022; Inglehart & Norris, 2016; Koeppen et al., 2021; Huijsmans et al., 2021). They illustrate how people might turn toward APEPs for different individual reasons. These different 'roots' of protest voting have been found in studies by Harteveld et al. (2022), McKay et al. (2021), Otjes (2021) and Huijsmans (2023a), and point toward a need to diversify our understanding of protest voting.

2.3 The immediate environment: broader welfare and well-being

The recent insights into the importance of cultural and socio-psychological drivers in explaining anti-establishment voting can be extended by including the concepts of broader welfare and well-being. Generally, these determinants are more focused on the daily-life environment of the immediate neighborhood, like social cohesion, safety or accessibility. As mentioned in the introduction, several authors have called for the inclusion of variables related to broader welfare (Van Leeuwen & Halleck Vega, 2021; Koeppen et al., 2021, McKay et al., 2021; Huijsmans, 2023b). Koeppen et al. (2021) addressed this research gap by investigating the relationship between subjective happiness and APEP voting in the EU. They find that subjective happiness by itself does not explain APEP voting, but that it can be a driver for it when it is linked to other local characteristics. They connect this to previous findings by Otjes et al. (2020), who identify local group identification through collective disadvantage within marginalized groups as one of the drivers of APEP voting. In other words, citizen collectives with shared anti-establishment sentiments could, on the one hand, be more likely to vote for APEPs, and simultaneously report higher levels of happiness on the other hand (Koeppen et al., 2021). Burger & Eiselt (2023) investigate the relationship between subjective well-being and populist voting in the Netherlands, using a composite subjective well-being index that includes happiness, life satisfaction and quality of life. They find that decreased subjective well-being increases the chance that people vote for populist parties or abstain from voting.

Another important determinant of anti-establishment voting in this category is a low level of trust in politicians and government (Bélanger & Aarts, 2006; McKay et al., 2021; Mitsch et al., 2021; Otjes et al., 2020; Otjes, 2018; Stein et al., 2019; Van der Waal & De Koster, 2018). Some authors propose cultural explanations, with political distrust towards national government and parties growing in rural and peripheral areas where citizens feel culturally removed from the 'urban' government which they perceive as having different attitudes than theirs (Mitsch et al., 2021). This resonates with the mentioned 'cultural backlash' thesis of Inglehart & Norris (2016). Voting for APEPs has also been linked to political trust in combination with strong regional identification and low perceived group efficacy in a Dutch field study by Otjes et al. (2020). They argue that APEP voting behavior becomes dominant especially in cases where people feel that 'their' local group is subject to collective disadvantage.

Although these aspects of subjective well-being have been analyzed in relation to voting behavior, there are still sides to this concept that are underexplored. Broader welfare does not only consist of political trust, perceived happiness and cultural differences, but also includes factors related to health, employment quality, environmental quality, safety, education and equality (Van Leeuwen et al., 2021; Van den Berg & Kok, 2021; Van Bavel et al., 2019). Indicators related to social cohesion, health, access to facilities and security remain relatively under-researched. An exception is Ouweneel & Veenhoven (2016), who relate populist voting among citizens in Rotterdam to personal vulnerabilities in health, education and income. Thissen & Content (2022) recognize that many studies operationalize respondents' self-reported happiness or life satisfaction as measures for broader welfare. They note that these concepts can be interpreted differently by different people and are highly variable over time depending on the current situation of the respondent. This leaves other aspects related to broader welfare like accessibility, health, safety or social cohesion relatively underexposed, even though these aspects can provide a less changeable insight into well-being and APEP voting.

Research by Harteveld et al. (2022) has shown that local marginalization, a negative spiral where processes of brain drain and a decline in services reinforce each other, is an important predictor for APEP voting. Van Leeuwen et al. (2021) find the opposite effect: lower access to facilities corresponds to less populist voting. Therefore, the precise effect of accessibility on APEP voting remains unsure. This uncertainty is compounded by findings by Pot, Koster & Tillema (2023a; b), who demonstrate that *perceived* accessibility differs considerably from actual accessibility in the Netherlands, as it is mediated by people's needs, desires and capabilities. Qualitative research in rural areas has demonstrated that the loss of certain facilities (like a supermarket) can lead to reduced livability through a lessened social place attachment (Gieling, Haartsen & Vermeij, 2019; Haartsen & Gieling, 2021). Regionally, Van Vulpen (2023) finds that perceived unfair distribution of resources, dissatisfaction with the living environment and institutional distrust correlate with remoteness of public facilities. Internationally, Mitsch et al. (2021) find that low trust in government in Europe is driven mainly by negative perceptions of the quality of and access to education and healthcare, while Stein et al. (2021) find similar results in Norway related to citizens' satisfaction with public services. These processes are most relevant in the local context, in the immediate environment of people's everyday lives.

Van Leeuwen et al. (2021) incorporate a more complete measure of broader welfare by investigating the impact of the composite 'Broader welfare index' on voting behavior in the Netherlands on COROP region level. This index includes many aspects of broader welfare into one score. They find that a low score is significantly related to a higher vote share for PVV. Investigating the influence of broader welfare on a more detailed geographical scale could provide more nuanced insights. Additionally, although using a composite score does enhance the interpretability of the results and is a strong argument for its use as a general determinant beside other indicators, it is still worthwhile to detangle the different aspects of broader welfare to analyze their separate effects on voting behavior.

2.4 Place resentment

The previous sections divide the literature on determinants of protest voting into regional socio-economic determinants and local cultural determinants which also relate to broader welfare. Before describing the concept of place resentment, a final remark on this divide by Inglehart & Norris (2016) is in place. They argue that the division in literature between the 'competing' explanations of economic inequality and the cultural backlash theory is somewhat artificial. In reality, voting behavior is a messy process. Changes in regional economic circumstances can reinforce or mitigate interrelated local cultural and social processes, and vice versa. This notion is enhanced by the concept of place resentment discussed below, which introduces local representation and the urban-rural divide as important elements in understanding spatial patterns of discontent.

Place resentment is a novel concept that has inspired a new research agenda that investigates its relationship to APEP support (Borwein & Lucas, 2023; Cramer, 2016; De Lange et al., 2023; Huijsmans 2023a; b; Munis, 2022). Place resentment is defined as perceptions by citizens of unequal (spatial) distributions of resources over a certain area, which results in feelings of resentment toward 'other' groups living in other areas. Authors agree that place resentment comprises three components: (i) socioeconomic, (ii) cultural and (iii) political. These components can each be described as a characteristic of regions where inhabitants (i) perceive an unfair spatial distribution of socioeconomic resources, (ii) do not recognize themselves in the cultural values of 'other areas' and (iii) feel unseen by the political 'elite' elsewhere (Borwein & Lucas, 2023; Cramer, 2016; De Lange et al., 2023; Huijsmans, 2023a; b; Munis, 2021). Of the three components, the socioeconomic aspect is the most prominently represented in quantitative research through the investigation of the effect of socioeconomic decline on APEP support (De Lange et al., 2023; Huijsmans 2023b; McKay et al., 2021; Rodríguez-Pose, 2018). The other two aspects are relatively under-researched, as they are generally more difficult to operationalize in quantitative methods (Huijsmans, 2023b), with some notable exceptions (Huijsmans, 2023a; b; McKay et al., 2021; Munis, 2021; Van Vulpen, 2023). Nevertheless, Huijsmans (2023a; b) demonstrates that the cultural and political components of place resentment are equally important as socioeconomic factors in explaining place resentment and associated anti-migration and populist attitudes in the Netherlands. Studies in other countries examining the relationship between place resentment and APEP support `include Jacobs & Munis (2022), McKay et al. (2021) and Trujillo & Crowley (2022).

As such, place resentment can be put forward as a concept that unites the two strands of literature described before with a particular geographical focus and the addition of political representation. The socioeconomic component can be connected to the economic determinants of APEP support described in section 2.2. The cultural component can be connected to the 'cultural backlash' thesis of Inglehart & Norris (2016) in section 2.3. This leaves the unfair distribution of political representation in certain areas as a 'missing puzzle piece'. This thesis dives further into the political component of place resentment by investigating the relationship between APEP voting and local representation. Although earlier research has confirmed the presence of under-representation in terms of gender, level of attained education and migratory background, very little research has been done on geographic representation (Van Vulpen, 2023). An important exception is research by Latner & McGann (2005), Huijsmans (2023a; b) and Van Vulpen (2023). The latter finds that cities in the Randstad are overrepresented in terms of MPs' place of birth and residence. Furthermore, he identifies a 'vocal periphery', peripheral areas with relatively many representatives in parliament, alongside an 'unseen periphery' with little representation. The vocal periphery includes Limburg, Friesland, Zeeland (with the exception of Zeeuws-Vlaanderen) and Twente, while the unseen periphery is found in the Achterhoek, East-Groningen, Zeeuws-Vlaanderen and the top of North Holland. Van Vulpen argues there is no straightforward relationship between representation and regional discontent. On the contrary, the overrepresented vocal periphery is often more discontented than the unseen periphery. Internationally, recent research by Munis (2021) and Schulte-Cloos & Bauer (2021) in the US and Germany has shown that voters favor local election candidates from their community and that this especially occurs among people with strong place-based identities.

2.4.1 Geographical divides in place resentment

A key aspect of place resentment is its focus on place and spatial divides, the notion that one's area, village or neighborhood is being disadvantaged relative to other areas (Huijsmans 2023a). One relevant geographical divide is the difference between rural or peripheral areas and urban or central regions, especially since one of the investigated parties (BBB) has a distinct focus on rural areas (Borwein & Lucas, 2023; Cramer, 2016; De Lange et al., 2023; Mitsch et al., 2021; Munis, 2022). De Lange et al. (2023) stress the importance of distinguishing two divides, urban-rural and center-periphery, as they represent different regions with potentially different voter behavior. Initial pioneering studies into place resentment mainly focused on rural areas, where feelings of place attachment were found to translate into out-group hostility toward urban areas (Cramer, 2016). However, other researchers have rightfully pointed out that comparable feelings of resentment can appear in urban areas, where people still feel 'left behind' relative to other regions (De Lange et al., 2023; Huijsmans, 2023a; Rodríguez-Pose, 2018). Later research found that 'peripherality', the distance to the center of economic, electoral or cultural power, can be a better explanation for place resentment and APEP support than 'rurality' (De Lange et al., 2023; Harteveld et al., 2022). Rural areas can be located close to a country's center, like the villages in rural regions near the Dutch Randstad. Likewise, urban areas can simultaneously be located in peripheral areas far from the center, like the Dutch cities of Maastricht or Groningen (De Lange et al., 2023; Huijsmans, 2023a).

Recently, several studies have investigated the spatial divides of place resentment in the Netherlands. Huijsmans (2023a; b) demonstrates that there is a center-periphery divide between the Randstad and 'the rest' of the country, including larger towns and cities, where place resentment is connected to populist attitudes. Second, a divide exists between cities and rural areas, where resentment motivates anti-immigration attitudes. Additionally, Huijsmans et al. (2021) find a persisting and growing divide between rural and urban areas in terms of cultural attitudes toward cosmopolitan and nationalist issues. This resonates with Dutch policy reports investigating regional divides in discontent (Van den Berg & Kok, 2021; De Voogd & Cuperus, 2021). As such, place resentment is highest in rural and peripheral areas and lowest in central urban areas. De Lange et al. (2023) argue that, although the urban-rural divide is still present, the center-periphery divide is much more distinct and pronounced in the Dutch context. Additionally, researchers in other countries have argued for a less dichotomous perspective on regional divides in resentment (Borwein & Lucas, 2023; Munis, 2022), specifically focusing on place resentment in suburbs.

2.5 Conceptual framework

Figure 2.1 summarizes the most important concepts discussed here. The four categories of determinants build on the literature on place resentment (the cultural, political and socioeconomic spatial elements) and regional science (broader welfare). These categories are not often combined in literature and receive varying amounts of attention. This thesis combines these categories in a comprehensive set of determinants for APEP voting. Ideally, equal attention would be paid to each element. However, due to data limitations, the focus is on the political, socioeconomic and broader welfare elements. These categories comprise contextual and compositional factors, further outlined in chapter 3.1. The aim is to structure these conceptual categories considering a hierarchy of a regional and local scale, as they play relevant roles on both scales. Additionally, determinants can have different meanings and influences depending on the scale on which they play out. For example, the settlement of a firm will have a different, more direct effect on the local context and the nearby inhabitants than the impact on the overall trend in firm settlements in the wider region.

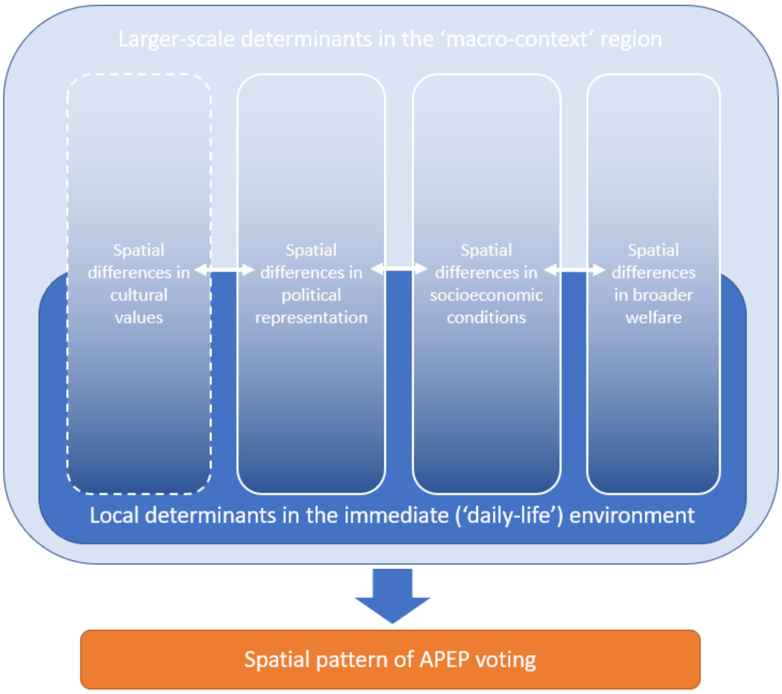

Figure 2.1: Conceptual framework of determinants of voting behavior

In the macro-context region, APEP voting is influenced by large-scale and 'further removed' determinants, such as demographic shrinking, brain drain or economic decline. These factors have been extensively researched in the 'geography of discontent' framework. These determinants are important to anti-establishment voting, as they influence long-term socio-economic processes in the wider region, and thereby influence the future opportunities that citizens will have. Simultaneously, these determinants play a role on a local scale that is embedded in the regional context. These smaller-scale, local determinants are formed and experienced in the immediate environment of citizens' daily lives, like social cohesion, local livability and personal health. These local determinants are still relatively understudied. Importantly, this conceptual model is a simplification, as the conceptual distinctions are a static representation of the underlying fuzzy processes behind APEP voting. Furthermore, there are nuances and variations in how different determinants play a role depending on the concept, region or scale at hand. For example, political representation on a regional level might be a more important determinant for APEP voting in a peripheral province like Limburg than in a central province such as South Holland.

Understanding how these determinants translate into unique geographical patterns of Dutch APEP voting is the main aim of this thesis, shown in orange in Figure 2.1. Because the combination of regional and local determinants will be unique from place to place, voting behavior will differ geographically. Although APEPs are similar in their claim to represent the 'unheard' citizen, they differ in their trajectories, salient policy issues and party lines. Therefore, their electorates are expected to be (partially) different from each other, each with its unique set of regional and local determinants. This is investigated in the first research question. Because larger-scale and socioeconomic determinants get relatively more attention in literature than the political or broader welfare determinants on a smaller scale, the second and third research questions focus on getting a deeper understanding of these determinants. Additionally, Figure 2.1 shows that determinants are in interaction with each other (illustrated as white arrows), indicating that the combination of variables can enforce or mitigate each other. Lastly, Figure 2.1 illustrates the importance of multiple geographical scales in which the categories of determinants are embedded. The influence of the multi-scalar nature of voting determinants on analysis is investigated in the fourth research question.

2.6 The Dutch context and Dutch protest parties

The Netherlands provides a least likely context to encounter strong disparities in geographic divides in voting behavior (De Lange et al., 2023; Harteveld et al., 2022; Huijsmans 2023a; b; Van Vulpen, 2023). This is due to its small size, high population density, highly centralized electoral system and relatively low regional inequality due to the long-standing welfare state (De Lange et al., 2023). This, in combination with its multi-party system, makes it less likely for territorial divides and regional resentment to occur than in other countries that feature prominently in regional discontent studies like the UK or the US (Huijsmans, 2023a; De Lange et al., 2023). The fact that the Netherlands is a least likely context for a geographical political divide makes it an interesting case study. If a divide can be established here, those disparities are likely present in other countries too. The Netherlands has a proportional representation system, making it one of the few countries in the world where members of parliament are elected in a single country-wide constituency (Latner & McGann, 2005). The system therefore does not guarantee representation at the regional level in the House of Representatives, although the Senate does elect its members based on the provincial election results.

Like other Western countries, the Netherlands has seen a rise in the number of APEPs and their support (De Jonge, 2021; Kessenich & Van der Burg, 2022, Otjes et al., 2020). Since the early 2000s, APEP support has diversified from initial support mainly in the Randstad to being most dominant in the periphery and disadvantaged city neighborhoods (De Voogd & Cuperus, 2021; Lucardie, 2008). Despite their mutual resemblances, these parties still distinguish themselves along specific party lines and ideological agendas, appealing to varying electorates (Van Leeuwen et al., 2021). As argued by Bélanger & Aarts (2006), APEPs benefit from strong positions on specific policy issues, like migration, the COVID-19 pandemic or the Dutch nitrogen crisis, making them attractive to certain disgruntled constituencies. The party lines of the parties studied in this thesis, PVV, FVD and BBB, are therefore briefly discussed below.

The PVV is a right-wing nationalist party (Harteveld et al., 2022; Otjes, 2021; Van Leeuwen et al., 2021). The main spearheads of their political agenda center around anti-Islam, anti-migration and anti-EU stances, while being pro-health care and pro-citizen power (Rooduijn et al., 2023a; b; Van Leeuwen et al., 2021). Support for PVV is found both in rural and urban areas and is connected to anti-immigration attitudes, local marginalization, lower incomes and citizens on unemployment benefits (Harteveld et al., 2022). For ten years, PVV was the only party on the far-right spectrum of the electoral system until FVD entered parliament in 2017 (Kessenich & Van der Brug, 2022).

Initially, the FVD created a profile of itself as the 'more sensible' alternative to PVV, with similar stances on traditional far-right issues (De Jonge, 2021). Otjes (2021) finds that, during this period, support for FVD and PVV centered around similar socio-cultural issues, but that FVD attracted a more liberal and academically educated electorate. However, the party gradually moved toward other issues, becoming explicitly climate-skeptical, anti-COVID-19 regulations and supportive of the Putin regime (De Jonge, 2021; Kessenich & Van der Brug, 2022; Nijhuis et al., 2023). Due to its radicalization since 2017, this party is now considered to be extreme right, rather than radical right (Rooduijn et al., 2023a; b).

Lastly, BBB is the newest 'contender' on the right-wing anti-establishment spectrum, after entering parliament in 2021. Because the party only recently entered the political arena, there is little scientific literature on the characteristics of their electorate, and their specific party line makes it more difficult to classify them as 'radical right-wing' (Nijhuis et al., 2023). However, the party positions itself explicitly as anti-establishment and as representatives for 'ignored' citizens (Holligan & Kirby, 2023; Meijer, 2023; Moses, 2023; Van Eijsden, 2023). BBB's main policy spearhead is related to their conservative stance in the Dutch nitrogen crisis and their focus on rural areas and people sympathetic toward the rural sector (Rooduijn et al., 2023a; b). This underlines the increasing urban-rural value differences and the politicization thereof (Huijsmans, 2023b). All three parties have reached significant victories, especially in provincial elections, but have also seen significant losses, as voter groups are volatile and quick to turn to other anti-establishment alternatives (Kessenich & Van der Brug, 2022).

3 Data and methods

This thesis employs hierarchical, multilevel regression to analyze Dutch APEP electoral patterns and compare the impact of scale on analysis accuracy. This methodology chapter describes the choices made during analysis, as well as the data quality and variable selection.

3.1 Data

3.1.1 APEP vote shares

Data on the election outcomes is provided by the Open State Foundation (Open State Foundation, 2019; 2023a), an NGO that ensures that election outcomes are published as open data after the Dutch elections. As many municipalities in 2019 were hesitant to openly publish their data at the polling station level, the foundation approached each municipality individually. At this moment, the 2019 election data from one municipality (Medemblik) is still missing (Haan, 2019; Open State Foundation, 2019; Pointer, 2019; Van Uffelen, 2019). The data contains geotagged polling stations from the provincial elections of March 20, 2019, for the analysis of PVV and FVD, and the provincial elections of March 15, 2023, for BBB. The data has detailed election outcomes, as well as information on voter turnout. Because this thesis focuses on the neighborhood level, the polling stations are aggregated through a spatial join, where the number of votes for each party is summed per neighborhood. The number of votes for the three parties is divided by the total number of votes to calculate the vote share. In the Netherlands, citizens can vote at any polling station within their municipality. The polling station closest to the residence is recommended on the voting pass. Certain locations, like central train stations, airports or mobile polling stations, can cause uncertainty on the exact place of residence of voters at those polling locations. These stations are therefore removed from the dataset before aggregation. Citizens are not allowed to vote at polling stations outside their municipality unless they request a special exemption. Descriptive statistics of the final dataset are shown in Table 3.1.

Table 3.1: Descriptive statistics of APEP vote shares in the provincial elections of 2023 (BBB) and 2019 (PVV and FVD)

Party	Number of Neighborhoods	Mean vote share	Std. Dev.	Min	Max
BBB	5416	21.0%	12.5%	11.1%	78.3%
PVV	5333	14.7%	5.1%	0%	61.3%
FVD	5333	7.3%	4.3%	0%	48.5%

Before analysis, the distribution of the aggregated voting data is checked. The distributions of PVV and BBB are both slightly right-skewed, which can be resolved through data transformation. However, since transforming the data does not change or improve the resulting models, the data is left untransformed. Although this slightly decreases the predictive capability of the model, it improves the interpretability. Since this thesis sets out to understand the mechanics behind APEP voting, rather than predict it, interpretability is deemed more important here.

3.1.2 Auxiliary variables

Selection

Table 3.2 shows the datasets used, retrieved from the Dutch Bureau of Statistics [CBS] (2021; 2023b), the National Institute for Public Health and Environment [RIVM] (2020) and Leefbaarometer (2020). The selection of the determinants is based on those put forward in previous studies into (Dutch) electoral geography, described in Chapter 2, which form the base model. These variables are subdivided into contextual variables and compositional variables (see Chapter 2.2). Because there is relatively less research into the effects of broader welfare, the variable selection in this block is more explorative. Relevant factors in the relationship between broader welfare and voting behavior are deduced from previous studies that proposed potential variables (see section 2.3). Because these factors are often quite general, i.e., health, happiness or social cohesion, the eventual specific variables chosen for the model are dictated by data availability, e.g., obesity levels, reported life satisfaction and participation in volunteering. The final block of broader welfare variables is shown in Table 3.2. The model initially contained more variables, but several were removed due to high multicollinearity (see Chapter 4.1).

The local candidates variable contains for each respective party the share of votes that have been cast in favor of candidates that come from the same municipality as where the votes are cast. Dutch voting ballots list the place of residence of the candidates, potentially guiding voters to vote in favor of candidates from the same town or municipality as them. The 'local vote share' is calculated by combining the complete candidate list of the elections (Open State Foundation, 2023b) with the total counted votes per candidate (Kiesraad, 2019; 2023). In some cases, an extra data processing step involves the matching of a candidate's place of residence with the corresponding municipality using a look-up table containing all Dutch places of residence (CBS, 2019; 2023a). In reality, a candidate's place of residence ('woonplaats') might better reflect the local identity associated with voting for a local candidate, especially in composite municipalities consisting of several smaller towns and villages. However, since the Kiesraad dataset only includes municipalities, this cannot be evaluated here. Furthermore, since this analysis concerns provincial elections, the municipality is still an acceptable smaller scale that voters could potentially favor over other municipalities in the province.

Table 3.2: Description of variables and their sources

Dataset	**Source**	**Scale**	**Year**	
Dependent variable			*FVD, PVV*	*BBB*
Election results (votes for BBB, PVV and FVD)	Open State Foundation	Neighborhood	2019	2023
Base model				
Contextual variables				
Voter turnout	Open State Foundation	Neighborhood	2019	2023
Rurality	CBS Statline	Neighborhood	2019	2023
Peripherality	Own calculations	Municipality	2019	2023
Housing value	CBS Statline	Neighborhood	2019	2022
Share of social housing	CBS Statline	Neighborhood	2019	2022
Settlement of companies*	CBS Statline	Neighborhood	2019	2022
Number of agricultural enterprises	CBS Statline	Neighborhood	2019	2022
Employment in agriculture	CBS Statline	Neighborhood	2019	2021
Compositional variables				
Age*	CBS Statline	Neighborhood	2019	2023
Ethnicity*	CBS Statline	Neighborhood	2019	2023
Income*	CBS Statline	Neighborhood	2019	2021
Marital status	CBS Statline	Neighborhood	2019	2023
Education	CBS Statline	Neighborhood	2019	2021
Unemployment benefits	CBS Statline	Neighborhood	2019	2021
Disability benefits	CBS Statline	Neighborhood	2019	2021
Welfare benefits	CBS Statline	Neighborhood	2019	2021
Employment rate	CBS Statline	Municipality	2019	2021
Broader welfare variables				
Local livability (contextual)				
Inequality in socio-economic status	CBS Statline	Neighborhood	2019	2021
Access to public facilities	Leefbaarometer	Neighborhood	2018	2020
Social cohesion	Leefbaarometer	Neighborhood	2018	2020
Safety	Leefbaarometer	Neighborhood	2018	2020

Quality of housing	Leefbaarometer	Neighborhood	2018	2020
Quality of local environment	Leefbaarometer	Neighborhood	2018	2020
Personal welfare (compositional)				
Severe obesity	RIVM Open data Statline	Neighborhood	2020	2020
Heavy drinking	RIVM Open data Statline	Neighborhood	2020	2020
Volunteering work	RIVM Open data Statline	Neighborhood	2020	2020
Satisfaction with own life	CBS Monitor Brede Welvaart	Municipality	2019	2021
Trust in institutions	CBS Monitor Brede Welvaart	Municipality	2019	2021
Trust in others	CBS Monitor Brede Welvaart	Municipality	2019	2021
Life expectancy	CBS Monitor Brede Welvaart	Municipality	2019	2021
Local candidates				
Votes for local political representatives	Open State Foundation	Municipality	2019	2023

*For variables indicated with *, an additional variable is included describing the change in that variable over the previous three years. This approach, applied in Harteveld et al. (2022) and Van Leeuwen et al. (2021), reflects changes in context-related processes associated with protest votes, like stagnating economic circumstances or an aging population. Descriptive statistics of the continuous variables are included in Appendix 8.1.*

Operationalization and processing

Continuous variables are normalized for the number of inhabitants in the neighborhood. Peripherality is measured as the distance between the municipalities and The Hague, following methods employed by De Lange et al. (2023) and Stein et al. (2021). Although Amsterdam is the Dutch capital, The Hague is the political center and is therefore more appropriate here. De Lange et al. (2023) found that the choice of Amsterdam or The Hague led to almost identical results in their analysis. The distance variable was log-transformed, which reduces the impact of close-by observations. Rurality is measured using the CBS classification of urbanization based on five categories ranging from extremely urbanized (2.500+ addresses per square kilometer) to not urbanized (fewer than 500 addresses per square kilometer). The education variable consists of three categories: no tertiary education, practical (vocational) education and theoretical education (including higher professional education and university). Variables related to local livability (see Table 3.2) are composite variables retrieved from Leefbaarometer (2020). The composites are constructed from a large set of local variables, described in depth in Mandemakers et al. (2021). Composite variables generally give a less precise account of how each component contributes to APEP vote shares. However, the composites already provide a detailed insight into the impact of livability and to include all variables separately would create so many variables that it would harm the interpretability of the model.

Due to privacy reasons, CBS and other institutions only publish sensitive data for neighborhoods with a sufficient number of inhabitants to ensure anonymity, ranging between 10-150 inhabitants, depending on the variable. Neighborhoods with too few inhabitants are removed from the dataset. Unfortunately, variables from the Broader Welfare Indicator (satisfaction with own life, trust in institutions and trust in others) contain some missing values at municipality level, which translates to quite a large number of missing values at the neighborhood level. Because this is the only available dataset that touches upon the trust- and happiness aspects of broader welfare, it is still deemed worthwhile to include in the model. The missing values are imputed with the national mean. Similarly, a number of faulty values (2.2% of cases in the entire dataset) in the voter turnout are imputed using the municipal mean. All variables are standardized, following the methodology of Koeppen et al. (2021), to be able to compare the impact of the variables within the model.

3.1.3 Data limitations

Despite the detail of the polling station and neighborhood data, some limitations regarding data availability should be mentioned. As shown in Table 3.2, not all variables are exactly matched to the year of the elections, especially the 2023 election. This is due to the delay at CBS in publishing the data, which usually takes 3 years. When data from 2023 is unavailable, the most recent available version is chosen. The RIVM welfare data is only available for the years 2012, 2016 and 2020, so 2020 is chosen for both election years. Updated datasets will likely become available in the future, which could be used then to correct this data limitation. The limited availability of data for recent years could especially be of importance for the 'trust in institutions' and 'trust in others' variables. The most recent data is from 2021, a year in which trust in institutions had just peaked (Schmeets & Exel, 2022). In 2022, however, trust in institutions and politics has decreased to its lowest point in ten years, while trust in fellow citizens has risen (Schmeets & Exel, 2022). This trend could have been an important motivation behind APEP voting for BBB but is unfortunately currently not captured in the dataset. A second availability issue relates to recent municipal or neighborhood redivisions, which cause missing values or inconsistencies when comparing data over time. A large part of the auxiliary data is not available for municipalities that have only recently been formed, like Land van Cuijk or Dijk en Waard. Since only cases without missing values are used for the regression, this can lead to an underrepresentation in the data of newly formed municipalities and neighborhoods.

The added nuance gained from the small-scale neighborhood data comes at a trade-off in terms of data availability and consistency. Because data on the neighborhood level is often less complete than on larger scales, more cases have to be excluded. Furthermore, rearrangements of neighborhood boundaries are more frequent than on larger scale levels, meaning that temporal comparisons become more unreliable. This is why a three year period prior to the election is used for calculating the change variables, rather than a longer period. Although three years is a relatively short period to capture changes in the socio-economic context, this is deemed necessary to ensure sufficient data reliability.

Regarding data quality, it is important to note that most of the broader welfare variables from RIVM, CBS and Leefbaarometer are based on nationwide survey data, which are used to calculate values for the rest of the Netherlands. The methodology and reliability of these datasets are discussed in depth in Viljanen et al. (2022), CBS (2022) and Mandemakers et al. (2021) and found to be sufficiently reliable. A final remark about the reliability of the local candidate data is that seven municipalities have no local representation at all on the provincial candidates list. This means that citizens of those municipalities are not able to vote locally, even if they might want to. This leads to a small 'blind spot' in the data, as it is not known to what extent the inhabitants there would have voted locally if they could. However, since this only concerns a very limited number of municipalities, the effect is negligible in the scope of this study.

3.2 Methods

3.2.1 Multilevel hierarchical model

The modeling approach taken in this thesis follows the conceptual model described in Chapter 2.5, where the local 'daily-life' environment of the neighborhood is embedded in the larger scale of the macro-context of the municipality. Multilevel modeling [MLM] is often applied in literature to address the multi-scalar nature of voting behavior (e.g., in Huijsmans, 2023; Koeppen et al., 2021; Lenzi & Perucca, 2021; Sipma & Lubbers, 2020; Jun, 2013). Therefore, a multilevel regression model with a random intercept is applied to each of the party datasets (Hox, Moerbeek & Van de Schoot, 2010). This allows for variation in parameters at more than a single level and is thus more appropriate for data structures where the units of analysis are nested within larger units (Hox et al., 2010). Geographically, it can simultaneously model the variation between individuals and their locations. It also enables the researcher to employ independent variables from both scales, which is impossible with fixed effects through dummy variables (Koeppen et al. 2021). The MLM applied here includes an intercept that varies across municipalities in which the individual neighborhoods are situated, accounting for the nested structure. It can be argued that there are several other relevant levels of scale that influence the decision-making process to some degree, like the provincial, household or individual level. Although relevant, these scales are not considered in this research due to data limitations and the risk of creating an overly complex model.

To assess the effect of broader welfare variables and a local candidates variable these variables are added stepwise in blocks to the base model in a hierarchical regression. The fit of each of the 'steps' was evaluated using ANOVA. This method is common to estimate the influence of particular predictors in the field of voting behavior research (e.g., De Lange et al., 2023; Harteveld et al., 2022; Huijsmans, 2023b; Rodríguez-Pose et al., 2023). This way, it can be evaluated whether the addition of these variables truly adds explanatory power to the model, on top of the more 'conventional' compositional and contextual determinants whose influence has already been established in literature. This leads to the following model, which is run for each party:

$$APEPVote_n = \beta_0 + \beta_1 BaseModel_{nm} + \beta_2 BroaderWelfare_{nm} + \beta_3 LocalCandidates_m + u_{0m} + \varepsilon_{nm}$$

$APEPVote_n$ indicates the share of the votes that either BBB, PVV or FVD received per neighborhood. The subscripts n and m (neighborhoods and municipalities) indicate the relevant scales in each model element, e and u reflect the residuals at the neighborhood and municipality levels, respectively. After the MLM is applied to the three party datasets, it can be evaluated which factors come forward as significant determinants of voting behavior for BBB, PVV or FVD. The comparison between the parties paints a picture of the regional characteristics of their respective electorates.

3.2.2 Scale analysis

As argued in Chapter 1, scale is an important aspect of geographical voting behavior analysis. Analysis using aggregated spatial data is affected by the boundary problem and the modifiable areal unit problem [MAUP] (Manley, 2014). Put briefly, MAUP refers to the bias caused by aggregated data that is dependent on the shape and size of the administrative unit (Kwan, 2018; Openshaw, 1984). Analysis results will differ when different spatial forms and sizes are used, and this bias becomes especially salient when using larger units (Manley, 2014; Kwan, 2018). The boundary problem refers to the phenomenon that instances located close together geographically can be separated by administrative boundaries, masking the influence of neighbors (Kwan, 2018). Small-scale data can help mitigate bias, because MAUP is generally less severe on smaller scales (Manley, 2014). Furthermore, Dutch neighborhood boundaries are deliberately drawn to maximize internal homogeneity in terms of function and urban and historical planning (CBS, 2020), mitigating the boundary problem (Manley, 2014). Alternatively, MAUP and the boundary problem can be addressed through the use of individual voter data or through clustering (Hennerdal & Nielsen, 2017). However, due to data limitations, these are not feasible for this research. Furthermore, data on election outcomes will always be aggregated to a certain extent because of voter privacy, which makes this analysis relevant for a wider set of voting behavior studies.

For the multilevel analysis described earlier, the main geographical unit of analysis was the neighborhood because it is (i) better able to reflect the context of voters' daily lives, and (ii) is less susceptible to MAUP and the boundary problem. The scale analysis in this thesis aims to investigate to what *extent* the use of neighborhood data improves analysis quality. This was addressed by running three parallel versions of the BBB base model, each using data on a different spatial scale. The datasets used here (see Table 3.3 and Appendix 8.1 for the descriptive statistics) are on the municipal, neighborhood and grid (500 m x 500 m) scale (CBS, 2023b; c). Not all variables of the base model in Table 3.2 are available on all three parallel scale levels, which necessitates a stripped-down version of the base model. Because the aim here is to compare the impact of different scales on model reliability and performance, the absence of these variables does not seriously affect this analysis.

The boundaries of municipalities follow, to a certain extent, 'logical' features in the landscape and are designed to have a certain degree of internal cohesion (Ministry of Interior Relations, 2019). However, they are much larger than neighborhoods, which is expected to worsen MAUP-related problems and associated biases. Grid cells are generally smaller than neighborhoods but do not follow any natural boundaries, which is expected to lead to boundary problem-related error. It is therefore hypothesized that the neighborhood scale will have the lowest error rate. By running the same analysis on different spatial scales using ordinary least squares, the accuracy of the three models can be compared. The error rate of the scales is compared spatially between rural and urban areas by mapping and comparing the standardized residuals of the models. As mentioned by Krupka (2007) and Andersson et al. (2018), different MAUP-and boundary-related error rates between metropolitan and rural areas can be expected, because these contain differing levels of internal diversity and will therefore have different biases.

Table 3.3: Variables used in the scale analysis

Variable	Source	Year
Dependent variables		
Vote share	Open State Foundation	2023
Contextual variables		
Voter turnout	Open State Foundation	2023
Urban density	CBS	2020
Distance to the Hague	CBS	2020
Housing value	CBS	2020
Share of social housing	CBS	2020
Compositional variables		
Age	CBS	2020
Western migrants	CBS	2020
Non-western migrants	CBS	2020
Mean household income	CBS	2020
Benefits under the pension age	CBS	2020
Local livability		
Access to public facilities	Leefbaarometer	2020
Safety	Leefbaarometer	2020
Quality of housing	Leefbaarometer	2020
Quality of local environment	Leefbaarometer	2020

4 Results

4.1 Descriptive statistics

The descriptive statistics of the dataset are included in Appendix 8.1. Figure 4.1 shows the distribution of the vote share received by each party per neighborhood. On average, BBB received a higher vote share than FVD and PVV, while FVD received more than PVV[1]. Additionally, Figure 4.1 shows that BBB has a broader range of achieved vote share, while the ranges of the other parties are smaller.

Figures 4.2, 4.3 and 4.4 show the election outcomes for the three parties at the polling station level. They provide a first insight into the spatial distribution of votes for the APEPs. Figure 4.2 displays higher vote shares for BBB in the rural eastern regions of the Netherlands, and lower vote shares in and around cities.

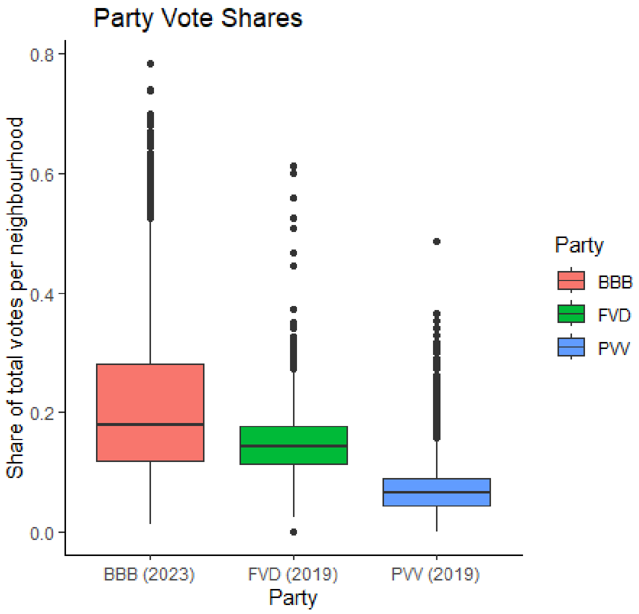

Figure 4.1: Boxplot showing the distribution of the attained share of the total vote per party

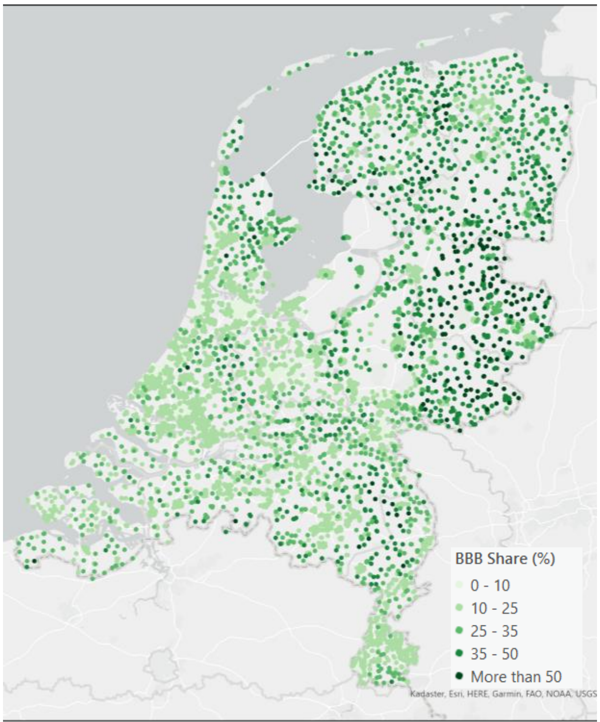

Figure 4.2: BBB vote shares at polling station level.

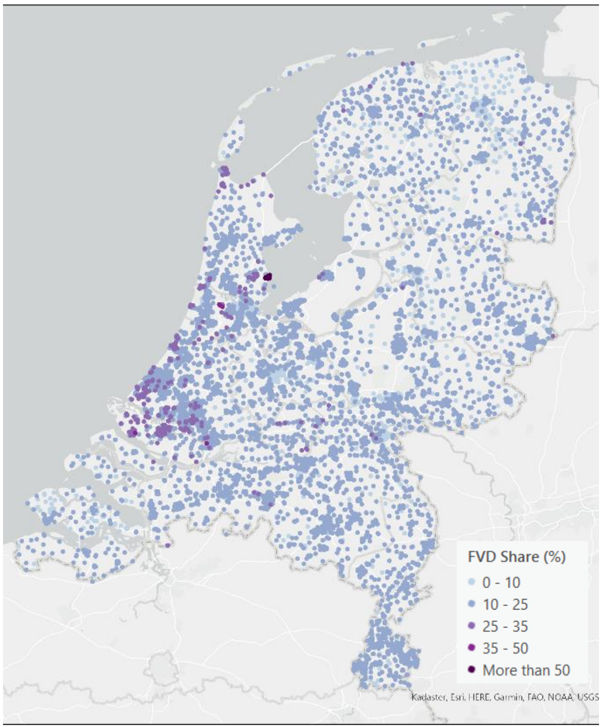

Figure 4.3: FVD vote shares at polling station level.

[1] A one-way ANOVA test showed a significant difference at the p < 0.01 level for the three parties [F (2, 15705)] = 3526, *p* = 0.000]. Post hoc comparisons using Tukey HSD show that the mean values of all three parties differ significantly: between BBB-FVD (*p* = 0.00, 99% C.I. = [-0.07, -0.06]), PVV-BBB (*p* = 0.00, 99% C.I. = [-0.14, -013]) and PVV-FVD (*p* = 0.00, 99% C.I. = [-0.08, -0.07]).

Conversely, the spread of FVD votes in Figure 4.3 suggests a more urban pattern, with higher shares in and around certain cities like Rotterdam and The Hague, but also with higher scores in less urbanized areas in the western provinces of the country. The dark purple dots in North Holland display the remarkably high vote shares in Volendam, a village of 22,000 inhabitants with a strong local identity. Figure 4.4 shows the spread of PVV votes. Again, a different pattern arises, with high shares of votes in the southern province of Limburg, localized in some rural areas, and in and around the cities of Rotterdam and The Hague. These patterns indicate that these parties, although they are all APEPs, have distinct electoral geographies. Furthermore, the urban-rural divide mentioned in Chapter 1 is not necessarily reflected for all parties, as higher shares of APEP votes for PVV and FVD can be found in and around cities. Some cities, like Rotterdam and The Hague, show higher APEP vote shares than cities like Amsterdam, Utrecht or Groningen, indicating that the electoral pattern can differ between cities. Lastly, these maps illustrate three different electorate regions; the eastern rural region, where BBB won a large vote share, the western regions, where FVD won larger shares, and a southern region in Limburg, where PVV won higher shares.

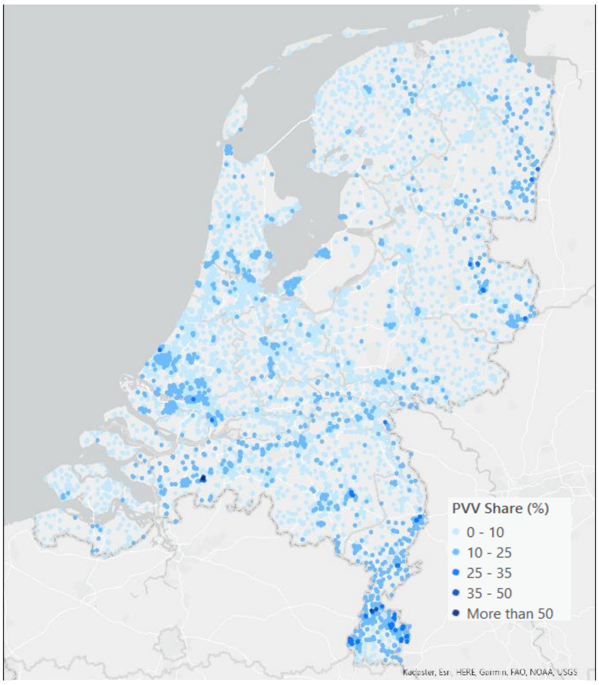

Figure 4.4: PVV vote shares at polling station level.

The differing degrees of urbanization and rurality and their relation to voting for APEPs are investigated in Figure 4.5, which splits the vote shares into 5 urbanization degrees. The boxplot shows that the party vote shares are located relatively close together in extremely urban areas (more than 2500 addresses per km²). PVV and FVD receive a more or less equal share of the votes across all urbanization levels, while BBB shares increase toward more rural areas. The boxplot of the absolute number of votes per neighborhood and urbanization degree (see Appendix 8.2) shows a similar pattern. One important distinction is that, when looking at absolute vote numbers, the relative 'lead' of BBB in rural areas is less pronounced than when looking at relative vote shares. This is because the overall number of votes in rural areas is lower than in urban areas, due to lower population densities. Therefore, larger vote shares are attained quicker, i.e., with a smaller number of votes.

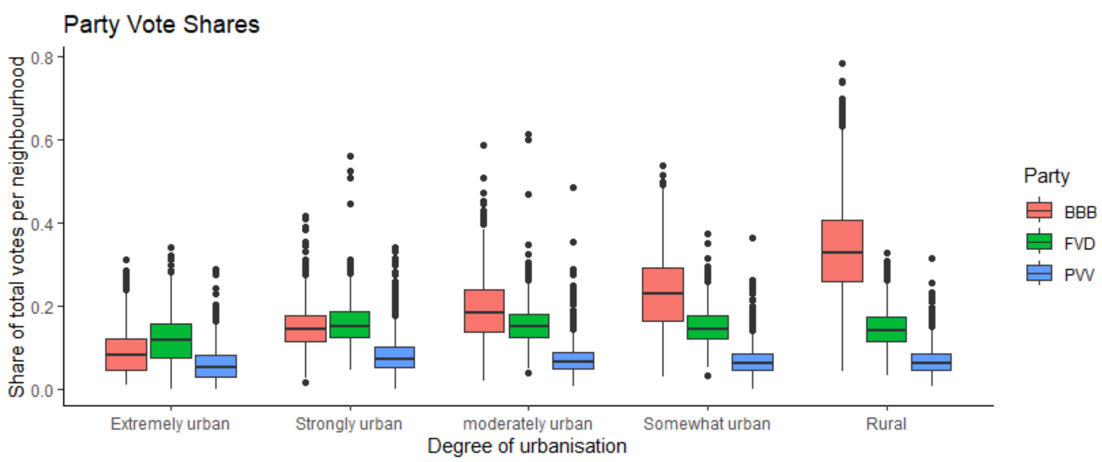

Figure 4.5: APEP vote shares subdivided by urbanization degree

4.1.1 Multicollinearity

The matrices showing the significant ($p < 0.01$) correlations between the used variables are provided in Appendix 8.3. Generally, positive correlations are found between certain demographic variables and broader welfare variables. The demographic variables include higher shares of migrants, higher shares of the 25-45 age group, and lower shares of married couples and the 45-65 age group. Simultaneously, these variables have positive and negative correlations, respectively, with rurality. This relationship is to be expected since it is known that young, single people as well as migrants are overrepresented in cities (Alba & Foner, 2017; Harteveld et al., 2022). The correlated broader welfare variables are in line with expectations of 'urban phenomena' for cities, such as lower social cohesion and more social housing. This underlines the importance of controlling for urban density in the regression.

Strong positive and negative correlations exist between the broader welfare variables. This is to be expected to a certain degree since broader welfare is an interrelated concept with different aspects influencing each other. However, since multicollinearity can negatively influence the model performance, the severity of this effect was checked. Multicollinearity was evaluated by assessing the variance inflation factors [VIFs]. Iteratively, the variable with the highest VIFs was removed and the multicollinearity of the remaining variables was re-evaluated. The variables removed this way due to high VIFs include household size, the share of rented housing, households with a low income, loneliness, stress, perceived health, the share of smokers, long-term illnesses, anxiety and depression, difficulty in making ends meet and control over one's own life. Although different points of view exist, most scholars agree that a VIF between 5 and 10 is acceptable (James et al., 2013). After the removal of the problematic variables, the remaining variables are within the acceptable range of collinearity.

4.1.2 Rurality and peripherality

To explore the effects of rurality and peripherality on vote shares (as discussed in section 2.4), an initial 'stripped-down' ordinary least squares regression was done using only the urbanization degrees (indicating rurality) and the distance to the Hague (indicating peripherality)[2]. Effects of urban density and distance to the Hague on the vote shares are shown in Figure 4.6 (insignificant values are shown with diagonal stripes). Compared to rural areas, the BBB received significantly lower vote shares in more urbanized areas. The other two parties, conversely, show much smaller effects. FVD receives lower vote shares in the most urbanized neighborhoods compared to rural neighborhoods, but vote shares are actually higher in other urban densities for both PVV and FVD. Similarly, the distance to The Hague shows a positive coefficient for BBB and PVV vote shares, meaning that neighborhoods further from The Hague are more likely to vote for these parties. Conversely, FVD shows a negative coefficient, indicating the precise opposite. This confirms observations in previous studies (e.g., De Lange et al., 2023; Huijsmans, 2023a) that *both* rurality and peripherality are important components in voting behavior and that these patterns can be quite different between APEPs. De Lange et al. (2022) and Van Vulpen (2023) find that anti-establishment feelings are more pronounced along the center-periphery axis than the urban-rural axis. These results, however, show a more pronounced effect along the rurality axis than the peripherality axis, especially for BBB.

[2] Three OLS regressions were carried out for this, using only the vote shares of the respective parties as dependent variable and the rurality and peripherality indicators as independent variables. The BBB model ($R^2 = 0.55$) showed a higher explained variance than FVD ($R^2 = 0.14$) or PVV ($R^2 = 0.05$). The full models are provided in Appendix 8.4.

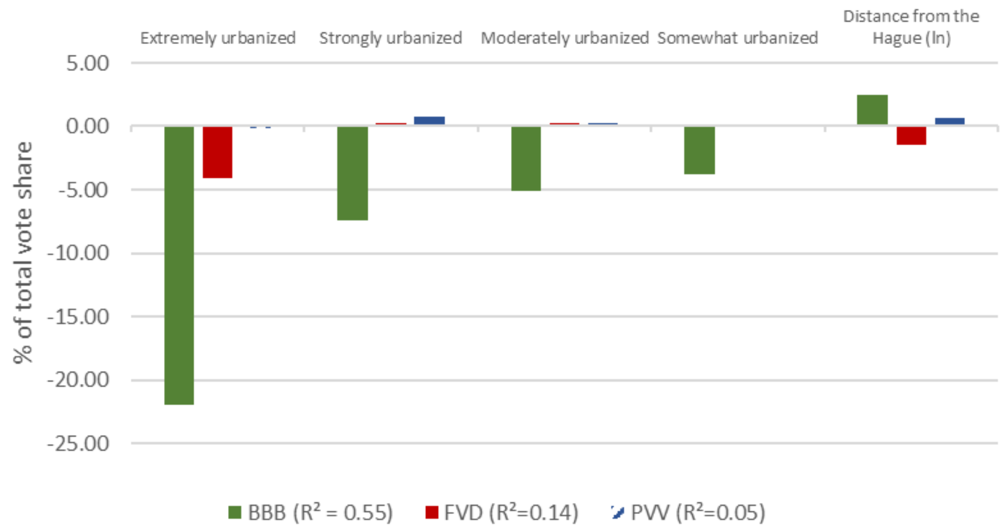

Figure 4.6: Effect of urban density (ref = rural areas with less than 500 addresses per km²) and distance to the Hague on neighborhood vote shares based on OLS analysis. Insignificant values are shown with diagonal stripes.

4.2 Multilevel model

This section discusses the individual blocks that were added to the multilevel model. The complete hierarchical models per party are included in Appendix 8.7. The addition of the broader welfare block significantly improved the performance of the model, while the local candidate block only improved the BBB model (see Appendix 8.9.4 for ANOVA results). The models were validated using a randomly sampled 30% subset. The addition of the broader welfare block was responsible for the largest decrease in RMSE in all three models (see Appendix 8.9.5 for the complete evaluation of the RMSE).

4.2.1 Comparing the parties: The base model

Table 4.1 contains the results of the base model of the three APEPs. The explanatory power of the fixed effects alone (without the random effects of the municipality level) is expressed by the marginal R^2, while the conditional R^2 refers to the explanatory power of the complete model including the random effects. The model performs best for BBB (Conditional $R^2 = 0.87$). The explanatory power of the FVD and PVV models is less, but still quite good (FVD Conditional $R^2 = 0.61$, PVV Conditional $R^2 = 0.65$). The intra-class correlation coefficient [ICC] tests the variance between data points within and outside the grouped cases (in this case, the neighborhoods grouped in municipalities), and thus reflects the interdependence of the data points. A high ICC supports the use of a multilevel model, as this indicates that interdependence within clusters is strong. The ICC value for BBB is 0.60 and for FVD and PVV it is both 0.40. These values show that the influence of the municipal level is considerable as 60% and 40% of variance between neighborhoods is situated at the municipal level. This strongly supports the use of a multilevel model.

Table 4.1 shows that the 'holy trinity' of APEP voter characteristics (age, education and income) are reflected in this analysis (Dijkstra et al., 2020; discussed in Chapter 2.2). All three parties show, though to different extents, that neighborhoods with more young adults are less likely to vote for APEPs. Neighborhoods with more practically skilled people are more likely to vote for APEPs than those with more people with an academic education. Higher average income of a neighborhood is negatively associated with voting for APEPs, although with a modest effect, but no connection is found between average income and FVD vote shares.

Other areas with notable differences between the parties relate to the share of people employed in agriculture. As expected, a higher percentage of employment in agriculture corresponds to a higher share of BBB votes, while this does not come forward for the other two parties. Neighborhoods with higher shares of Western migrants are associated with lower BBB vote shares, but *higher* shares for PVV and FVD. Interestingly, a higher percentage of non-western migrants is associated with fewer votes for PVV. This corresponds to the findings of Koeppen et al. (2022), who discuss the complicated process between support for APEPs and the size of the population with a migration background. The presence of a nonlinear relationship between migration levels and APEP voting is likely. Although anti-immigration attitudes are often associated with APEPs, these attitudes are not always linearly related to actual percentages of inhabitants with a migration background (Harteveld et al., 2022; Koeppen et al., 2022). Paradoxically, relatively strong anti-immigration attitudes are often found in areas with a relatively low number of migrants (Huijsmans, 2023a). The employment rate does not play a role in determining BBB votes but does correspond to higher FVD vote shares and lower PVV shares.

The most influential predictor for BBB is, by far, the 'extremely urbanized' variable as well as other degrees of urban density, although their estimated effect is much lower than sketched in the OLS of Figure 4.6. Education levels and distance to the Hague are also important predictors for BBB voting. FVD has distance to The Hague as its strongest predictor, while education is important for this party too. For PVV, the most important predictors are higher practical education levels and higher shares of Western migrants.

Table 4.1: Base model of BBB, FVD and PVV

Multilevel model – base model

Dependent variable = share of votes in favor of APEP per neighborhood (%)

	BBB		FVD		PVV	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	22.73 ***	41.55	15.03 ***	57.41	6.81 ***	32.87
Municipality ID (random effect)	-0.00	-0.57	-0.00	-1.11	0.00 *	2.49
Contextual variables						
Extremely urbanized *(ref: rural)*	-8.65 ***	-18.80	-0.38	-1.20	0.14	0.56
Strongly urbanized	-3.37 ***	-21.48	0.38 ***	3.50	0.29 ***	3.40
Moderately urbanized	-2.75 ***	-22.11	0.36 ***	4.11	0.12	1.86
Somewhat urbanized	-2.17 ***	-20.63	0.31 ***	4.25	0.08	1.33
Voter turnout	0.25 **	3.07	-0.36 ***	-5.77	-0.41 ***	-8.50
Distance to the Hague (ln)	3.01 ***	7.72	-1.94 ***	-10.26	0.35 *	2.34
Mean property value	0.55 *	2.21	-0.05	-0.26	0.10	0.72
Share of social housing (%)	0.86 ***	5.04	0.33 **	2.87	0.30 ***	3.33
Compositional variables						
Firm settlement (per individual)	-0.26 **	-2.66	-0.15 *	-2.15	-0.10	-1.72
Change in firm settlement (%)	-0.28 **	-2.85	-0.02	-0.36	-0.05	-0.98
Agricultural companies (%)	0.34 ***	3.99	-0.15 *	-1.97	0.02	0.30
People employed in agriculture (%)	1.62 ***	6.23	-0.22 *	-2.57	-0.07	-0.89
Population =< 14 years (%) *(ref: >65 years)*	-0.11	-0.91	0.01	0.12	0.52 ***	7.80
Population =< 24 years (%)	-1.57 ***	-10.86	-0.54 ***	-5.83	-0.49 ***	-6.80
Population =< 44 years (%)	-0.24	-1.08	-0.11	-0.77	0.23	1.95
Population =< 65 years (%)	0.05	0.34	-0.07	-0.66	0.21 *	2.46
Change in population aged 65+ (%)	-0.09	-1.07	-0.00	-0.03	-0.04	-0.81
Married (%) (*ref: Single)*	-0.64 *	-2.34	0.55 **	3.08	0.13	0.92
Divorced (%)	-0.67 ***	-3.71	0.35 **	2.87	-0.05	-0.52
Practical education (%) *(ref: Theoretical)*	2.19 ***	16.37	1.27 ***	14.72	0.67 ***	9.88
No tertiary education (%)	2.19 ***	16.10	1.41 ***	15.70	1.31 ***	18.33
Western migration background (%) (ln)	-0.89 ***	-4.78	0.51 ***	4.09	1.11 ***	11.27
Nonwestern migration background (%) (ln)	-1.74 ***	-8.02	-0.18	-1.25	-0.58 ***	-5.13
Change in population with Western migration background (%)	0.17	1.95	0.05	0.81	-0.05	-0.97
Change in population with Nonwestern migration background	0.18 *	2.04	0.36 ***	5.68	0.02	0.41
Average income	-1.22 ***	-4.97	-0.13	-0.68	-0.61 ***	-4.19

Change in low-income households (%)	0.19 *	2.20	-0.01	-0.10	0.13 **	2.59
Change in average income (%)	-0.00	-0.03	0.04	0.63	-0.09	-1.76
Unemployment benefits (%)	-0.12	-1.33	0.13 *	2.11	0.12 *	2.39
Disability benefits (%)	-0.46 ***	-3.65	0.11	1.02	0.40 ***	5.77
Social welfare benefits (%)	-0.84 ***	-4.24	-0.83 ***	-5.91	-0.32 **	-2.86
Employment rate (%)	0.33	1.51	0.71 ***	4.86	-0.35 **	-3.05
Random Effects						
σ^2	20.80		9.14		5.88	
τ_{00}	31.81 municipality ID		6.13 municipality ID		3.84 municipality ID	
ICC	0.60		0.40		0.40	
N	337 municipality ID		326 municipality ID		328 municipality ID	
Observations	3770		3612		3612	
Marginal R^2 / Conditional R^2	0.659 / 0.865		0.342 / 0.606		0.414 / 0.646	
** p<0.05, ** p<0.01, *** p<0.001*						

4.2.2 Comparing the parties: Broader welfare

In the next step, the broader welfare variables are added to the model. Figures 4.7 and 4.8 show two examples of the geographical spread of the broader welfare variables on the neighborhood and municipality levels. Only neighborhoods that contain at least one polling station are included. Maps on the other broader welfare variables are included in Appendix 8.10.

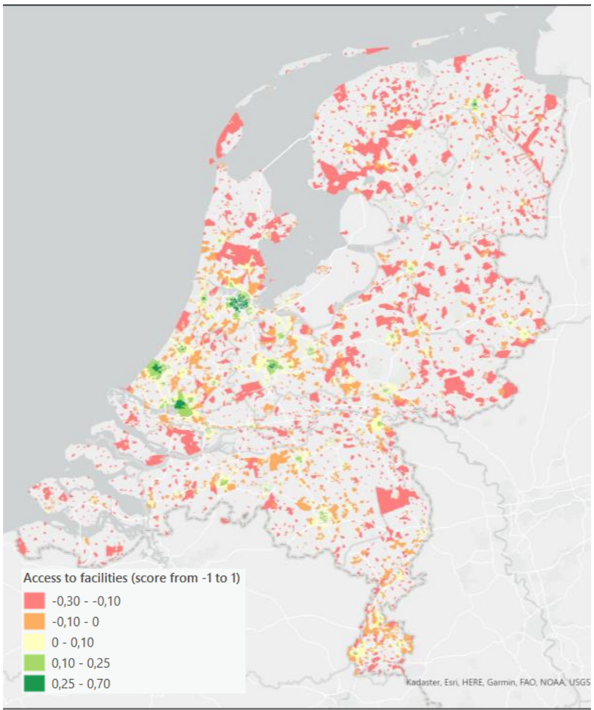

Figure 4.7: Access to facilities per neighborhood. The values are centered around the mean (0) and range from -1 to 1.

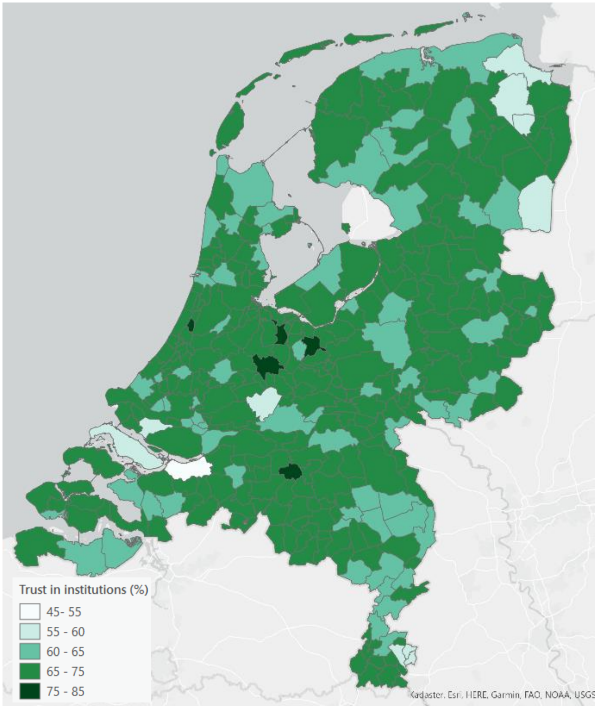

Figure 4.8: Expressed trust in institutions per municipality (%).

Table 4.2 contains the results of the model with the added broader welfare block. The base model variables are not shown in this table, but the complete model is included in Appendix 8.5. The results show that the addition of the broader welfare block significantly adds explanatory power to each of the three party models, although to a varying extent.[3] For all parties, the marginal R^2 increases more than the conditional R^2, meaning that the additional explanatory power of the broader welfare

[3] The BBB model's conditional R^2 = 0.88, an increase of only +0.01. The marginal R^2, which excludes the effect of the municipality random effects, increases from 0.66 to 0.73 (+0.07). FVD's conditional R^2 rises to 0.66 (+0.05) and marginal R^2 to 0.50 (+0.16). The PVV's conditional R^2 increases to 0.72 (+0.07) and marginal R^2 to 0.60 (+0.19).

variables is somewhat muted by controlling for municipal random effects. The addition of the broader welfare variables adds more explanatory power to PVV and FVD than to BBB, indicating that broader welfare is better able to capture the local voting behavior for these parties. Therefore, these indicators appear to play a bigger role for the PVV and FVD electorates than for BBB. The PVV model responds the strongest to the addition. This corresponds to previous findings by Van Leeuwen et al. (2021). They found that a composite broader welfare variable was highly significant and negative for PVV vote shares, while it was insignificant for SP (another left-wing APEP). This signals that a vote for PVV is more motivated by a lower broader welfare than other parties. By alternatingly adding and leaving out the 'local livability' and 'personal welfare' blocks, the explanatory power of the separate blocks could be evaluated. For FVD and PVV, the personal welfare block added more insight than the liveability block, while the liveability block was more important for explaining BBB vote shares[4].

Table 4.2: Multilevel model of the broader welfare variables. The base model variables are shown in Appendix 8.5.

Multilevel model – broader welfare model Dependent variable = share of votes in favor of APEP per neighborhood						
	BBB		FVD		PVV	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	21.46 ***	43.82	15.14 ***	67.15	7.38 ***	41.91
Municipality ID (random effect)	-0.00	-0.53	-0.00 **	-3.29	0.00	1.20
Contextual variables	*Included*		*Included*		*Included*	
Compositional variables	*Included*		*Included*		*Included*	
Local livability indicators						
Quality of environment	-0.46 ***	-4.13	0.01	0.07	-0.29 ***	-4.86
Safety	0.19	0.88	-0.07	-0.47	-0.46 ***	-3.84
Social cohesion	-0.10	-0.36	0.49 **	2.72	0.34 *	2.38
Access to facilities	-2.87 ***	-10.44	-1.66 ***	-9.25	-0.37 **	-2.67
Quality of housing stock	0.29	1.88	-0.11	-1.02	-0.42 ***	-4.92
Personal welfare indicators						
Inequality in socio-economic status	0.33	1.86	-0.24 *	-2.10	-0.07	-0.73
Severe obesity (%)	2.69 ***	10.32	1.03 ***	6.19	1.54 ***	11.69
Heavy drinker (%)	1.38 ***	9.61	1.14 ***	11.61	0.55 ***	7.17
Volunteering work (%)	2.04 ***	7.70	-2.35 ***	-13.82	-1.62 ***	-12.16
Satisfied with own life (%)	-0.26	-0.65	0.20	1.10	-0.11	-0.78
Expressed trust in others (%)	0.62	1.57	-0.06	-0.32	-0.15	-1.07
Expressed trust in institutions (%)	-0.23	-0.61	-0.58 ***	-3.40	-0.50 ***	-3.78
Life expectancy	0.27	1.05	0.23	1.76	-0.14	-1.33
Random Effects						
σ^2	19.26		8.35		5.22	
τ_{00}	22.85 Municipality ID		3.81 Municipality ID		2.29 Municipality ID	
ICC	0.54		0.31		0.31	
N	337 Municipality ID		325 Municipality ID		325 Municipality ID	
Observations	3770		3612		3612	
Marginal R^2 / Conditional R^2	0.732 / 0.877		0.499 / 0.656		0.591 / 0.716	
						**** p<0.05, ** p<0.01, *** p<0.001***

Looking at the individual indicators, access to facilities is important for all three parties, having an especially large influence on votes for BBB and FVD. The negative relation indicates that lower access to facilities corresponds to higher vote shares. This corresponds to previous findings that local marginalization is an important predictor for APEP voting (Harteveld et al., 2022). The importance of the other local livability variables differs per party. A higher quality of the environment corresponds to

[4] BBB's conditional R^2 increased with +0.009 for the livability block and with +0.005 for the personal welfare block. The FVD model's R^2 increased with + 0.012 for livability and +0.032 for personal welfare, while PVV gained +0.028 and + 0.079, respectively.

lower vote shares for BBB and PVV. Surprisingly, higher social cohesion corresponds with higher shares for FVD and PVV, but not for BBB. Possible reasons for this are discussed in Chapter 5.

Regarding the personal welfare indicators, three predictors are important for all parties: The level of severe obesity, the percentage of heavy drinkers and participation in volunteering. Higher degrees in the first two are both positively related to voting for all three APEPs, confirming previous studies arguing that health is an important factor in broader welfare and APEP support (e.g., Van Leeuwen et al., 2021; Ouweneel & Veenhoven, 2016; Van den Berg & Kok, 2021). The volunteering indicator provides an interesting insight into the difference between BBB and the other APEPs. BBB's vote share is found to increase with more participation in volunteering. One explanation could be that these voters are drawn to the BBB discourse surrounding 'naoberschap' (neighborliness) and the importance of social networks within communities, where volunteering plays an important role. This is outlined in the party's core values (BBB, n.d.) and election programs (BBB, 2023a; b) and described by Egeter (2023). Another explanation, especially in the rural areas where BBB won high vote shares, relates to reduced accessibility of facilities, which can motivate citizens to participate in more volunteering to reduce the 'gap' left behind by this absence. This phenomenon has been demonstrated in a Dutch village by Haartsen & Gieling (2021). Although reduced access to facilities is a significant predictor for all parties, it is strongest for BBB vote shares, which might contribute to the positive relation of BBB shares to volunteering. Lastly, the relatively older age composition of (rural) BBB voters can play a role here, as older people, especially in rural areas, are highly involved in volunteering activities (Fortuijn & Van der Meer; 2006).

Unlike the BBB, participation in voluntary work is negatively associated with voting for FVD and PVV. One explanation could be that the electorate of these parties is more urban than the BBB, and therefore the importance of volunteering in rural villages described above is less important here. An additional factor could be formed by the respondence of voters to the strong anti-institutional discourse surrounding both parties, suggesting that this electorate feels further removed from institutional society and is thus less inclined to contribute through volunteering. This is compounded by the fact that these parties (PVV and FVD) both have significant negative relationships with trust in institutions. This mistrust could coincide with an unwillingness to participate in more institution-related volunteering activities, like work at libraries or in transportation (e.g., a volunteer-run transportation system to keep the nearest supermarket accessible for everybody, as described in Haartsen & Gieling (2021)). Interestingly, no effects on vote shares for PVV and FVD are found on trust in others, indicating that this mistrust is aimed specifically at 'established' organizations, but not at fellow citizens. No significant effect for trust in institutions and trust in others is present for BBB. Nevertheless, these findings form a contrast with the positive relationships found between PVV and FVD vote shares and social cohesion (further discussed in Chapter 5).

No significant relation is found between social cohesion and BBB vote shares. Gieling et al. (2019) and Haartsen & Gieling (2021) provide a possible explanation. They demonstrate that decreasing public facilities can motivate more voluntary initiatives, but can also lead to a lessened social attachment because of the removal of meeting places. Similarly, local attachment does not automatically translate to higher volunteering participation (Gieling et al., 2019). This is especially salient in rural areas, where BBB is popular. Therefore, social cohesion and voluntary participation do not necessarily reflect the same type of social engagement. The relationship between social cohesion, volunteering and trust in institutions is explored further in the discussion.

The addition of the broader welfare block changed the strength and significance of several base-model predictors (see Appendix 8.7). One change worth noting is that, in all three models, the share of social housing becomes insignificant after the broader welfare variables are added, meaning that the effect of this indicator is captured by the newly added variables. This suggests that social housing functioned as a proxy for other broader welfare determinants. Furthermore, the addition of the broader welfare block has made both the urban dummy and share of non-western migrants of PVV significant and quite influential. This suggests that, for PVV, the addition of the welfare block has (partially) responded to omitted variables. Living in a city actually relates to lower PVV vote shares, when controlling for broader welfare variables. This could be due to the fact that broader welfare is generally relatively lower in cities, as also illustrated by the mapped broader welfare variables in Appendix 8.10. Similarly, the influence of BBB's urban density variables is considerably reduced by the addition of the broader welfare block, reflecting that living in an urban or rural area has less influence on BBB voting when broader welfare is considered.

4.2.3 Comparing the parties: Local candidates

Table 4.3 contains the results of the model with the added local candidate variable (the complete model is included in Appendix 8.6). Although the addition of the variable did not lead to a notable increase in the R^2, significant effects are found for FVD and PVV. In the current context, the variable significantly improved the PVV model (see Appendix 8.9 for the ANOVA results). The local candidate variable is weakly significant for FVD, indicating that a higher tendency to vote locally corresponds to a lower FVD vote share. The vote share of local candidates is highly significant (*p<0.001)* for PVV, indicating that more local votes are recorded in neighborhoods with higher shares of votes for PVV. This corresponds to findings by Huijsmans (2023a; b) and Van Vulpen (2023), discussed further in Chapter 5.

Table 4.3: MLM of the local candidates variable. The base and broader welfare variables are shown in Appendix 8.6.

Multilevel model – local candidates model						
Dependent variable = share of votes in favor of APEP per neighborhood						
	BBB		FVD		PVV	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	21.55 ***	43.06	15.04 ***	65.27	7.55 ***	42.84
Municipality ID (random effect)	-0.00	-0.52	-0.00 **	-3.25	0.00	1.11
Contextual variables	*Included*		*Included*		*Included*	
Compositional variables	*Included*		*Included*		*Included*	
Local livability indicators	*Included*		*Included*		*Included*	
Personal welfare indicators	*Included*		*Included*		*Included*	
Votes cast for local candidate (%)	0.34	0.89	-0.33 *	-1.99	0.55 ***	4.41
Random Effects						
σ^2	19.26		8.35		5.22	
τ_{00}	22.87 Municipality ID		3.77 Municipality ID		2.14 Municipality ID	
ICC	0.54		0.31		0.29	
N	337 Municipality ID		326 Municipality ID		328 Municipality ID	
Observations	3770		3612		3612	
Marginal R^2 / Conditional R^2	0.728 / 0.876		0.511 / 0.663		0.596 / 0.714	
						***** p<0.05, ** p<0.01, *** p<0.001**

Nevertheless, these current results are far from conclusive and add limited explanatory power to the current model. Further exploratory analysis into the complete dataset of representatives of all parties provided promising preliminary results that could be a starting point for future research. It shows that whether a candidate is from a local municipality or not has a significant and relatively large impact on the share of the votes attained by the candidate in that municipality while controlling for party, candidate position, length of the candidates list, population size and distance to The Hague[5].

[5] Two OLS regressions were carried out for this, using datasets containing vote data on all candidates that participated in the provincial elections of 2019 and 2023. The 2023 model (*R^2 = 0.11)* showed a significant

Therefore, although this does not necessarily become salient in the regression in Table 4.3, there are indications that locality can play a role in voters' decision to vote for a particular candidate, especially in regions with higher perceived regional resentment or with a strong regional identity. For example, Urk, a municipality with a strong regional identity, was the municipality with the highest share (87%) of the votes cast in favor of local candidates in 2023. Further research is needed to disentangle this relationship.

To conclude this section on the hierarchical multilevel model, it is worthwhile to note that, over the addition of the model blocks, the sign direction of the two highest urban density indicators have reversed for PVV from positive to negative (see Appendix 8.7.3). This means that most urban areas are actually less likely to vote for PVV when all other factors are controlled for, compared to rural areas. After adding the broader welfare blocks in the BBB model, all urban density indicators keep a strong and negative effect on BBB vote shares, although their impact is lessened considerably. This indicates that, in the base model, urban density captures a portion of omitted variables which can exaggerate the influence of these variables. The additions did not change the urban density predictors of FVD in a meaningful way.

4.3 Scale analysis

Table 4.4 shows the results of the OLS regression using the BBB vote share data on the three scale levels discussed in Chapter 3.2.2. The results confirm that smaller scale levels correspond to an improved model performance (municipality scale $R^2 = 0.60$, neighborhood scale $R^2 = 0.68$, grid scale $R^2 = 0.65$), although the effect is modest. This supports the hypothesis that the modifiable areal unit problem can play a relevant role in the modeling of voting geographies. Most differences between the models can be found between the municipality scale and the two smaller scales. Interestingly, the share of the population with a non-western migration background has a positive effect on BBB vote shares on the municipal level, while this effect reverses on the neighborhood and grid level. This suggests that municipalities with more non-western migrants generally tend to vote more for BBB than those with fewer non-western migrants, but that people actually within the local area or neighborhood with these higher shares are *less* likely to vote for BBB. Similarly, strong effects on the municipal level for income, property value, share of social housing and benefits disappear when zooming in to smaller scales. This underlines why scale matters in understanding voting patterns, as different levels of aggregation can paint different pictures of the electorate of APEPs.

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increase in performance after adding the local candidate dummy (β = 0.90, t(183798) = 76, $p < 0.001$, *added* $R^2 = 0.03$). A similar result was found for the 2019 dataset (β = 1.18, t(142121) = 74, $p < 0.001$, *added* $R^2 = 0.04$). For both models, the local candidate model was the most important predictor. Full models are provided in Appendix 8.8.

Table 4.4: Regression results of the scale analysis using BBB vote share data

Ordinary least squares model – Scale analysis					** p<0.05, ** p<0.01, *** p<0.001*	
Dependent variable = share of votes in favor of BBB per spatial unit						
	Municipality scale		Neighborhood scale		Grid scale	
Predictors	*Est.*	*t*	*Est.*	*Est.*	*t*	*Est.*
(Intercept)	20.94***	31.30	22.42***	54.27	22.94***	57.69
Voter turnout	1.58**	2.72	1.75***	4.04	1.41**	3.25
Extremely urbanized *(ref: rural)*	-2.42*	-2.14	-8.80***	-12.87	-11.66***	-20.76
Strongly urbanized	-4.55***	-5.76	-9.99***	-19.89	-10.85***	-24.90
Moderately urbanized	-1.61*	-2.33	-3.21***	-18.51	-3.12***	-19.54
Somewhat urbanized	0.36	1.62	-2.34***	-15.22	-2.07***	-14.13
Population =< 14 years (%) *(ref: >65 years)*	0.13	0.58	-0.24	-1.56	-0.35*	-2.56
Population =< 24 years (%)	-0.54**	-2.61	-0.94***	-7.41	-1.10***	-9.46
Population =< 44 years (%)	-0.13	-0.27	0.72***	3.63	0.08	0.50
Population =< 65 years (%)	1.94***	5.38	0.70***	4.17	0.16	1.22
Western migration background (%)	-2.57***	-10.37	-1.05***	-6.23	-1.02***	-8.21
Nonwestern migration background (%)	2.82***	6.31	-0.86***	-3.53	-0.86***	-4.46
Mean standardized income (x1000)	-5.24***	-10.66	-4.61***	-15.51	-1.56***	-6.22
Mean property value	3.14***	6.73	1.55***	5.68	-0.39	-1.64
Share of social housing (%)	-0.94***	-3.52	-0.61**	-3.08	0.00	0.00
Population on benefits (%)	1.20***	3.38	0.50*	2.13	-0.09	-0.47
Distance to the Hague (ln)	0.67**	2.99	0.67***	4.55	0.68***	5.27
Quality of environment	0.33*	1.96	0.42***	3.32	0.53***	4.74
Safety	4.49***	8.99	1.28***	4.48	0.30	1.71
Access to facilities	-4.29***	-7.91	-3.27***	-11.36	-3.02***	-11.67
Quality of housing stock	-0.58	-1.63	0.16	0.76	-0.23	-1.61
Observations	3753		3753		3753	
R^2 / R^2 adjusted	0.604 / 0.602		0.677 / 0.675		0.649 / 0.647	

The RMSE attained by the three models is shown in Appendix 8.11.1. Both the neighborhood and the grid model have a lower RMSE than the municipal model. Especially the urban density and age predictors have a stronger effect on these smaller scales than on the municipality level. This is to be expected, because urban density and age composition are quite unequally distributed on the local level, but are smoothed out by aggregation to the municipal level. Interestingly, the grid model has a lower RMSE than the neighborhood model, indicating that the grid model is more accurate. This could be because the squares of the grid all have a relatively small size (500 by 500 meters). Comparatively, the neighborhood model has much more diverse shapes and sizes, and many are larger than 500 by 500 meters. This variability is probably the reason why the neighborhood model has a slightly higher RMSE and is thus less accurate. Nevertheless, the explanatory power of the neighborhood model is larger than the grid model. Lastly, Appendix 8.11.2 shows the mapped standardized residuals of the three models. The maps show that, in all three models, there are deviating residuals in the eastern rural areas where the vote shares have been underestimated by the model. Cities tend to have the least deviating residuals. This indicates that the models are better at predicting voting behavior in urban areas than in rural areas. This could be because urban municipalities, neighborhoods and grid cells contain more diversity, which averages out when aggregated to the relevant scale level. Therefore, they can provide more general statistics that are closer to the regional mean.

5 Discussion

This chapter relates the key findings to literature and discusses the underlying mechanisms before addressing limitations.

5.1 Main findings and relevance

5.1.1 Comparing the geographical electoral patterns of BBB, PVV and FVD

The final models for BBB, FVD and PVV attained R^2's of 0.88, 0.66 and 0.71, respectively. This is similar to comparable papers related to voting behavior, where the R^2 typically ranges between 0.6 and 0.7 (Dijkstra et al. 2020; Rodríguez-Pose et al., 2023; Van Leeuwen et al., 2021), making the R^2 of BBB relatively high. The results show that distinct differences can be found between each of the parties in their set of important determinants. This resonates with earlier work by Van Leeuwen et al. (2021), who find differences between the geographical electorates of populist parties on the left and right. This thesis adds that there are also distinct differences between different right-wing APEPs and that these can be rooted in different sources of discontent. Two main divides emerge: an urban-rural divide on the macro-context in the larger region and a welfare divide on the local scale. The urban-rural divide separates BBB from the other parties, while factors surrounding welfare are especially important for PVV. PVV also distinguishes itself because it is the only party with a significant relation between PVV vote shares and voting for a local candidate. FVD responds much less to certain 'traditional APEP variables' than the other parties: income-, age- and ethnicity-related variables are insignificant.

The urban-rural divide between the rural BBB electorate and the more urban PVV and FVD electorate is illustrated mainly by the urbanization and peripherality indicators. The results show that BBB is defined more by the *rurality* of its electorate, while the FVD is defined more by its *peripherality*, while PVV has neither. Besides these, other 'rural' indicators also significantly distinguish BBB, like the share of agricultural companies, people employed in agriculture, marital status and the share of migrants. The latter's negative relation with BBB vote shares (i.e., higher shares of (non-)Western migrants correspond to lower BBB vote shares) could be because shares of migrants are especially high in cities. Furthermore, BBB's political agenda focuses much less on anti-migration points than PVV and FVD, which is reflected in their electorates.

The Dutch urban-rural divide, previously confirmed by De Lange et al. (2022), Huijsmans (2023a) and Van Vulpen (2023), is not solely determined by urban density and peripherality. As more variables are added, the influence of these factors lessens, indicating that this divide is not the only determinant of discontent and APEP voting. Van Vulpen (2023) finds that economic decline is not the main driver for Dutch peripheral discontent, a view supported by this thesis. Economic factors play a limited role except when it concerns those specifically related to agriculture. Instead, De Lange et al. (2022), Huijsmans (2023a) and Van Vulpen (2023) argue that discontent is rooted in 'resentment' about one's region not receiving its 'fair share' in representation and investment compared to the center, especially in places with strong local identities. These results reflect this underinvestment, especially in the low access to facilities and quality of the environment. Additionally, Van Vulpen (2023) demonstrates that, although the periphery experiences more regional discontent, residents are generally happier with their environment and enjoy a relatively higher broader welfare. This resonates with the current finding here that the addition of the broader welfare block only added limited additional insight for BBB. This illustrates the BBB electorate as not necessarily skeptical of institutions or severely disadvantaged, but rather as concerned about a receding government and diminishing facility level, experiencing discontent from feeling 'overlooked'.

The PVV electorate is typified by their responsiveness to local broader welfare factors. This is in line with findings by Van Leeuwen et al. (2021), who find that broader welfare is a significant predictor for PVV vote shares. This electorate also responds to determinants that point toward more socioeconomic disadvantage and skepticism toward institutions. This resonates with Harteveld et al. (2022), who relate economic hardship to stronger anti-immigration attitudes and a higher propensity to vote for PVV, whose political agenda mainly revolves around anti-migration standpoints. They find evidence that political elites and migrants are equally blamed for this economic hardship. This thesis adds that reduced broader welfare can play a role for this electorate too. Low broader welfare can motivate voters to 'blame' others for their hardship, be it the government or migrants. The explicit anti-establishment and anti-migration standpoints of the PVV provide these voters with a way to channel this blame toward a scapegoat. Meanwhile, the results do not point towards an additional urban-rural divide for the PVV electorate. The areas where issues surrounding broader welfare are especially salient can equally be in relatively disadvantaged areas in peripheral regions or in inner-city neighborhoods.

Although there is no clear 'divide' that separates FVD from the other parties, FVD distinguishes itself because it responds less to the traditional APEP determinants of the 'holy triad' of income, age and education. Especially salient is that the income variable is insignificant for FVD. Its model had the lowest performance, suggesting that part of the determinants for FVD voting remain uncaptured. Nevertheless, the electorate is similar to PVV in terms of personal welfare factors. This indicates that the FVD electorate is more intangible than other parties and that the determinants of the 'holy triad' do not necessarily apply to all APEPs. One explanation could be the fact that FVD attracted a more fragmented and diverse electorate with its initial party line centering on similar socio-cultural issues as the PVV but with a more 'sensible' and liberal approach (De Jonge, 2021).

Interestingly, most 'change' variables, reflecting the development in socio-economic variables over the three years preceding the elections, remain insignificant. These variables reflect the change in income, firm settlement, and share of the elderly population over the last three years. This indicates that regional economic and demographic decline is not as important here as expected from previous findings by Rodríguez-Pose (2018) and Harteveld et al. (2022). Instead, these results resonate more with work in the Netherlands by Van Vulpen (2023) and in the UK by McKay et al. (2021), who find that economic decline does not provide an explanation for political discontent across the board. However, Van Vulpen (2023) found strong associations between discontent and an aging population, which are not reflected in these findings.

This thesis shows that it is difficult to pinpoint the exact characteristics of the 'wandering' electorate of discontented voters. The results demonstrate that a single, straightforward model of *the* anti-establishment voter does not exist. Nevertheless, core characteristics of discontented places should be sought in the commonalities between the three electorates. These include lower shares of young adults (aged 15-25 years), higher shares of practically educated people or people with no tertiary education, lower shares of people on welfare benefits, less access to facilities and higher shares of people with severe obesity and heavy drinkers. These characteristics form the demographics of neighborhoods with higher protest vote shares and more discontent, and should therefore be a starting point for future research and policy that aims to address this discontent.

5.1.2 Broader welfare

This thesis addresses a research gap outlined in academia (Koeppen et al., 2021; Van Leeuwen & Halleck Vega, 2021) as well as in policy (De Voogd & Cuperus, 2021; Van den Berg & Kok, 2021; Rli, ROB & RVS, 2023) by considering the effect of broader welfare. Many studies investigating discontent look into subjective well-being, self-reported life satisfaction or happiness (Burger & Eiselt, 2023; Koeppen et al., 2021). This thesis extends this by employing a wider range of variables and by zooming in on specific aspects of broader welfare rather than general composites. Important aspects are especially local livability indicators, health-related indicators and trust in institutions. The broader welfare variables significantly improved the model for all three parties, which shows that these variables can be significant and influential determinants and provide a new perspective on the role of broader welfare in electoral patterns. Additionally, this thesis provides empirical evidence that directly connects to voting behavior. Studies that include broader welfare are often on the individual level and investigate people's political preferences or their intention to vote for APEPs (Burger & Eiselt, 2023; Koeppen et al., 2021). However, these preferences or intentions do not necessarily guarantee that these people will actually vote as reported when elections arrive. Burger & Eiselt (2023) argue that voters might choose a different party than they initially claimed due to new information received during the elections, strategic voting or abstaining from voting. Because this thesis employs data on the neighborhood-level, it was possible to use actual election outcomes. It confirms that broader welfare remains relevant when taking actual election data into account (Burger & Eiselt, 2023).

Considering the most important predictors, the health-related factors show a stable, significant impact on APEP voting for all parties. Academic literature on the relationship between health and discontent or protest voting in the Netherlands is limited (except for Ouweneel & Veenhoven, 2016), although it is mentioned as an important factor in policy (De Voogd & Cuperus, 2021; Thissen & Content, 2022). Therefore, this study provides initial empirical evidence for the link between poor health and a higher tendency for protest voting. Compared to other predictors, the impact of these indicators is considerable, suggesting that the role of health in regional discontent might be quite influential.

Access to facilities is another important broader welfare indicator. This resonates with earlier findings by Van Vulpen (2023) and Huijsmans (2023a) that peripheral discontent is fueled by notions of an unfair distribution of national resources. It is in line with the 'rural service paradox', proposed by Van Vulpen (2023), which states that when facilities disappear, especially in rural areas, local citizens often organize themselves to substitute for the missing service previously provided by the government. These initiatives can have a positive impact on local participation but simultaneously can lead to negative attitudes toward the government that has 'left them behind', thereby still promoting APEP voting. Indeed, a higher participation in volunteering corresponds to a higher BBB vote share. Since similar relationships between accessibility and APEP voting are also found for PVV and FVD, this process is relevant beyond the urban-rural divide. Once completed, the removal of services is difficult to restore and can have far-reaching effects on local livability, demography and economy (Bock, 2016; Huijsmans, 2023a; b; Van Leeuwen et al., 2021). Previous studies have already linked this to increased place resentment (Harteveld et al., 2019; McKay et al. 2021; Van Vulpen, 2023), while this study links it specifically to APEP voting. Therefore, caution is called for when considering the removal of local services, as 'trust arrives on foot but leaves on horseback'.

Interestingly, significant positive effects are found between social cohesion and PVV and FVD vote shares, but no significant effects are found for BBB. As outlined in the previous chapter, this could be because social cohesion is not necessarily directly related to local participation or attachment in rural areas (Gieling et al., 2019). Furthermore, the operationalization of social cohesion used in this thesis might be less suitable for rural areas. The index is based on the concept of 'bridging ties' rather than 'bonding ties' (Mandemakers et al., 2021). For example, the score is partly based on diversity in age composition, a higher population density and population decline. As a result, rural areas might receive unfairly low scores. The negative relationship between PVV and FVD vote shares and volunteering participation underlines that certain 'types' of social cohesion and participation are perhaps better represented than others. Future research could advance this aspect by detangling the effects of different 'types' of social cohesion or local participation (illustrated in Gieling et al., 2019).

Finally, a last important broader welfare predictor is trust in institutions. PVV and FVD show a negative relation between trust in institutions and their respective vote shares. This corresponds with other studies that relate lower trust levels to discontented places (McKay et al., 2021; Van Vulpen, 2023).

Additionally, voter turnout can be seen as a measurement of trust in institutions, since people with low trust in institutions or politics are less likely to vote (McKay et al., 2021). This is in line with our results, as a low voter turnout is associated with higher PVV and FVD vote shares, while a high voter turnout is associated with a high BBB vote share. Van Vulpen (2023) finds decreased trust in institutions especially in peripheral areas, which is not necessarily reflected in the results here, especially for the more 'urban' FVD party. Interestingly, trust in institutions is not significant for BBB and trust in others does not play a significant role for any party, underlining that mutual (dis)trust among citizens is not a cause for protest voting. This study thereby provides empirical evidence for which *type* of trust is important for APEP voting, and that it does not necessarily play a role for all APEP electorates.

5.1.3 Local candidates

This thesis finds preliminary empirical evidence for a significant positive relationship between voting for local candidates and PVV vote shares. Very few studies have been done into geographical representation in the Dutch parliament (exceptions include Huijsmans, 2023b; Latner & McGann, 2005; Hakhverdian, 2017; Van Vulpen, 2023; Van Vulpen & Van den Berg, 2023) and these focus on representation by MPs in the Dutch parliament rather than on voting behavior for local candidates. In the Dutch context, no work has yet investigated whether people are more likely to vote for representatives from the same municipality and if this is especially salient for protest voting. This is remarkable, as international studies have shown that a candidate's roots are important to voters (Munis, 2021) and that voting for local candidates and parties can be viewed as a form of 'protest voting' (Lundåsen & Erlingsson, 2023; Otjes, 2020). It is therefore not surprising that a significant effect is found between local and APEP voting. Previous research has shown that political underrepresentation is one of the roots of regional resentment (Huijsmans, 2023a; b) and that, in international literature, a relationship has already been established between people with strong place-based identities and voting for local candidates (Munis, 2021; Schulte-Cloos & Bauer, 2021).

Why is a significant effect found for PVV, but not for other parties? One explanation is the PVV's popularity in the southern peripheral provinces, especially in Limburg, and their leader-centered party model with a leader from the same region. This is in line with findings by Huijsmans (2023b) and Van Vulpen (2023) that local representation is important for certain vocal peripheries and a general signifier of place resentment and regional discontent. However, this does not explain why no significant relationship is found for BBB, which also centers around peripheral discontent. One reason for this distinction could be that local PVV candidates are currently more established and well-known in their municipalities, as the PVV has been active much longer and has experience with participating in local government. This builds familiarity with the representatives and could motivate citizens to vote for acquainted local candidates. Additionally, the lower trust in institutions among PVV voters, which can move them to vote locally, can provide an explanation here. This is in line with findings by Otjes (2018), who finds that local parties receive more support from voters with lower trust in institutions. Similarly, local candidates could receive more support from citizens who are skeptical of institutions. Nevertheless, this thesis provides only preliminary evidence and more research is needed before establishing a definite relationship between support for local candidates and protest voting.

5.1.4 Influence of scale

This thesis shows that a smaller scale improves analysis accuracy, and suggests that problems related to aggregation size are more influential than the shape of the units. These results correspond with the recommended use of smaller scales in the regional science field. Multiple authors have argued that small-scale analysis is better suited to investigate regional discontent because it better reflects the daily-life environment in which voters experience their life (Gordon, 2018; McKay et al., 2021; Rodríquez-Pose et al., 2023). Similarly, scale-related spatial problems causing statistical bias are well-known within spatial analysis (Manley, 2014). This thesis combined theoretical insights from regional science with practical insights from spatial science to explore the impact of scale on spatial voting patterns. Although the argumentation by the regional science academics could be a possible explanation for the higher accuracy, a causal connection is not necessarily established here. Nevertheless, these preliminary findings are promising and relevant for future geographical electoral studies.

5.2 Limitations

Several limitations can be identified for this thesis. As mentioned in the conceptual framework (section 2.5), the cultural component of regional discontent is not a focal point in this thesis due to data limitations. Nevertheless, local identities and cultural differences between the center and periphery can play a key role in regional discontent (Huijsmans, 2023a; b). The importance of a cultural divide aligns with the persisting urban-rural divide that separates BBB from the other APEPs and the different influences of social cohesion, volunteer participation and trust in institutions. The role of a 'rural identity' might be significant here, as demonstrated by Cramer (2016) and Ziblatt et al. (2020). More generally, differences in local identities and lifestyles can lead to a larger perceived distance to the political establishment, and thus play a role in motivating APEP voting, especially in regions where cultural aspects like 'naoberschap' (neighborliness) are deemed important (Rli, ROB & RVS, 2023).

Another conceptual limitation concerns the generalized link between local determinants of APEP voting and discontent. Van Vulpen (2023) rightfully nuances this and notes that discontent is not exclusively expressed through APEP voting. He argues that it is not guaranteed that APEP voters share the same resentment as expressed in the party line. Therefore, an APEP vote does not necessarily directly translate to the reason for a citizen's discontent. Vice versa, discontented citizens might not always manifest their discontent through an APEP vote. The use of surveys can add insight into the presence and type of discontent beyond voting behavior. Nevertheless, the use of election data in investigating regional discontent can be justified for its comparative benefits. Most importantly, it provides a very large, reliable and detailed sample of the local sentiment of citizens, even though this is channeled through a choice for a particular party. Furthermore, APEP voting rooted in discontent can have far-reaching consequences for policy and the political course of the country, which makes discontent expressed through voting relatively impactful in its consequences.

Because this thesis focuses explicitly on the geographical spread of APEP voting in the Netherlands, the contribution of (social) media and networks to anti-establishment voting is left outside its scope. Nevertheless, it is important to be aware of the emerging role of social media within voting behavior, as research demonstrates its importance in channeling and disseminating anti-establishment ideas (for example, see Bartlett, Birdwell & Littler, 2011; Engesser et al., 2017; Hameleers & Schmuck, 2017). Similarly, election polls and their interpretation in the media can create their own dynamic, as illustrated in the recent national election (Valk & De Witt Wijnen, 2023). Besides the influence of traditional and social media, voters' social networks are important in APEP voting. Voters' personal networks can influence voting behavior through peer pressure and the dissemination of information within social groups (Paulis & Ognibene, 2022; Santoro & Beck, 2018). Because this thesis aimed to concentrate on factors at the neighborhood-level, it was not possible to include these aspects, although it should be recognized that they play an influential role in voting behavior.

The distribution of regional investments in peripheral regions and its link to regional discontent is another aspect that was outside the scope of this thesis. Perceived unequal distribution of government spending can be a root of discontent (De Lange et al., 2022; Huijsmans, 2023b), and both Meijers (2022) and Van Vulpen (2023) show that 'left behind' regions are not prioritized in regional investments. Because no comprehensive and current dataset is available for this aspect of regional economic development, this part was not included in this thesis. Nevertheless, its inclusion seems promising for future research.

6 Conclusion

This thesis contributes to the fields of regional and political science by providing empirical evidence on local determinants of Dutch protest voting, thereby adding to existing literature on Dutch APEP voting behavior (De Lange et al., 2022; Van Leeuwen et al., 2021; Harteveld et al., 2022). It shows how three Dutch APEPs have distinct geographical electorates, providing evidence for different ‘roots’ of discontent as posed by multiple authors (e.g., Harteveld et al., 2022; McKay et al., 2021; Huijsmans, 2023a). The electoral geographies investigated in this study mainly distinguish themselves on a larger geographical scale along a rural-urban divide and on a more local scale through the extent to which they are affected by broader welfare issues. This thesis confirms that broader welfare plays an important role in APEP voting, in line with previous findings by Burger & Eiselt (2023)`, Koeppen et al. (2021) and Van Leeuwen et al. (2021). It further extends this research by including new broader welfare variables and by making a conceptual division between aspects related to local livability and personal welfare. This thesis provides explorative empirical evidence for a relationship between APEP voting and voting for local candidates. Finally, it contributes to methodological aspects of voting behavior studies by using data on a local scale (i.e., the neighborhood) and by assessing the impact of scale on analysis accuracy. This chapter provides an answer to the research questions and proposes topics for future research.

RQ 1: How does the local geographical pattern in voting behavior for BBB in 2023 compare to the electoral geographical patterns of FVD and PVV in 2019?

Each political party has a distinct geographic electoral party ‘profile’, suggesting the core characteristics and roots of discontent of their electorates. The BBB electoral pattern distinguishes itself from the other two parties by their persisting and clearly defined urban-rural and center-periphery divide. This divide is much less pronounced and significant for PVV and is even reversed for FVD. This indicates a rural discontent for the BBB electorate that is less prominent for other parties, which is also in line with their distinctive results for determinants related to rural characteristics, like volunteer participation and the presence of agricultural companies. FVD and PVV also differ considerably from each other. The PVV electorate responds most strongly to the broader welfare indicators, suggesting that these issues are especially salient in this electorate. It also shows a significant positive relation between APEP votes and votes for a local candidate. FVD differs from the other two parties because the ‘traditional’ determinants of APEP voting, average income and migrant population, are not significant for them. It is also the only party that is significantly more urban than rural. The differences between the electorates underline that a clear-cut ‘mold’ of *the* APEP electorate does not come forward. Commonalities among electorates highlight key characteristics of discontented regions, offering insights for addressing discontent. These shared features encompass an older, less theoretically- and academically educated population, with poorer well-being in terms of health and restricted access to public services.

RQ 2: To what extent do neighborhoods with higher levels of ‘broader welfare’ correspond with lower levels of votes for APEPs, when controlling for regional and local socio-economic determinants?

This thesis shows that the addition of broader welfare significantly improves the models and provides more insight into the roots of regional discontent. Interestingly, some party electorates, namely PVV, are better explained by this addition than others. The use of election data provides new insights into the relationship between broader welfare and protest voting as these results are based on the actual voting behavior of people, rather than what they state as their intended vote in survey-based research. Furthermore, the addition of variables related to the environment, health and social dynamics provide a broader insight into the link to protest voting beyond respondents’ self-assessed happiness or satisfaction with life. The distinction between broader welfare variables related to local livability and personal welfare was found to be a useful conceptual division. The most important broader welfare-related variables were those related to health, access to facilities, volunteer participation and trust in institutions. The addition of these determinants changed the influence of variables related to peripherality, rurality and social housing, indicating that these can function as proxy variables for factors related to broader welfare. This is interesting for future research looking into the urban-rural divide or urban inequality, as researchers should be aware that effects could be falsely attributed to these divides, while they are actually related to broader welfare.

RQ 3: To what extent do higher shares of votes in favor of local representatives from all parties coincide with higher shares of votes for APEPs, when controlling for regional and local socio-economic determinants?

This thesis finds a significant positive relationship between votes cast in favor of local candidates and PVV vote shares. An increase of 1% vote share for a local candidate corresponds to a 0.55% increase in PVV vote shares. This provides new insight into the role of local representation in APEP voting, where previous studies looked mainly at geographical representation in parliament or mentions in parliamentary questions. These promising results should be treated as preliminary empirical evidence that, for certain electorates, a protest vote can coincide with a ‘local’ vote in the least likely context of the Netherlands.

RQ 4: How do different spatial scales influence the explanatory power of analyzing voting patterns for Dutch APEPs?

This thesis shows that smaller spatial scales yield a higher analysis accuracy than larger scales when comparing outcomes for the same election dataset and socioeconomic predictors. This indicates that the use of aggregated data on the municipal, provincial or NUTS-3 level smooths out the inequalities present inside these areas, and thereby brushes over important nuances that can improve understanding of geographical electoral patterns. When data availability allows, the use of smaller scales can help researchers attain a more distinct and clearer picture of the electorates. In contrast to the *size* of the spatial unit, no clear improvement was found for using a certain *shape*, even though the modifiable areal unit problem suggests that this can be an influential factor too. From a conceptual point of view, it can be argued that a multilevel and small-scale perspective is more suitable to reflect the actual daily environment through which people experience their lives and which mediates their vote choice. This underlines the importance of scale in electoral geography and warrants a conscientious choice of a suitable scale for the problem at hand.

6.1 Recommendations for future research

This last section states the main recommendations for future research. Due to limited time and data availability, this thesis was not able to capture the full spectrum of motivations for APEP voting; cultural differences and the distribution of regional investments are two aspects that are not included. Future research should aim to include these to attain a complete understanding of electoral patterns of discontent. Previous studies have looked into cultural aspects through focus groups and surveys (Cramer, 2016; Munis, 2021) or regional investments using critical policy analysis (Meijers, 2022; Van Vulpen, 2023). Future research can benefit from comprehensive approaches in which all aspects of discontent are incorporated: socioeconomic inequalities, cultural differences, political representation and broader welfare. This prevents regional discontent from being falsely attributed to factors that are not truly at the root of discontent through omitted variable bias. A thorough understanding of Dutch regional discontent, to which this thesis aims to attribute, can help policymakers get a handle on *where* discontent is most salient and *how* this can be addressed most effectively.

This thesis found relatively large influences of factors related to broader welfare, especially volunteering participation, social cohesion, trust in institutions and accessibility of facilities. As described in the discussion, these factors are expected to be interrelated through a complex interplay. Determinants of voting behavior are often interrelated, and conceptual divisions in them can be somewhat artificial (Inglehart & Norris, 2016). This underlines that the phenomena put forward by this thesis are complex and often transcend the conceptual distinctions between economic, social or cultural determinants. This warrants further research to detangle these mechanisms, where cultural aspects such as place attachment can potentially play a significant role. Future researchers are also encouraged to include more variables that were left outside analysis due to multicollinearity, including the influence of stress, loneliness, long-term illness and difficulty in making ends meet. Mixed methods might provide a useful methodology for future research where general statistical analysis can be combined with surveys and in-depth interviews to interpret the complex mechanism between places, local attachment, service provision and social networks.

Another question for future research is: to what extent can a general relationship be found between protest voting and voting for local candidates and how are these 'local votes' motivated? This thesis has provided preliminary evidence for the existence of such a relationship. Future research could expand this by comparing local vote shares between different parties, by considering the influence of local parties and by looking into what voters wish to express or achieve through their local vote. The scientific field could benefit from investigating whether the 'localness' of a candidate is in certain cases deemed more important than the party program or political leader. The Netherlands lends itself as a suitable place to study this because it has detailed public datasets on election outcomes and candidates' places of residence.

To conclude this thesis, a final recommendation for further research is to examine and compare electoral geographies of discontent in different types of elections. National, municipal and provincial elections differ from each other in the issues they focus on, corresponding to their level of government. Contrary to the provincial and municipal elections, national parties do not have to compete with local parties in the general election. Furthermore, different elections receive different voter turnouts, where certain demographics are less inclined to vote in the local or provincial elections, while national elections often yield the highest turnout rates (Koerntjes, 2022). Voters might be more inclined to vote for APEPs in certain elections than others. It has been suggested that provincial elections are increasingly used as a 'trial' election to support new challenger parties on the flanks of the political spectrum (Van Ostaaijen, 2023; Van Heck, 2023). Therefore, it is a possibility that voters' preferences for a local candidate might differ depending on the type of election.

Finally, the different election dynamics and the need for understanding electoral discontent are underlined by the recent outcomes of the Dutch national election, where the PVV won a historic victory and became the largest party in parliament (Kirby & Holligan, 2023b). These results once again display signs of geographical divides in the Dutch political landscape and show that research into discontent and APEP voting is currently extremely relevant. Thus far, the government has not been able to effectively address this discontent. Dissatisfied electorates seem volatile and unpredictable in their choice for protest parties to express their discontent. However, by comparing determinants of protest voting for three Dutch APEPs, this thesis aimed to identify and understand the root causes of APEP voting. At the same time, it is important to keep both similarities *and* differences between APEP electorates in mind. This thesis has shown that *the* discontented electorate cannot be straightforwardly determined, but is a fluid and changing group of citizens, as are their different reasons for discontent. These insights together contribute to the first steps of addressing this discontent and provide tools to start reconnecting with regions that feel left behind.

7 Literature

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8 Appendices

8.1 Descriptive statistics of the continuous variables

8.1.1 BBB model

Table 8.1.1: Descriptive statistics of variables for the BBB model in the provincial elections of 2023

Descriptive statistics BBB
N = 5386

Statistic	Mean	St. Dev.	Min	Max
BBB vote share	0.21	0.13	0.01	0.78
Voter turnout rate	0.62	0.19	0.09	4.30
Distance to the Hauge (km)	94.29	55.84	3.00	224.75
Mean property value	318.92	125.84	82	2,065
Share of social housing (%)	26.24	19.00	0.00	100
Firm settlement (per individual)	0.13	0.09	0.03	2.14
Change in firm settlement (%)	1.00	0.001	0.99	1.00
Agricultural companies (% of total companies)	4.28	13.25	0.00	375.00
People employed in agriculture (%)	1.70	2.62	0.00	16.00
Population =< 14 years (%)	14.97	4.42	0.00	37.00
Population =< 24 years (%)	11.78	4.08	2.00	68.00
Population =< 44 years (%)	24.04	7.17	4.00	76.00
Population =< 65 years (%)	27.59	4.94	1.00	45.00
Change in population aged 65+ (%)	1.03	2.48	-24.00	32.00
Married (%)	39.11	8.79	1.00	66.00
Divorced (%)	7.86	2.66	0.00	23.00
Practical education (%)	0.32	0.07	0.04	0.71
No tertiary education (%)	0.20	0.07	0.01	0.59
Western migration background (%)	2.28	11.14	6.23	1.00
Non-western migration background (%)	2.11	12.48	12.75	1.00
Change in population with Western migration background (%)	0.51	1.46	-35.00	25.00
Change in population with non-Western migration background (%)	0.87	2.02	-22.00	21.00
Average income	34.57	8.40	14.50	161.30
Change in households with low income (%)	-0.60	1.27	-11.60	13.10
Change in average income (%)	-0.04	0.04	-0.46	0.25
Unemployment benefits (%)	0.01	0.01	0.00	0.05
Disability benefits (%)	0.04	0.02	0.00	0.46
Social welfare benefits (%)	0.02	0.02	0.00	0.18
Employment rate (%)	69.30	6.95	27.00	91.00
Quality of environment	0.01	0.03	-0.14	0.37
Safety	0.02	0.08	-0.34	0.15
Social cohesion	0.01	0.05	-0.14	0.22
Access to facilities	-0.02	0.14	-0.30	0.65
Quality of housing stock	0.01	0.04	-0.46	0.16
Inequality in socio-economic status	0.75	0.15	0.26	1.15
Severe obesity (%)	15.68	3.50	5.10	28.80
Heavy drinker (%)	6.47	1.43	2.10	17.60
Volunteering work (%)	25.98	6.49	11.30	57.50

Satisfied with own life (%)	83.99	2.06	78.20	89.40
Expressed trust in others (%)	66.20	5.80	48.20	83.00
Expressed trust in institutions (%)	66.91	3.70	55.90	78.60
Life expectancy	81.80	1.04	78.40	85.70
Share of votes cast in favor of local candidates	0.24	0.16	0.002	0.87

8.1.2 FVD and PVV model

Table 8.1.2: Descriptive statistics of variables for the FVD and PVV models in the provincial elections of 2019

Descriptive statistics FVD and PVV
N = 5161

Statistic	Mean	St. Dev.	Min	Max
FVD vote share	0.15	0.05	0.00	0.61
PVV vote share	0.07	0.04	0.00	0.49
Voter turnout rate	0.58	0.14	0.11	3.53
Distance to the Hauge (km)	92.01	54.15	3.00	224.75
Mean property value	254.53	111.61	56.00	1,985.00
Share of social housing (%)	27.22	19.18	0.00	100.00
Firm settlement (per individual)	200.56	198.13	25.00	3,875.00
Change in firm settlement (%)	-0.09	0.34	-8.50	0.98
Agricultural companies (% of total companies)	3.96	10.77	0.00	240.00
People employed in agriculture (%)	0.03	0.07	0.00	0.60
Population =< 14 years (%)	15.39	4.43	0.00	41.00
Population =< 24 years (%)	11.80	3.89	2.00	66.00
Population =< 44 years (%)	23.71	7.12	3.00	71.00
Population =< 65 years (%)	28.33	5.14	0.00	47.00
Change in population aged 65+ (%)	1.19	2.62	-41.00	33.00
Married (%)	39.91	8.74	0.00	67.00
Divorced (%)	7.73	2.69	0.00	24.00
Practical education (%)	0.32	0.07	0.06	0.83
No tertiary education (%)	0.22	0.07	0.01	0.65
Western migration background (%)	10.75	5.89	1.00	68.00
Non-western migration background (%)	11.80	12.60	1.00	88.00
Change in population with Western migration background (%)	0.46	1.41	-11.00	34.00
Change in population with non-Western migration background (%)	0.84	1.79	-26.00	18.00
Average income	33.39	8.22	13.80	172.30
Change in households with low income (%)	-0.39	1.90	-76.20	22.20
Change in average income (%)	-0.08	0.06	-2.21	0.23
Unemployment benefits (%)	0.01	0.01	0.00	0.05
Disability benefits (%)	0.04	0.02	0.00	0.44
Social welfare benefits (%)	0.02	0.02	0.00	0.20
Employment rate (%)	68.96	6.96	30.00	91.00
Quality of environment	0.004	0.03	-0.14	0.35
Safety	0.02	0.08	-0.33	0.15
Social cohesion	0.01	0.05	-0.14	0.24
Access to facilities	-0.03	0.13	-0.31	0.61

Quality of housing stock	0.01	0.04	-0.25	0.17
Inequality in socio-economic status	0.76	0.15	0.26	1.36
Severe obesity (%)	15.70	3.50	5.10	28.60
Heavy drinker (%)	6.45	1.42	2.10	15.80
Volunteering work (%)	25.88	6.50	11.30	57.50
Satisfied with own life (%)	87.60	1.94	81.60	93.70
Expressed trust in others (%)	61.99	5.88	42.10	79.60
Expressed trust in institutions (%)	63.04	3.59	52.40	76.80
Life expectancy	81.86	1.03	78.70	86.50
Share of votes cast in favor of local candidates	0.25	0.16	0.01	0.68

8.1.3 Scale model

Table 8.1.3: Descriptive statistics of variables used for the scale analysis for BBB in the provincial elections of 2023

Statistic	Municipality				Neighborhood				Grid			
	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max
BBB vote share	19.80	12.34	0.78	78.30	19.04	12.06	0.00	78.30	17.39	10.17	0.00	66.91
Voter turnout rate	0.61	0.23	0.05	6.05	0.61	0.26	0.05	6.05	0.60	0.24	0.06	5.53
Population =< 14 years (%)	15.56	1.87	10	28	15.12	4.61	0	37	0.15	0.05	0.01	0.37
Population =< 24 years (%)	12.23	2.05	9	22	12.00	4.56	0	67	0.12	0.05	0.02	0.55
Population =< 44 years (%)	24.30	4.64	14	37	24.61	7.80	0	72	0.25	0.08	0.04	0.65
Population =< 65 years (%)	28.00	2.57	19	34	27.44	5.23	0	45	0.26	0.05	0.06	0.44
Western migration background (%)	9.99	4.68	2	47	10.35	6.00	0	62	11.02	6.55	0	70
Non-western migration background (%)	12.43	10.30	1	39	12.57	13.78	0	86	13.31	14.37	0	90
Mean household income	32.50	3.72	25.00	61.70	34.44	8.64	11.60	177.00	30.80	6.04	14.50	95.90
Mean property value	268.87	70.03	138	740	273.62	113.76	54	1,583	254.79	99.37	78	1,322
Share of social housing (%)	28.09	7.27	1	45	28.18	18.94	0	100	29.02	20.01	0	100
Benefits under pension age (%)	0.08	0.02	0.03	0.15	0.08	0.04	0.00	0.34	0.09	0.04	0.01	0.47
Distance to the Hauge (km)	11.23	0.88	5.21	12.36	11.12	0.95	5.37	12.36	11.06	0.95	5.21	12.34
Quality of environment	0.01	0.02	-0.04	0.23	0.01	0.03	-0.14	0.37	0.01	0.03	-0.21	0.37
Safety	0.01	0.06	-0.12	0.12	0.01	0.08	-0.44	0.15	-0.01	0.09	-0.39	0.15
Access to facilities	-0.01	0.12	-0.21	0.33	0.001	0.14	-0.30	0.65	0.03	0.14	-0.29	0.67
Quality of housing stock	0.01	0.03	-0.09	0.07	0.01	0.04	-0.36	0.16	-0.002	0.04	-0.20	0.36

8.2 Absolute number of votes per urbanization degree

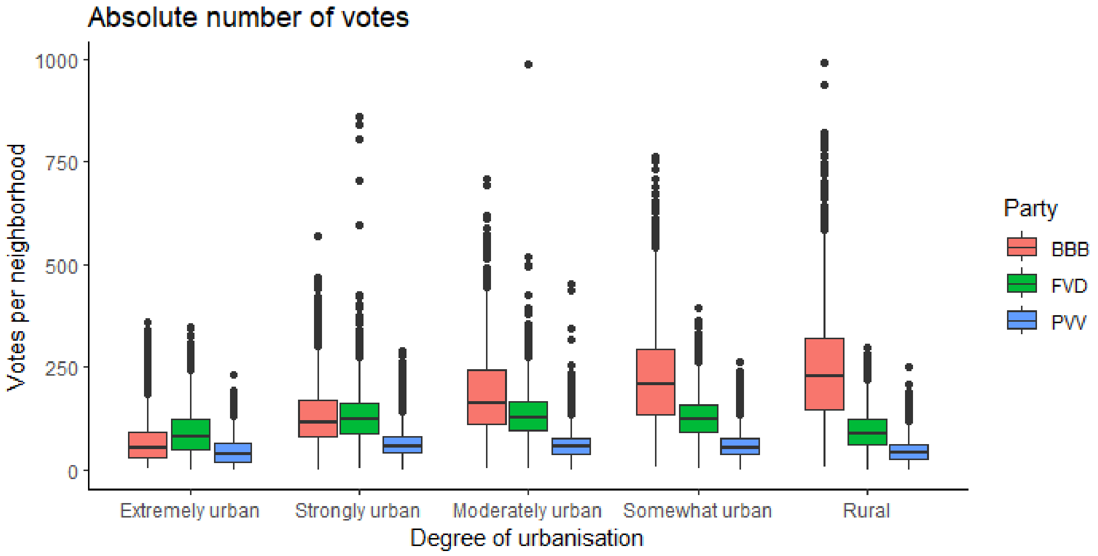

Figure 8.2.1: Absolute number of votes per neighborhood, split between 5 urbanization degrees.

8.3 Correlation matrices

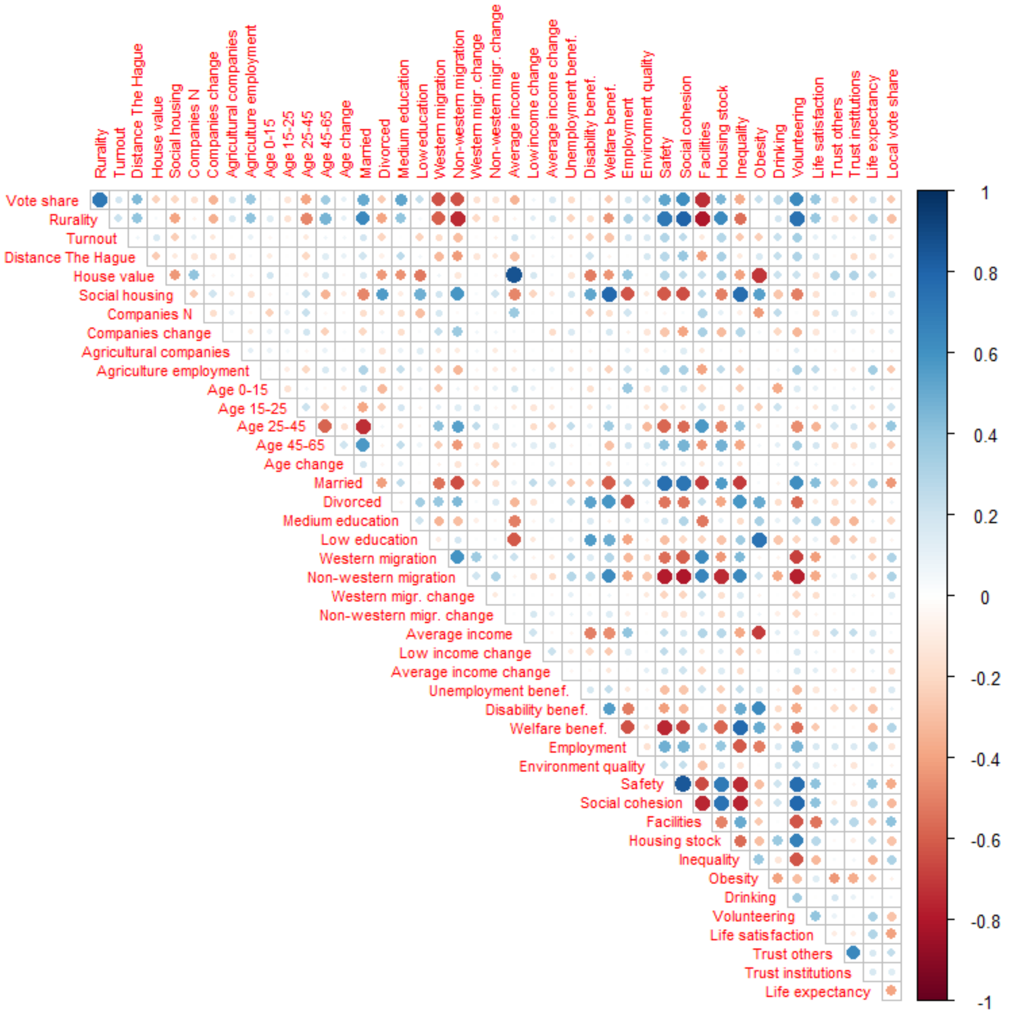

Figure 8.3.1: Correlation matrix with 2023 data

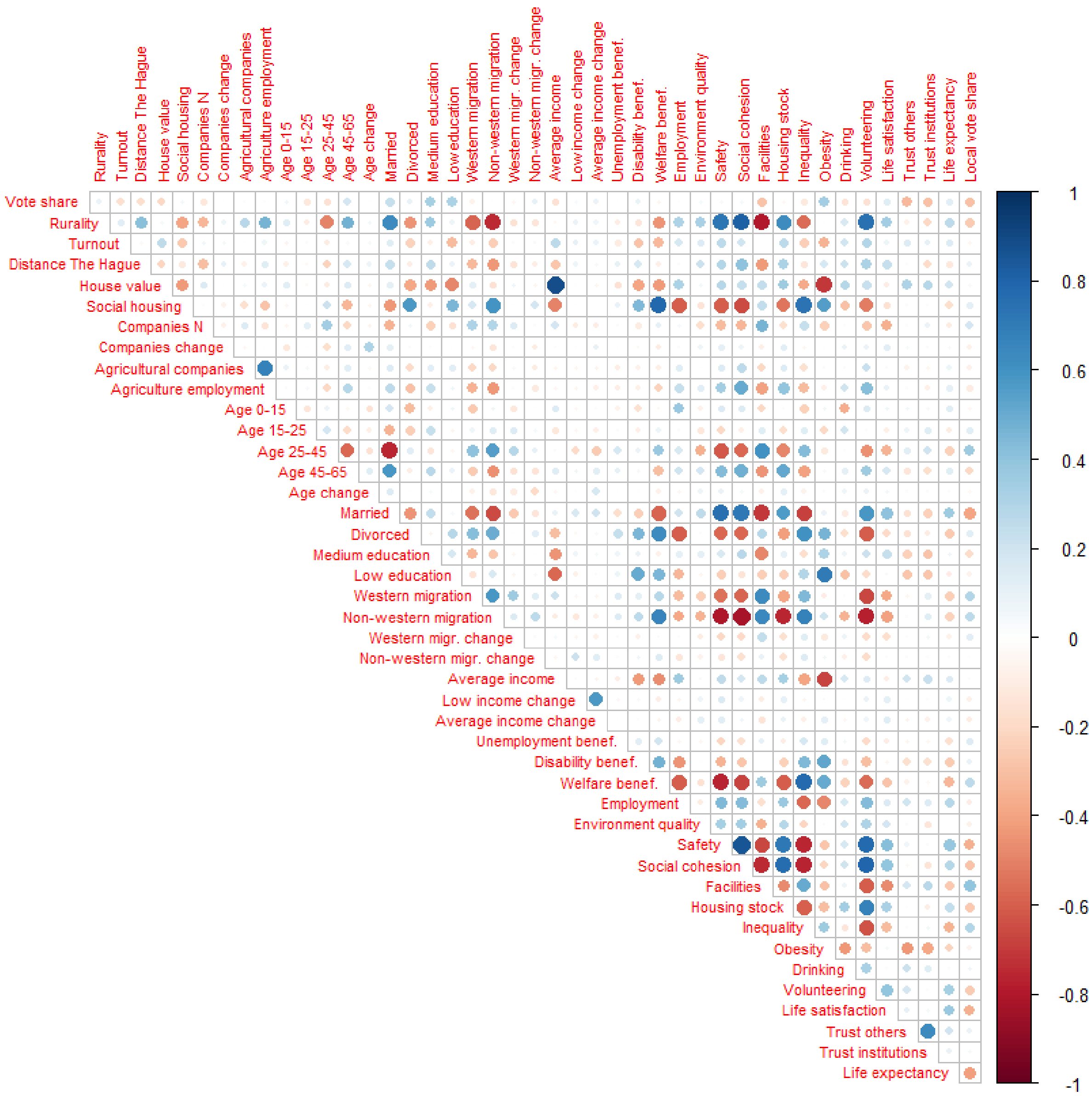

Figure 8.3.2: Correlation plot with the 2019 data

8.4 Ordinary least squares of rurality and peripherality

Table 8.4.1: OLS of BBB with only rurality and peripherality predictors

Ordinary least squares			
Dependent variable = share of votes in favor of BBB per neighborhood			
Predictors	Estimates	CI	p
(Intercept)	25.00	24.68 – 25.32	<0.001
Extremely urbanized *(ref: rural)*	-22.01	-22.89 – -21.12	<0.001
Strongly urbanized	-7.38	-7.72 – -7.05	<0.001
Moderately urbanized	-5.05	-5.37 – -4.74	<0.001
Somewhat urbanized	-3.76	-4.06 – -3.45	<0.001
Distance to the Hague (ln)	2.49	2.19 – 2.78	<0.001
Observations	3770		
R^2 / R^2 adjusted	0.551 / 0.550		

Table 8.4.2: OLS of FVD with only rurality and peripherality predictors

Ordinary least squares			
Dependent variable = share of votes in favor of FVD per neighborhood			
Predictors	Estimates	CI	p
(Intercept)	15.36	15.18 – 15.54	<0.001
Extremely urbanized *(ref: rural)*	-4.07	-4.57 – -3.56	<0.001
Strongly urbanized	0.23	0.04 – 0.43	0.017
Moderately urbanized	0.26	0.08 – 0.44	0.005
Somewhat urbanized	0.13	-0.04 – 0.31	0.135
Distance to the Hague (ln)	-1.51	-1.68 – -1.35	<0.001
Observations	3612		
R^2 / R^2 adjusted	0.143 / 0.142		

Table 8.4.3: OLS of PVV with only rurality and peripherality predictors

Ordinary least squares			
Dependent variable = share of votes in favor of PVV per neighborhood			
Predictors	Estimates	CI	p
(Intercept)	7.33	7.16 – 7.49	<0.001
Extremely urbanized *(ref: rural)*	-0.19	-0.65 – 0.27	0.429
Strongly urbanized	0.73	0.56 – 0.91	<0.001
Moderately urbanized	0.26	0.09 – 0.42	0.002
Somewhat urbanized	0.05	-0.11 – 0.21	0.548
Distance to the Hague (ln)	0.62	0.47 – 0.77	<0.001
Observations	3612		
R^2 / R^2 adjusted	0.047 / 0.045		

8.5 Full broader welfare model

Table 8.5.1: Full multilevel model including the broader welfare variables for all three parties

Multilevel model – broader welfare model						
Dependent variable = share of votes in favor of APEP per neighborhood						
	BBB		FVD		PVV	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	21.46 ***	43.82	15.14 ***	67.15	7.38 ***	41.91
Municipality ID (random effect)	-0.00	-0.53	-0.00 **	-3.29	0.00	1.20
Contextual variables						
Extremely urbanized *(ref: rural)*	-3.44 ***	-6.10	-0.19	-0.50	-1.07 ***	-3.53
Strongly urbanized	-1.50 ***	-7.79	0.32 *	2.45	-0.22 *	-2.09
Moderately urbanized	-1.38 ***	-9.57	0.37 ***	3.78	-0.13	-1.66
Somewhat urbanized	-1.24 ***	-10.87	0.36 ***	4.58	-0.02	-0.38
Voter turnout	0.22 **	2.84	-0.19 **	-3.16	-0.27 ***	-5.96
Distance to the Hague (ln)	2.22 ***	6.17	-2.29 ***	-13.44	0.13	1.00
Mean property value	0.80 **	3.16	0.35 *	1.98	0.59 ***	4.31
Share of social housing (%)	0.34	1.82	0.17	1.37	0.09	0.91
Compositional variables						
Firm settlement (per individual)	-0.13	-1.35	-0.05	-0.67	-0.06	-1.09
Change in firm settlement (%)	-0.12	-1.20	0.02	0.34	-0.04	-0.77
Agricultural companies (%)	0.42 ***	5.00	-0.13	-1.76	-0.11	-1.62
People employed in agriculture (%)	1.32 ***	5.57	-0.35 ***	-4.01	0.03	0.39
Population =< 14 years (%) *(ref: >65 years)*	-0.62 ***	-4.76	-0.10	-1.07	0.36 ***	5.19
Population =< 24 years (%)	-1.34 ***	-9.14	-0.46 ***	-4.99	-0.38 ***	-5.33
Population =< 44 years (%)	0.04	0.20	0.14	0.96	0.19	1.67
Population =< 65 years (%)	-0.28	-1.79	0.03	0.25	0.31 ***	3.61
Change in population aged 65+ (%)	-0.15	-1.84	0.00	0.07	0.02	0.41
Married (%) (*ref: Single)*	-0.97 ***	-3.56	0.41 *	2.29	-0.07	-0.48
Divorced (%)	-0.99 ***	-5.58	-0.02	-0.14	-0.45 ***	-4.83
Practical education (%) *(ref: Theoretical)*	1.56 ***	11.32	0.78 ***	8.89	0.24 ***	3.51
No tertiary education (%)	1.63 ***	11.36	0.83 ***	8.87	0.68 ***	9.29
Western migration background (%) (ln)	-0.71 ***	-3.83	0.04	0.29	0.75 ***	8.05
Nonwestern migration background (%) (ln)	-1.05 ***	-4.66	-0.23	-1.51	-1.02 ***	-8.85
Change in population with Western migration background (%)	0.17 *	1.99	0.09	1.43	-0.06	-1.35
Change in population with Nonwestern migration background	0.11	1.19	0.34 ***	5.47	0.07	1.49
Average income	-0.87 ***	-3.64	-0.06	-0.36	-0.47 ***	-3.45
Change in low-income households (%)	0.17 *	2.03	0.01	0.15	0.13 **	2.91
Change in average income (%)	-0.00	-0.01	0.00	0.07	-0.12 *	-2.33
Unemployment benefits (%)	-0.11	-1.27	0.03	0.57	0.06	1.41
Disability benefits (%)	-0.54 ***	-4.41	-0.01	-0.06	0.34 ***	5.12
Social welfare benefits (%)	-0.67 ***	-3.35	-0.57 ***	-3.96	-0.40 ***	-3.53
Employment rate (%)	0.57 **	2.68	0.71 ***	4.93	-0.18	-1.68
Local livability indicators						
Quality of environment	-0.46 ***	-4.13	0.01	0.07	-0.29 ***	-4.86
Safety	0.19	0.88	-0.07	-0.47	-0.46 ***	-3.84
Social cohesion	-0.10	-0.36	0.49 **	2.72	0.34 *	2.38
Access to facilities	-2.87 ***	-10.44	-1.66 ***	-9.25	-0.37 **	-2.67
Quality of housing stock	0.29	1.88	-0.11	-1.02	-0.42 ***	-4.92
Personal welfare indicators						
Inequality in socio-economic status	0.33	1.86	-0.24 *	-2.10	-0.07	-0.73
Severe obesity (%)	2.69 ***	10.32	1.03 ***	6.19	1.54 ***	11.69
Heavy drinker (%)	1.38 ***	9.61	1.14 ***	11.61	0.55 ***	7.17
Volunteering work (%)	2.04 ***	7.70	-2.35 ***	-13.82	-1.62 ***	-12.16

Satisfied with own life (%)	-0.26	-0.65	0.20	1.10	-0.11	-0.78
Expressed trust in others (%)	0.62	1.57	-0.06	-0.32	-0.15	-1.07
Expressed trust in institutions (%)	-0.23	-0.61	-0.58 ***	-3.40	-0.50 ***	-3.78
Life expectancy	0.27	1.05	0.23	1.76	-0.14	-1.33
Random Effects						
σ^2	19.26		8.35		5.22	
τ_{00}	22.85 Municipality ID		3.81 Municipality ID		2.29 Municipality ID	
ICC	0.54		0.31		0.31	
N	337 Municipality ID		325 Municipality ID		325 Municipality ID	
Observations	3770		3612		3612	
Marginal R^2 / Conditional R^2	0.732 / 0.877		0.499 / 0.656		0.591 / 0.716	

** p<0.05, ** p<0.01, *** p<0.001*

8.6 Full candidate model

Table 8.6.1: Full multilevel model including the local candidates variables for all three parties

Multilevel model – local candidates model						
Dependent variable = share of votes in favor of APEP per neighborhood						
	BBB		FVD		PVV	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	21.55 ***	43.06	15.04 ***	65.27	7.55 ***	42.84
Municipality ID (random effect)	-0.00	-0.52	-0.00 **	-3.25	0.00	1.11
Contextual variables						
Extremely urbanized *(ref: rural)*	-3.44 ***	-6.11	-0.18	-0.46	-1.10 ***	-3.66
Strongly urbanized	-1.50 ***	-7.79	0.33 *	2.49	-0.23 *	-2.20
Moderately urbanized	-1.38 ***	-9.57	0.37 ***	3.78	-0.13	-1.71
Somewhat urbanized	-1.24 ***	-10.87	0.35 ***	4.57	-0.03	-0.42
Voter turnout	0.22 **	2.84	-0.19 **	-3.13	-0.28 ***	-6.02
Distance to the Hague (ln)	2.17 ***	5.94	-2.23 ***	-12.93	0.04	0.28
Mean property value	0.81 **	3.20	0.35 *	1.96	0.60 ***	4.36
Share of social housing (%)	0.35	1.83	0.17	1.35	0.09	0.91
Compositional variables						
Firm settlement (per individual)	-0.13	-1.34	-0.05	-0.69	-0.06	-1.07
Change in firm settlement (%)	-0.12	-1.20	0.02	0.32	-0.04	-0.74
Agricultural companies (%)	0.42 ***	4.98	-0.13	-1.78	-0.10	-1.56
People employed in agriculture (%)	1.33 ***	5.59	-0.34 ***	-3.95	0.02	0.24
Population =< 14 years (%) *(ref: >65 years)*	-0.62 ***	-4.78	-0.09	-1.01	0.35 ***	5.04
Population =< 24 years (%)	-1.35 ***	-9.15	-0.45 ***	-4.93	-0.38 ***	-5.43
Population =< 44 years (%)	0.04	0.19	0.15	0.98	0.19	1.66
Population =< 65 years (%)	-0.28	-1.80	0.03	0.24	0.31 ***	3.62
Change in population aged 65+ (%)	-0.15	-1.83	0.00	0.08	0.02	0.37
Married (%) *(ref: Single)*	-0.98 ***	-3.56	0.41 *	2.29	-0.06	-0.44
Divorced (%)	-0.98 ***	-5.57	-0.02	-0.13	-0.46 ***	-4.86
Practical education (%) *(ref: Theoretical)*	1.56 ***	11.32	0.78 ***	8.89	0.24 ***	3.51
No tertiary education (%)	1.64 ***	11.36	0.83 ***	8.87	0.68 ***	9.35
Western migration background (%) (ln)	-0.71 ***	-3.85	0.05	0.41	0.74 ***	7.93
Nonwestern migration background (%) (ln)	-1.05 ***	-4.66	-0.23	-1.52	-1.02 ***	-8.91
Change in population with Western migration background (%)	0.17 *	1.99	0.08	1.37	-0.06	-1.33
Change in population with Nonwestern migration background	0.11	1.20	0.34 ***	5.45	0.07	1.52
Average income	-0.88 ***	-3.67	-0.06	-0.35	-0.48 ***	-3.50
Change in low-income households (%)	0.17 *	2.03	0.01	0.16	0.13 **	2.88
Change in average income (%)	-0.00	-0.01	0.00	0.07	-0.12 *	-2.36
Unemployment benefits (%)	-0.11	-1.27	0.04	0.60	0.06	1.33
Disability benefits (%)	-0.54 ***	-4.41	-0.00	-0.03	0.34 ***	5.11
Social welfare benefits (%)	-0.67 ***	-3.37	-0.56 ***	-3.95	-0.40 ***	-3.55
Employment rate (%)	0.57 **	2.69	0.71 ***	4.94	-0.18	-1.68
Local livability indicators						
Quality of environment	-0.46 ***	-4.14	0.01	0.13	-0.30 ***	-5.02
Safety	0.19	0.88	-0.08	-0.49	-0.45 ***	-3.81
Social cohesion	-0.10	-0.38	0.49 **	2.75	0.34 *	2.35
Access to facilities	-2.87 ***	-10.45	-1.64 ***	-9.13	-0.39 **	-2.86
Quality of housing stock	0.29	1.89	-0.12	-1.08	-0.41 ***	-4.78
Personal welfare indicators						
Inequality in socio-economic status	0.32	1.84	-0.24 *	-2.09	-0.07	-0.75
Severe obesity (%)	2.69 ***	10.33	1.03 ***	6.19	1.54 ***	11.75
Heavy drinker (%)	1.38 ***	9.61	1.13 ***	11.51	0.56 ***	7.35
Volunteering work (%)	2.04 ***	7.68	-2.34 ***	-13.74	-1.65 ***	-12.48

Satisfied with own life (%)	-0.23	-0.56	0.18	0.97	-0.08	-0.55
Expressed trust in others (%)	0.59	1.49	-0.05	-0.30	-0.16	-1.18
Expressed trust in institutions (%)	-0.24	-0.62	-0.59 ***	-3.45	-0.49 ***	-3.81
Life expectancy	0.33	1.23	0.17	1.28	-0.03	-0.24
Votes cast for local candidate (%)	0.34	0.89	-0.33 *	-1.99	0.55 ***	4.41
Random Effects						
σ^2	19.26		8.35		5.22	
τ_{00}	22.87 Municipality ID		3.77 Municipality ID		2.14 Municipality ID	
ICC	0.54		0.31		0.29	
N	336 Municipality ID		326 Municipality ID		328 Municipality ID	
Observations	3770		3612		3612	
Marginal R^2 / Conditional R^2	0.728 / 0.876		0.511 / 0.663		0.596 / 0.714	

**** p<0.05, ** p<0.01, *** p<0.001***

8.7 Full hierarchical models

8.7.1 BBB

Table 8.7.1: Full multilevel model for BBB including the hierarchical blocks

	Base model		Broader welfare		Local candidates	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	22.73***	41.55	21.46***	43.82	21.55***	43.06
Municipality ID (random effect)	-0.00	-0.57	-0.00	-0.53	-0.00	-0.52
Contextual variables						
Extremely urbanized *(ref: rural)*	-8.65***	-18.80	-3.44***	-6.10	-3.44***	-6.11
Strongly urbanized	-3.37***	-21.48	-1.50***	-7.79	-1.50***	-7.79
Moderately urbanized	-2.75***	-22.11	-1.38***	-9.57	-1.38***	-9.57
Somewhat urbanized	-2.17***	-20.63	-1.24***	-10.87	-1.24***	-10.87
Voter turnout	0.25**	3.07	0.22**	2.84	0.22**	2.84
Distance to the Hague (ln)	3.01***	7.72	2.22***	6.17	2.17***	5.94
Mean property value	0.55*	2.21	0.80**	3.16	0.81**	3.20
Share of social housing (%)	0.86***	5.04	0.34	1.82	0.35	1.83
Compositional variables						
Firm settlement (per indiv.)	-0.26**	-2.66	-0.13	-1.35	-0.13	-1.34
Change in firm settlement (%)	-0.28**	-2.85	-0.12	-1.20	-0.12	-1.20
Agricultural companies (%)	0.34***	3.99	0.42***	5.00	0.42***	4.98
People employed in agriculture (%)	1.62***	6.23	1.32***	5.57	1.33***	5.59
Population =< 14 years (%) *(ref: >65 years)*	-0.11	-0.91	-0.62***	-4.76	-0.62***	-4.78
Population =< 24 years (%)	-1.57***	-10.86	-1.34***	-9.14	-1.35***	-9.15
Population =< 44 years (%)	-0.24	-1.08	0.04	0.20	0.04	0.19
Population =< 65 years (%)	0.05	0.34	-0.28	-1.79	-0.28	-1.80
Change in population aged 65+ (%)	-0.09	-1.07	-0.15	-1.84	-0.15	-1.83
Married (%) *(ref: Single)*	-0.64*	-2.34	-0.97***	-3.56	-0.98***	-3.56
Divorced (%)	-0.67***	-3.71	-0.99***	-5.58	-0.98***	-5.57
Practical education (%) *(ref: Theoretical)*	2.19***	16.37	1.56***	11.32	1.56***	11.32
No tertiary education (%)	2.19***	16.10	1.63***	11.36	1.64***	11.36
Western migration background (%) (ln)	-0.89***	-4.78	-0.71***	-3.83	-0.71***	-3.85
Nonwestern migration background (%) (ln)	-1.74***	-8.02	-1.05***	-4.66	-1.05***	-4.66
Change in population with Western migration background (%)	0.17	1.95	0.17*	1.99	0.17*	1.99
Change in population with Nonwestern migration background	0.18*	2.04	0.11	1.19	0.11	1.20
Average income	-1.22***	-4.97	-0.87***	-3.64	-0.88***	-3.67
Change in low-income households (%)	0.19*	2.20	0.17*	2.03	0.17*	2.03
Change in average income (%)	-0.00	-0.03	-0.00	-0.01	-0.00	-0.01
Unemployment benefits (%)	-0.12	-1.33	-0.11	-1.27	-0.11	-1.27
Disability benefits (%)	-0.46***	-3.65	-0.54***	-4.41	-0.54***	-4.41
Social welfare benefits (%)	-0.84***	-4.24	-0.67***	-3.35	-0.67***	-3.37
Employment rate (%)	0.33	1.51	0.57**	2.68	0.57**	2.69
Local livability indicators						
Quality of environment			-0.46***	-4.13	-0.46***	-4.14
Safety			0.19	0.88	0.19	0.88
Social cohesion			-0.10	-0.36	-0.10	-0.38
Access to facilities			-2.87***	-10.44	-2.87***	-10.45
Quality of housing stock			0.29	1.88	0.29	1.89
Personal welfare indicators						
Inequality in socio-economic status			0.33	1.86	0.32	1.84
Severe obesity (%)			2.69***	10.32	2.69***	10.33

Heavy drinker (%)			1.38***	9.61	1.38***	9.61
Volunteering work (%)			2.04***	7.70	2.04***	7.68
Satisfied with own life (%)			-0.26	-0.65	-0.23	-0.56
Expressed trust in others (%)			0.62	1.57	0.59	1.49
Expressed trust in institutions (%)			-0.23	-0.61	-0.24	-0.62
Life expectancy			0.27	1.05	0.33	1.23
Votes cast for local candidate (%)					0.34	0.89
Random Effects						
σ^2	20.80		19.26		19.26	
τ_{00}	31.81 Municipality ID		22.85 Municipality ID		22.87 Municipality ID	
ICC	0.60		0.54		0.54	
N	336 Municipality ID		336 Municipality ID		336 Municipality ID	
Observations	3770		3770		3770	
Marginal R^2 / Conditional R^2	0.659 / 0.865		0.732 / 0.877		0.728 / 0.876	
***** p<0.05, ** p<0.01, *** p<0.001***						

8.7.2 FVD

Table 8.7.2: Full multilevel model for FVD including the hierarchical blocks

	Base model		Broader welfare		Local candidates	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	15.03***	57.41	15.14***	67.15	15.04***	65.27
Municipality ID (random effect)	-0.00	-1.11	-0.00**	-3.29	-0.00**	-3.25
Contextual variables						
Extremely urbanized *(ref: rural)*	-0.38	-1.20	-0.19	-0.50	-0.18	-0.46
Strongly urbanized	0.38***	3.50	0.32*	2.45	0.33*	2.49
Moderately urbanized	0.36***	4.11	0.37***	3.78	0.37***	3.78
Somewhat urbanized	0.31***	4.25	0.36***	4.58	0.35***	4.57
Voter turnout	-0.36***	-5.77	-0.19**	-3.16	-0.19**	-3.13
Distance to the Hague (ln)	-1.94***	-10.26	-2.29***	-13.44	-2.23***	-12.93
Mean property value	-0.05	-0.26	0.35*	1.98	0.35*	1.96
Share of social housing (%)	0.33**	2.87	0.17	1.37	0.17	1.35
Compositional variables						
Firm settlement (per individual)	-0.15*	-2.15	-0.05	-0.67	-0.05	-0.69
Change in firm settlement (%)	-0.02	-0.36	0.02	0.34	0.02	0.32
Agricultural companies (% of total companies)	-0.15*	-1.97	-0.13	-1.76	-0.13	-1.78
People employed in agriculture (%)	-0.22*	-2.57	-0.35***	-4.01	-0.34***	-3.95
Population =< 14 years (%) *(ref: >65 years)*	0.01	0.12	-0.10	-1.07	-0.09	-1.01
Population =< 24 years (%)	-0.54***	-5.83	-0.46***	-4.99	-0.45***	-4.93
Population =< 44 years (%)	-0.11	-0.77	0.14	0.96	0.15	0.98
Population =< 65 years (%)	-0.07	-0.66	0.03	0.25	0.03	0.24
Change in population aged 65+ (%)	-0.00	-0.03	0.00	0.07	0.00	0.08
Married (%) (*ref: Single)*	0.55**	3.08	0.41*	2.29	0.41*	2.29
Divorced (%)	0.35**	2.87	-0.02	-0.14	-0.02	-0.13
Practical education (%) *(ref: Theoretical)*	1.27***	14.72	0.78***	8.89	0.78***	8.89
No tertiary education (%)	1.41***	15.70	0.83***	8.87	0.83***	8.87
Western migration background (%) (ln)	0.51***	4.09	0.04	0.29	0.05	0.41
Nonwestern migration background (%) (ln)	-0.18	-1.25	-0.23	-1.51	-0.23	-1.52
Change in population with Western migration background (%)	0.05	0.81	0.09	1.43	0.08	1.37
Change in population with Nonwestern migration background	0.36***	5.68	0.34***	5.47	0.34***	5.45
Average income	-0.13	-0.68	-0.06	-0.36	-0.06	-0.35
Change in low-income households (%)	-0.01	-0.10	0.01	0.15	0.01	0.16

Change in average income (%)	0.04	0.63	0.00	0.07	0.00	0.07
Unemployment benefits (%)	0.13*	2.11	0.03	0.57	0.04	0.60
Disability benefits (%)	0.11	1.02	-0.01	-0.06	-0.00	-0.03
Social welfare benefits (%)	-0.83***	-5.91	-0.57***	-3.96	-0.56***	-3.95
Employment rate (%)	0.71***	4.86	0.71***	4.93	0.71***	4.94
Local livability indicators						
Quality of environment			0.01	0.07	0.01	0.13
Safety			-0.07	-0.47	-0.08	-0.49
Social cohesion			0.49**	2.72	0.49**	2.75
Access to facilities			-1.66***	-9.25	-1.64***	-9.13
Quality of housing stock			-0.11	-1.02	-0.12	-1.08
Personal welfare indicators						
Inequality in socio-economic status			-0.24*	-2.10	-0.24*	-2.09
Severe obesity (%)			1.03***	6.19	1.03***	6.19
Heavy drinker (%)			1.14***	11.61	1.13***	11.51
Volunteering work (%)			-2.35***	-13.82	-2.34***	-13.74
Satisfied with own life (%)			0.20	1.10	0.18	0.97
Expressed trust in others (%)			-0.06	-0.32	-0.05	-0.30
Expressed trust in institutions (%)			-0.58***	-3.40	-0.59***	-3.45
Life expectancy			0.23	1.76	0.17	1.28
Local candidate						
Votes cast for local candidate (%)					-0.33*	-1.99
Random Effects						
σ^2	9.14		8.35		8.35	
τ_{00}	6.13 Municipality ID		3.81 Municipality ID		3.77 Municipality ID	
ICC	0.40		0.31		0.31	
N	326 Municipality ID		326 Municipality ID		326 Municipality ID	
Observations	3612		3612		3612	
Marginal R^2 / Conditional R^2	0.342 / 0.606		0.499 / 0.656		0.511 / 0.663	
**** p<0.05, ** p<0.01, *** p<0.001***						

8.7.3 PVV

Table 8.7.3 Full multilevel model for PVV including the hierarchical blocks

	Base model		Broader welfare		Local candidates	
Predictors	*Est.*	*t*	*Est.*	*t*	*Est.*	*t*
(Intercept)	6.81***	32.87	7.38***	41.91	7.55***	42.84
Municipality ID (random effect)	0.00*	2.49	0.00	1.20	0.00	1.11
Contextual variables						
Extremely urbanized *(ref: rural)*	0.14	0.56	-1.07***	-3.53	-1.10***	-3.66
Strongly urbanized	0.29***	3.40	-0.22*	-2.09	-0.23*	-2.20
Moderately urbanized	0.12	1.86	-0.13	-1.66	-0.13	-1.71
Somewhat urbanized	0.08	1.33	-0.02	-0.38	-0.03	-0.42
Voter turnout	-0.41***	-8.50	-0.27***	-5.96	-0.28***	-6.02
Distance to the Hague (ln)	0.35*	2.34	0.13	1.00	0.04	0.28
Mean property value	0.10	0.72	0.59***	4.31	0.60***	4.36
Share of social housing (%)	0.30***	3.33	0.09	0.91	0.09	0.91
Compositional variables						
Firm settlement (per individual)	-0.10	-1.72	-0.06	-1.09	-0.06	-1.07
Change in firm settlement (%)	-0.05	-0.98	-0.04	-0.77	-0.04	-0.74
Agricultural companies (% of total companies)	0.02	0.30	-0.11	-1.62	-0.10	-1.56
People employed in agriculture (%)	-0.07	-0.89	0.03	0.39	0.02	0.24
Population =< 14 years (%) *(ref: >65 years)*	0.52***	7.80	0.36***	5.19	0.35 ***	5.04
Population =< 24 years (%)	-0.49***	-6.80	-0.38***	-5.33	-0.38 ***	-5.43
Population =< 44 years (%)	0.23	1.95	0.19	1.67	0.19	1.66

Population =< 65 years (%)	0.21*	2.46	0.31***	3.61	0.31 ***	3.62
Change in population aged 65+ (%)	-0.04	-0.81	0.02	0.41	0.02	0.37
Married (%) (*ref: Single)*	0.13	0.92	-0.07	-0.48	-0.06	-0.44
Divorced (%)	-0.05	-0.52	-0.45***	-4.83	-0.46 ***	-4.86
Practical education (%) *(ref: Theoretical)*	0.67***	9.88	0.24***	3.51	0.24 ***	3.51
No tertiary education (%)	1.31***	18.33	0.68***	9.29	0.68 ***	9.35
Western migration background (%) (ln)	1.11***	11.27	0.75***	8.05	0.74 ***	7.93
Nonwestern migration background (%) (ln)	-0.58***	-5.13	-1.02***	-8.85	-1.02 ***	-8.91
Change in population with Western migration background (%)	-0.05	-0.97	-0.06	-1.35	-0.06	-1.33
Change in population with Nonwestern migration background	0.02	0.41	0.07	1.49	0.07	1.52
Average income	-0.61***	-4.19	-0.47***	-3.45	-0.48***	-3.50
Change in low-income households (%)	0.13**	2.59	0.13**	2.91	0.13**	2.88
Change in average income (%)	-0.09	-1.76	-0.12*	-2.33	-0.12*	-2.36
Unemployment benefits (%)	0.12*	2.39	0.06	1.41	0.06	1.33
Disability benefits (%)	0.40***	5.77	0.34***	5.12	0.34***	5.11
Social welfare benefits (%)	-0.32**	-2.86	-0.40***	-3.53	-0.40***	-3.55
Employment rate (%)	-0.35**	-3.05	-0.18	-1.68	-0.18	-1.68
Local livability indicators						
Quality of environment			-0.29***	-4.86	-0.30***	-5.02
Safety			-0.46***	-3.84	-0.45***	-3.81
Social cohesion			0.34*	2.38	0.34*	2.35
Access to facilities			-0.37**	-2.67	-0.39**	-2.86
Quality of housing stock			-0.42***	-4.92	-0.41***	-4.78
Personal welfare indicators						
Inequality in socio-economic status			-0.07	-0.73	-0.07	-0.75
Severe obesity (%)			1.54***	11.69	1.54***	11.75
Heavy drinker (%)			0.55***	7.17	0.56***	7.35
Volunteering work (%)			-1.62***	-12.16	-1.65***	-12.48
Satisfied with own life (%)			-0.11	-0.78	-0.08	-0.55
Expressed trust in others (%)			-0.15	-1.07	-0.16	-1.18
Expressed trust in institutions (%)			-0.50***	-3.78	-0.49***	-3.81
Life expectancy			-0.14	-1.33	-0.03	-0.24
Votes cast for local candidate (%)					0.55***	4.41
Random Effects						
σ^2	5.88		5.22		5.22	
τ_{00}	3.84 Municipality ID		2.29 Municipality ID		2.14 Municipality ID	
ICC	0.40		0.31		0.29	
N	328 Municipality ID		328 Municipality ID		328 Municipality ID	
Observations	3612		3612		3612	
Marginal R^2 / Conditional R^2	0.414 / 0.646		0.591 / 0.716		0.596 / 0.714	

****p<0.05, ** p<0.01, *** p<0.001***

8.8 Local representation regression results

8.8.1 Local candidates election results – 2019

Table 8.8.1: Results for OLS regression with total local vote share per municipality as dependent variable for the 2019 provincial election

Linear Regression			
Dependent variable = Local vote share achieved per candidate from own municipality			
Predictors	Estimates	CI	p
(Intercept)	0.16	0.12 – 0.20	**<0.001**
Party dummies			
CDA	0.31	0.27 – 0.35	**<0.001**
DENK	0.01	-0.03 – 0.05	0.510
SGP	0.13	0.09 – 0.17	**<0.001**
ChristenUnie	0.14	0.10 – 0.18	**<0.001**
SP	0.15	0.11 – 0.19	**<0.001**
PVDA	0.19	0.15 – 0.23	**<0.001**
D66	0.15	0.11 – 0.19	**<0.001**
PVV	0.38	0.34 – 0.42	**<0.001**
50PLUS	0.17	0.13 – 0.21	**<0.001**
GroenLinks	0.20	0.16 – 0.24	**<0.001**
VVD	0.36	0.32 – 0.40	**<0.001**
Code Oranje	-0.03	-0.07 – 0.02	0.270
FVD	0.91	0.87 – 0.95	**<0.001**
PvdD	0.13	0.09 – 0.17	**<0.001**
Position on list	-0.02	-0.02 – -0.02	**<0.001**
Distance to the Hague	-0.00	-0.00 – 0.00	0.055
List length	0.01	0.01 – 0.01	**<0.001**
Inhabitants (municipality)	-0.00	-0.00 – -0.00	**<0.001**
Local vote (dummy)	1.18	1.15 – 1.21	**<0.001**
Observations	142141		
R^2 / R^2 adjusted	0.119 / 0.119		

8.8.2 Local candidates election results – 2023

Table 8.8.1: Results for OLS regression with total local vote share per municipality as dependent variable for the 2019 provincial election

Linear Regression			
Dependent variable = Local vote share achieved per candidate from own municipality			
Predictors	Estimates	CI	p
(Intercept)	0.23	0.21 – 0.24	<0.001
Party dummies			
CDA	0.14	0.12 – 0.16	<0.001
DENK	-0.10	-0.15 – -0.04	<0.001
SGP	0.09	0.06 – 0.11	<0.001
ChristenUnie	0.06	0.04 – 0.08	<0.001
SP	0.06	0.04 – 0.08	<0.001
PvdA	0.14	0.12 – 0.16	<0.001
D66	0.09	0.07 – 0.11	<0.001
PVV	0.45	0.42 – 0.49	<0.001
50PLUS	0.01	-0.01 – 0.03	0.283
GroenLinks	0.13	0.11 – 0.15	<0.001
VVD	0.23	0.21 – 0.25	<0.001
Code Oranje	-0.11	-0.19 – -0.03	0.006
FVD	0.04	0.02 – 0.06	<0.001
PvdD	0.07	0.05 – 0.09	<0.001
BBB	0.72	0.70 – 0.74	<0.001
Position on list	-0.02	-0.02 – -0.02	<0.001
Distance to the Hague	0.00	0.00 – 0.00	<0.001

List length	-0.00	-0.00 – -0.00	**<0.001**
Inhabitants (municipality)	-0.00	-0.00 – -0.00	**<0.001**
Local vote (dummy)	0.91	0.88 – 0.93	**<0.001**
Observations	183819		
R^2 / R^2 adjusted	0.105 / 0.105		

8.9 Model quality plots and statistics

8.9.1 Predicted vs fitted values- BBB

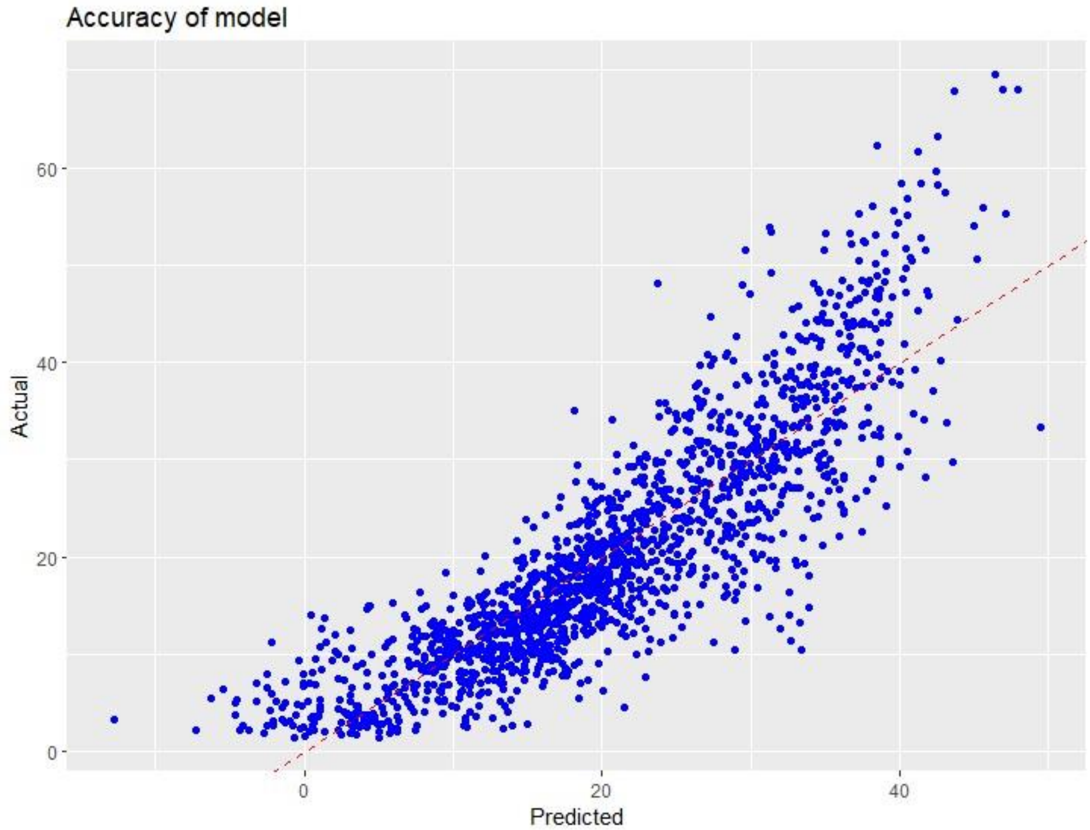

Figure 8.9.1: Distribution of predicted vs fitted values of BBB model

8.9.2 Predicted vs fitted values- FVD

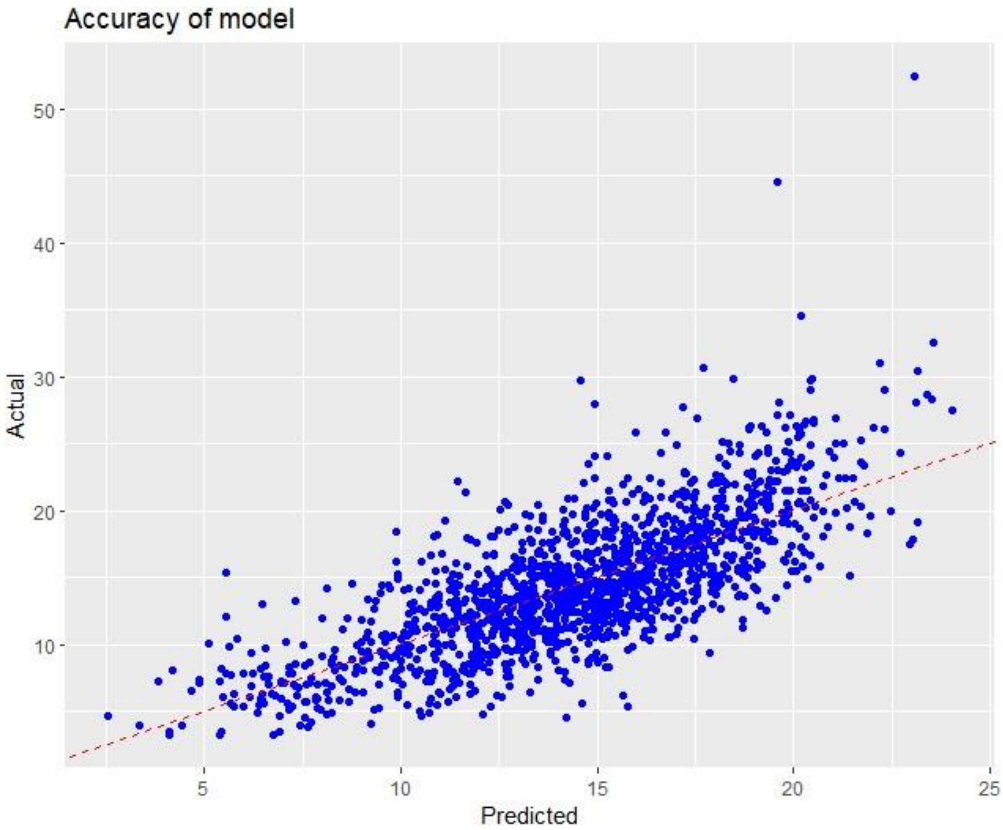

Figure 8.9.2: Distribution of predicted vs fitted values of FVD model

8.9.3 Predicted vs fitted values- PVV

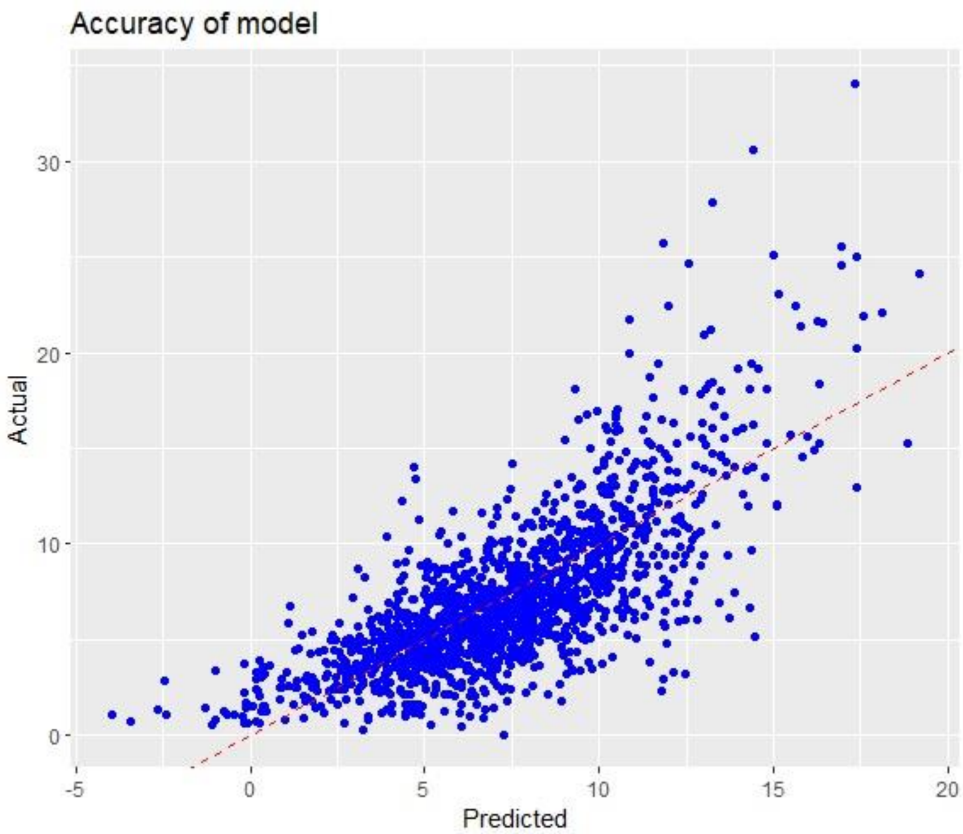

Figure 8.9.3: Distribution of predicted vs fitted values of PVV model

8.9.4 ANOVA results of model blocks

Table 8.9.1: ANOVA results of the two additional model blocks of the three parties

	BBB				*FVD*				*PVV*			
	dev	*Chisq*	*Df*	*p*	*dev*	*Chisq*	*Df*	*p*	*dev*	*Chisq*	*Df*	*p*
Base	22989	-	-	-	18938	-	-	-	17333	-	-	-
Broader welfare	22609	379.26	13	0.00***	18466	472.61	13	0.00***	16799	534.59	13	0.00***
Local candidate	22609	0.82	1	0.37	18462	3.94	1	0.05*	16786	12.38	1	0.00***

8.9.5 Validation results per block addition

Table 8.9.2: RMSE of each model of the three parties

Root Mean Square Error			
	BBB	*FVD*	*PVV*
Training data	4.35	2.93	2.35
Base model	6.75	3.91	3.00
Broader welfare model	6.16	3.40	2.71
Local candidates model	6.18	3.38	2.74

8.10 Maps of geography of the broader welfare variables

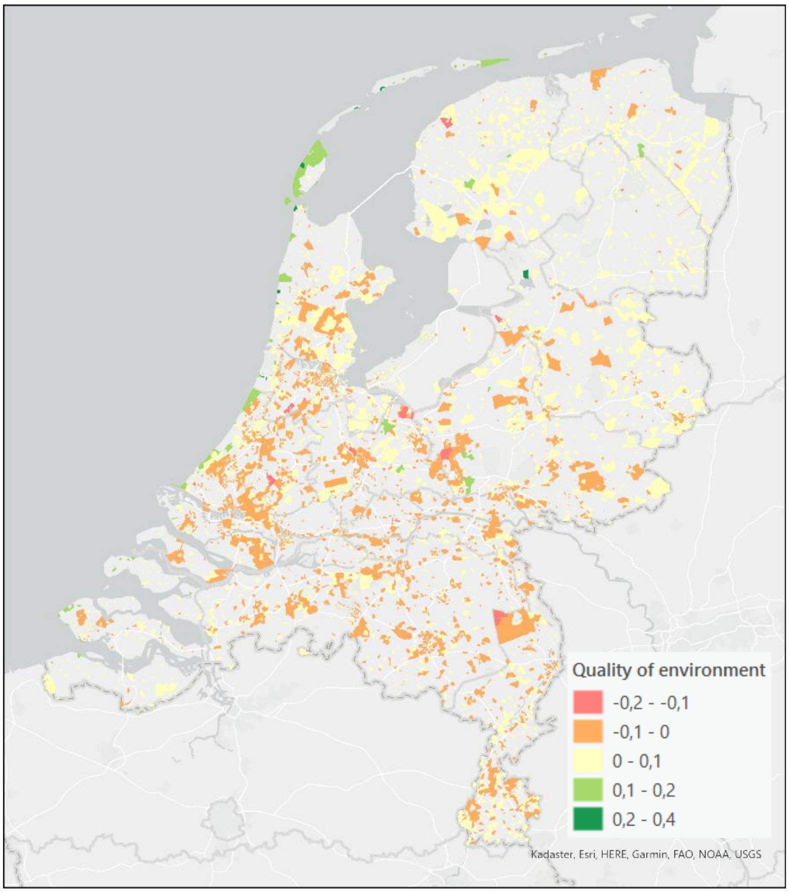

Figure 8.10.1: Quality of environment (Livability index, The values are centered around the mean (0) and range from -1 to 1)

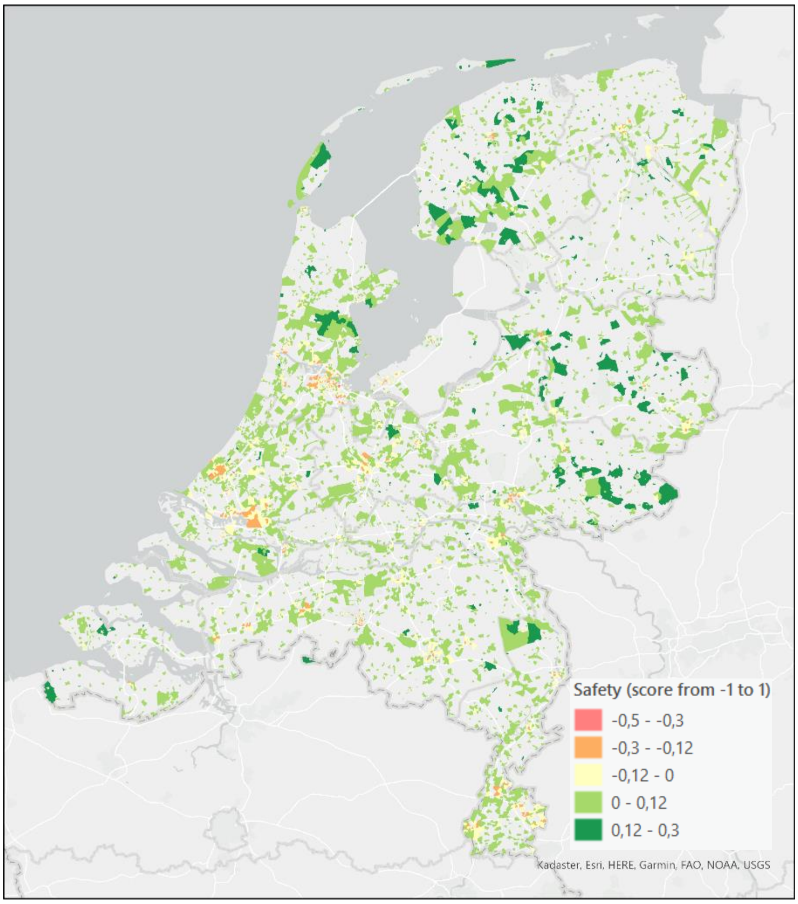

Figure 8.10.2: Safety (Livability index, The values are centered around the mean (0) and range from -1 to 1)

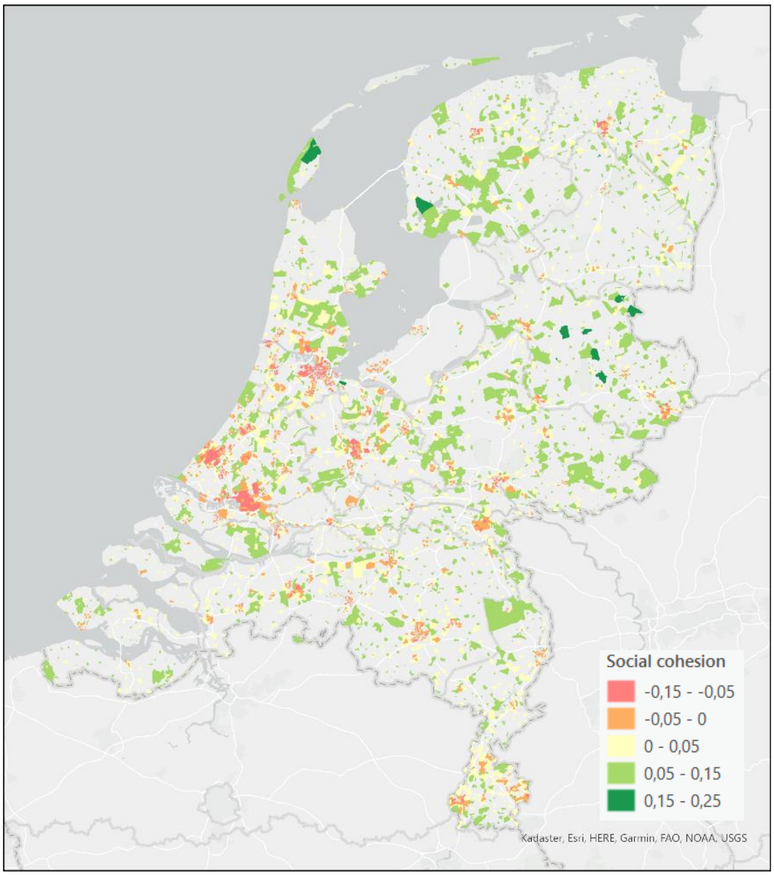

Figure 8.10.3: Social cohesion (Livability index, The values are centered around the mean (0) and range from -1 to 1)

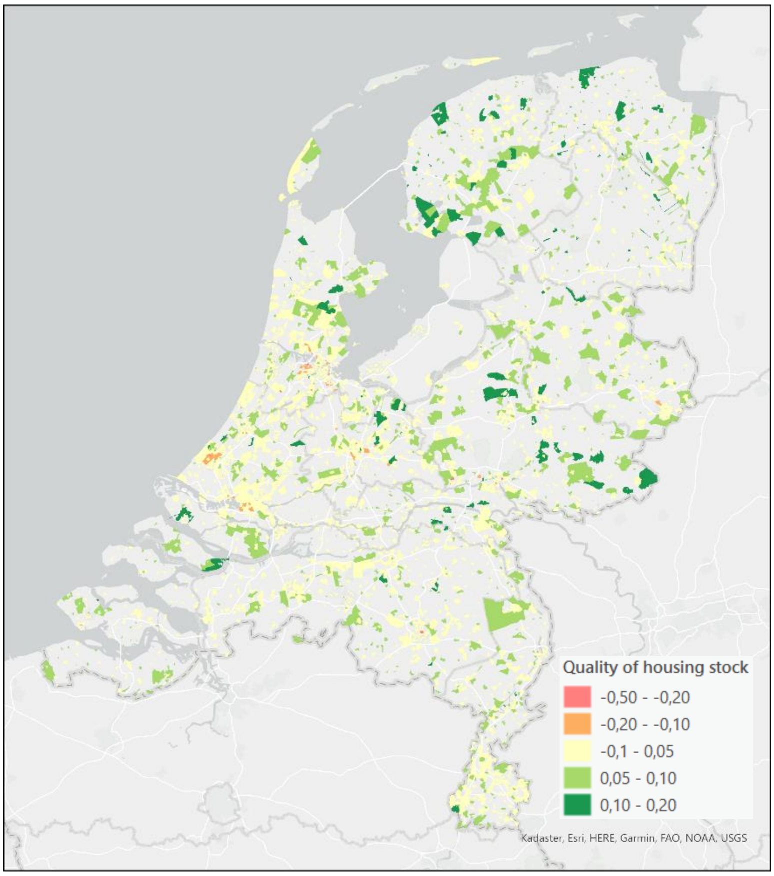

Figure 8.10.4: Quality of housing stock (Livability index, The values are centered around the mean (0) and range from -1 to 1)

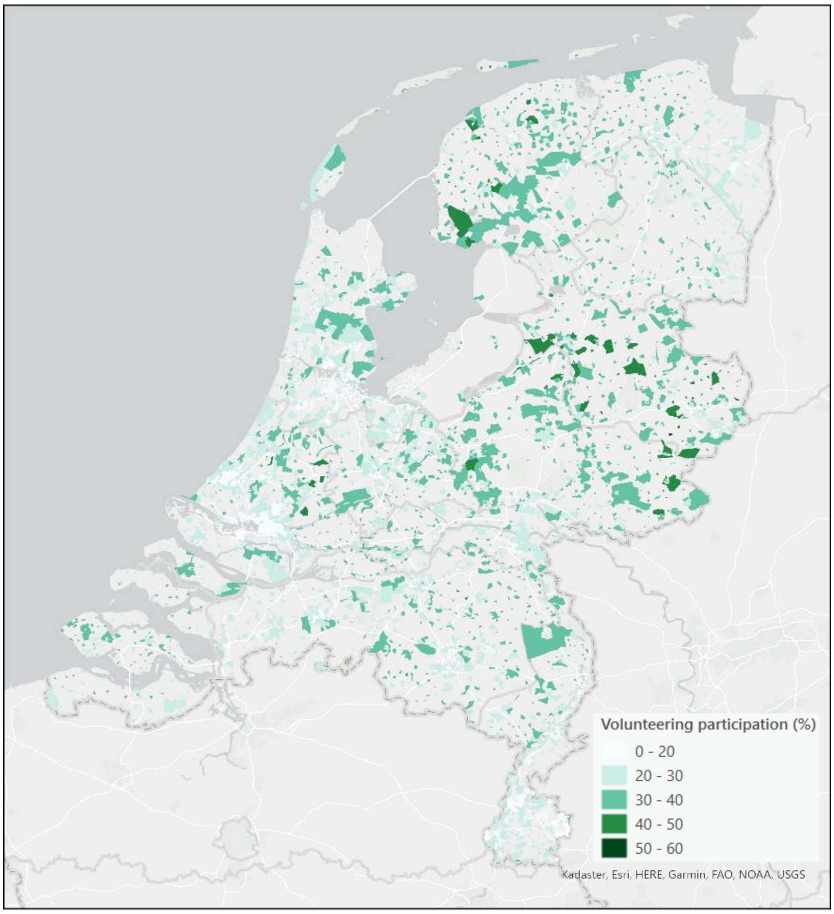

Figure 8.10.5: Share of population participating in volunteering (%)

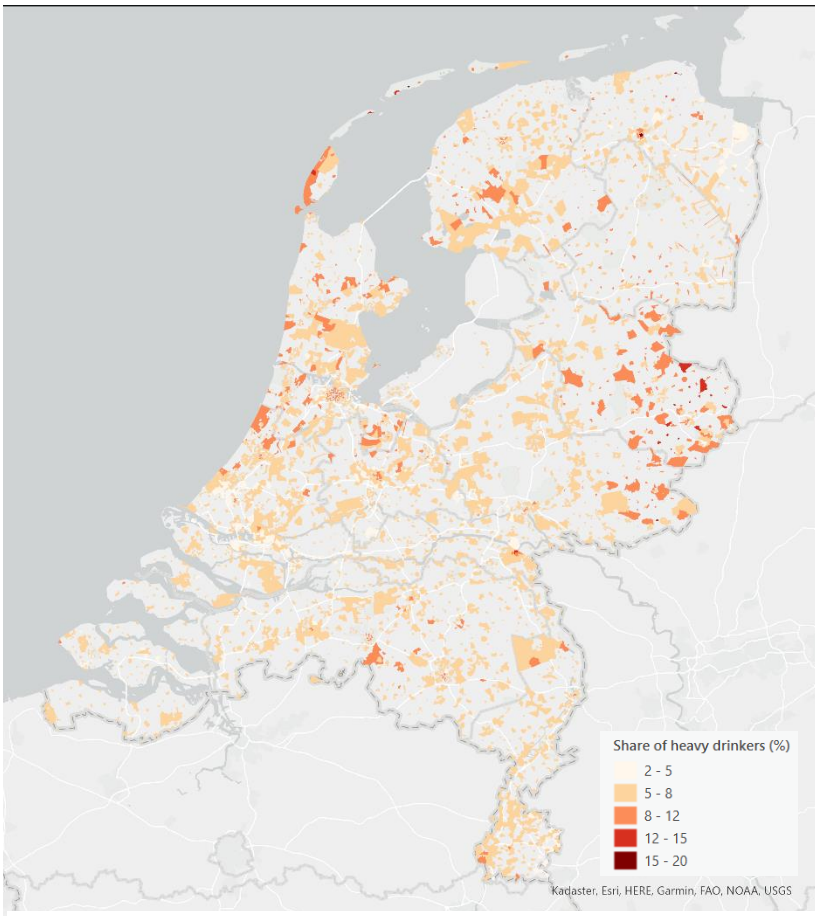

Figure 8.10.6: Share of population that is a heavy drinker (%)

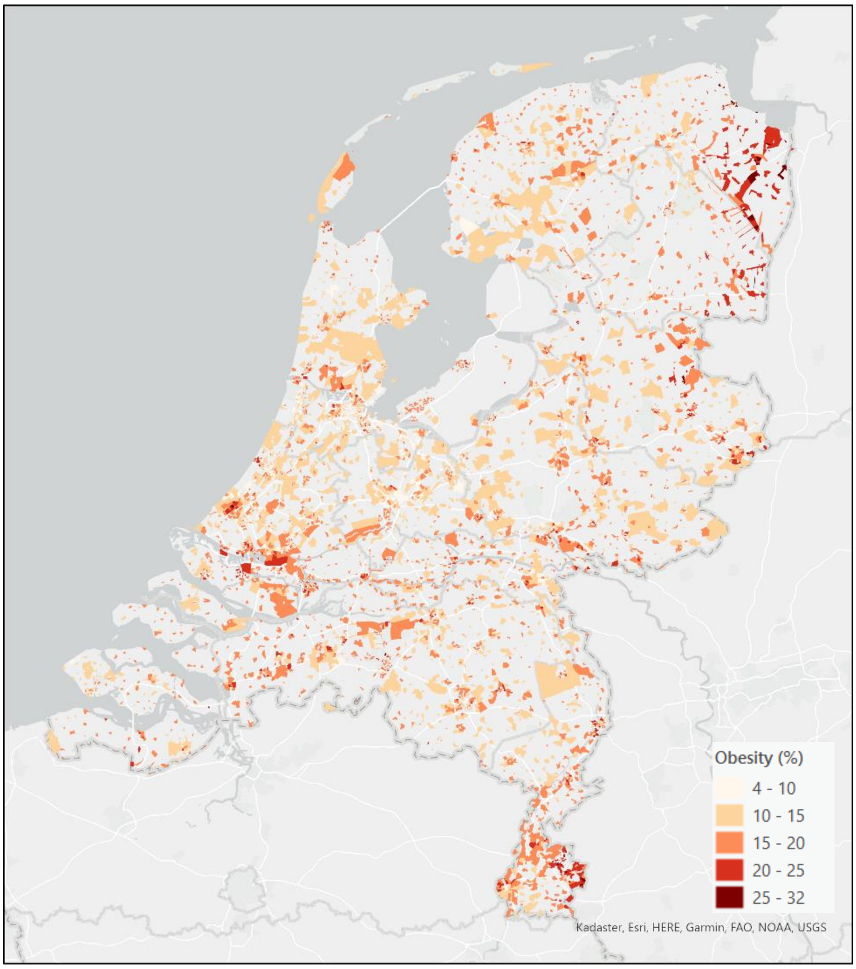

Figure 8.10.7: Share of population with severe obesity (%)

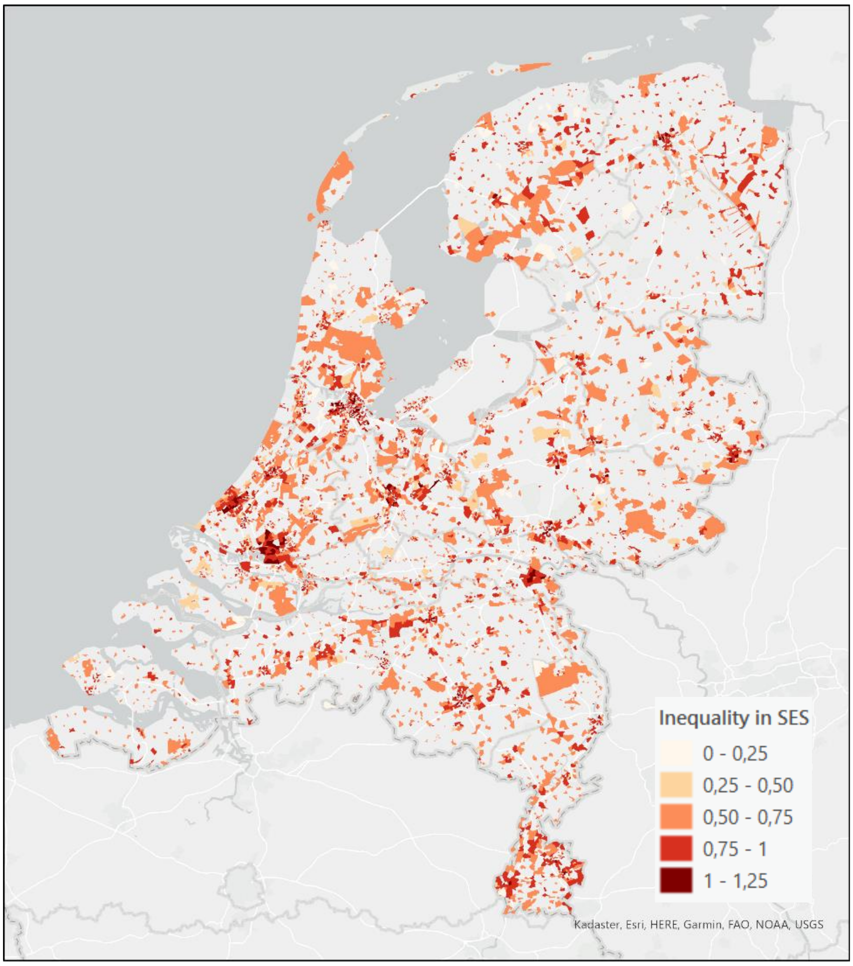

Figure 8.10.8: Inequality in socio-economic status (mean average difference in socio-economic status scores)

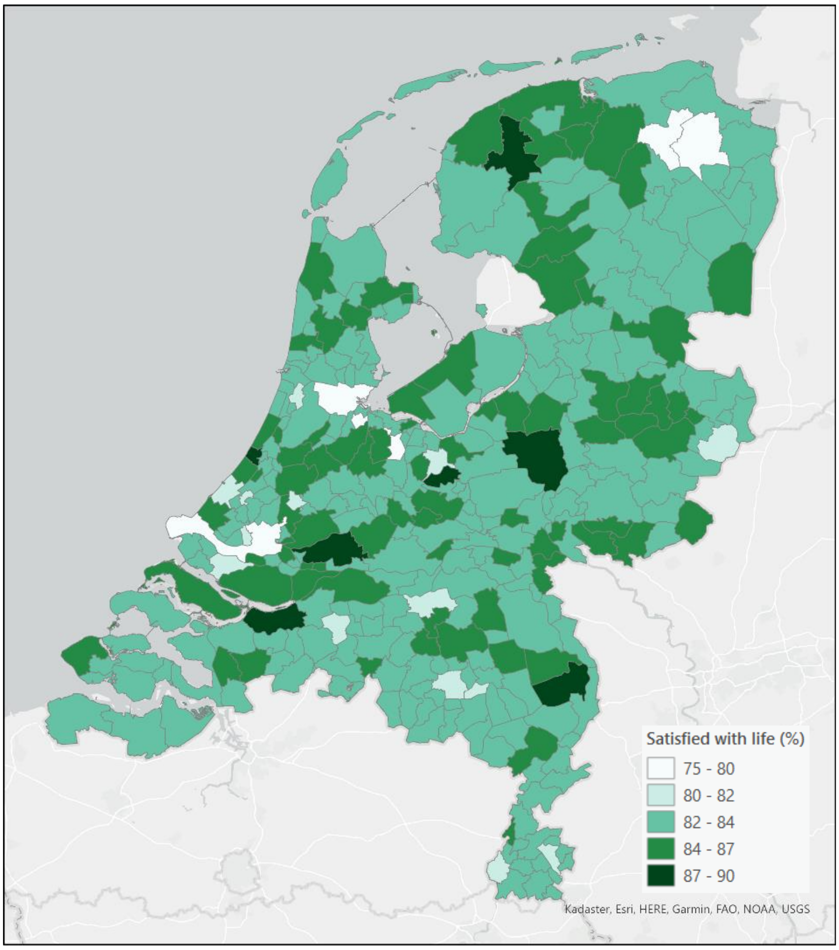

Figure 8.10.9: Share of population that is satisfied with own life per municipality (%)

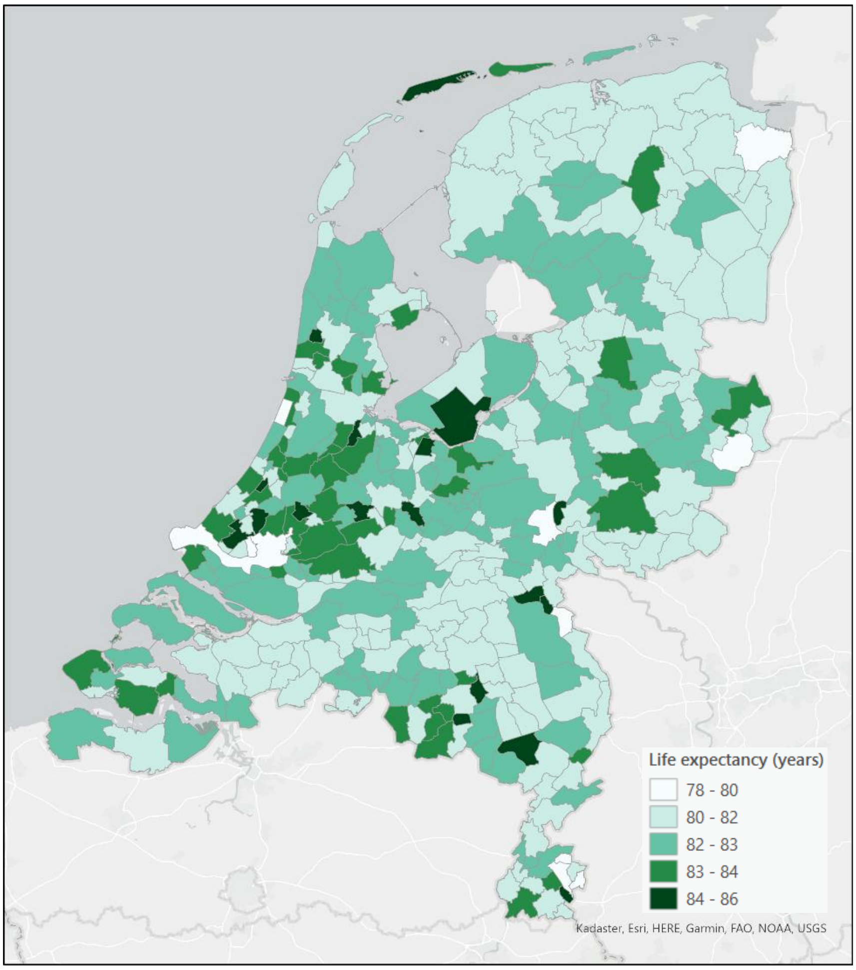

Figure 8.10.10: Average life expectancy per municipality (years)

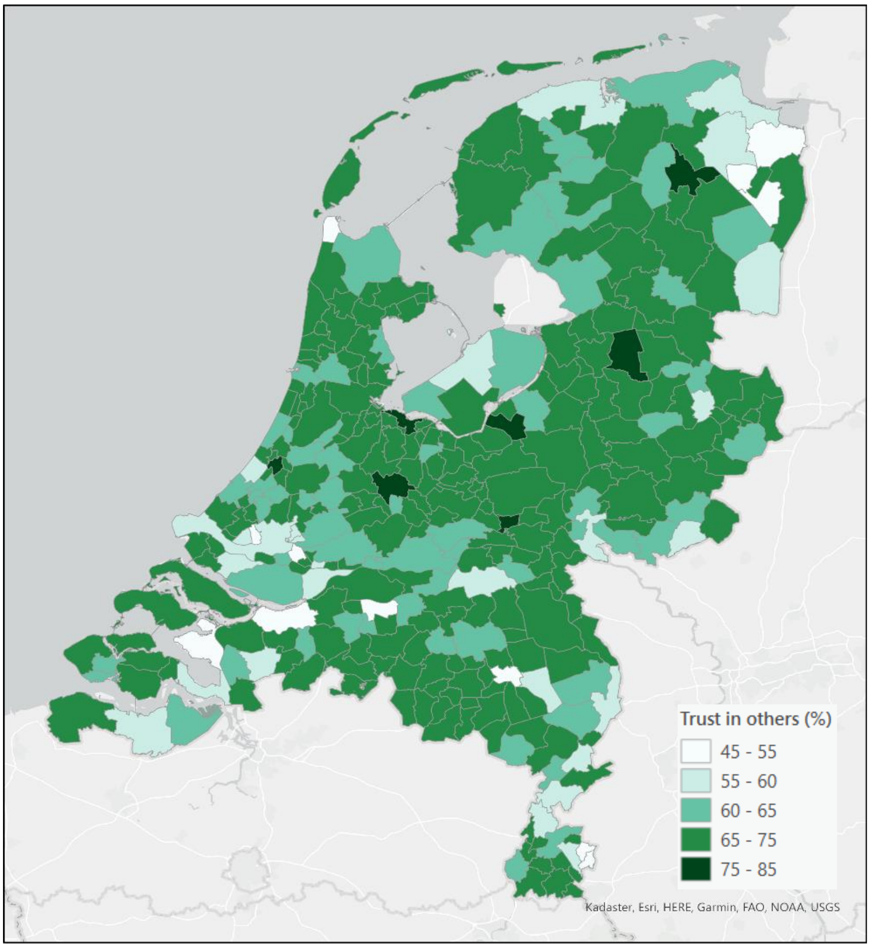

Figure 8.10.11: Share of population expressing to have trust in others per municipality (%)

8.11 RMSE and mapped standardized residuals of the three scale models

8.11.1 RMSE of the three scale models

Table 1: RMSE of the test data compared to the RMSE of the training data of the three models

RMSE			
	Municipality	*Neighborhood*	*Grid*
Training data	7.78	6.73	6.08
Test data	7.98	7.46	6.25

8.11.2 Mapped standardized residual per scale model

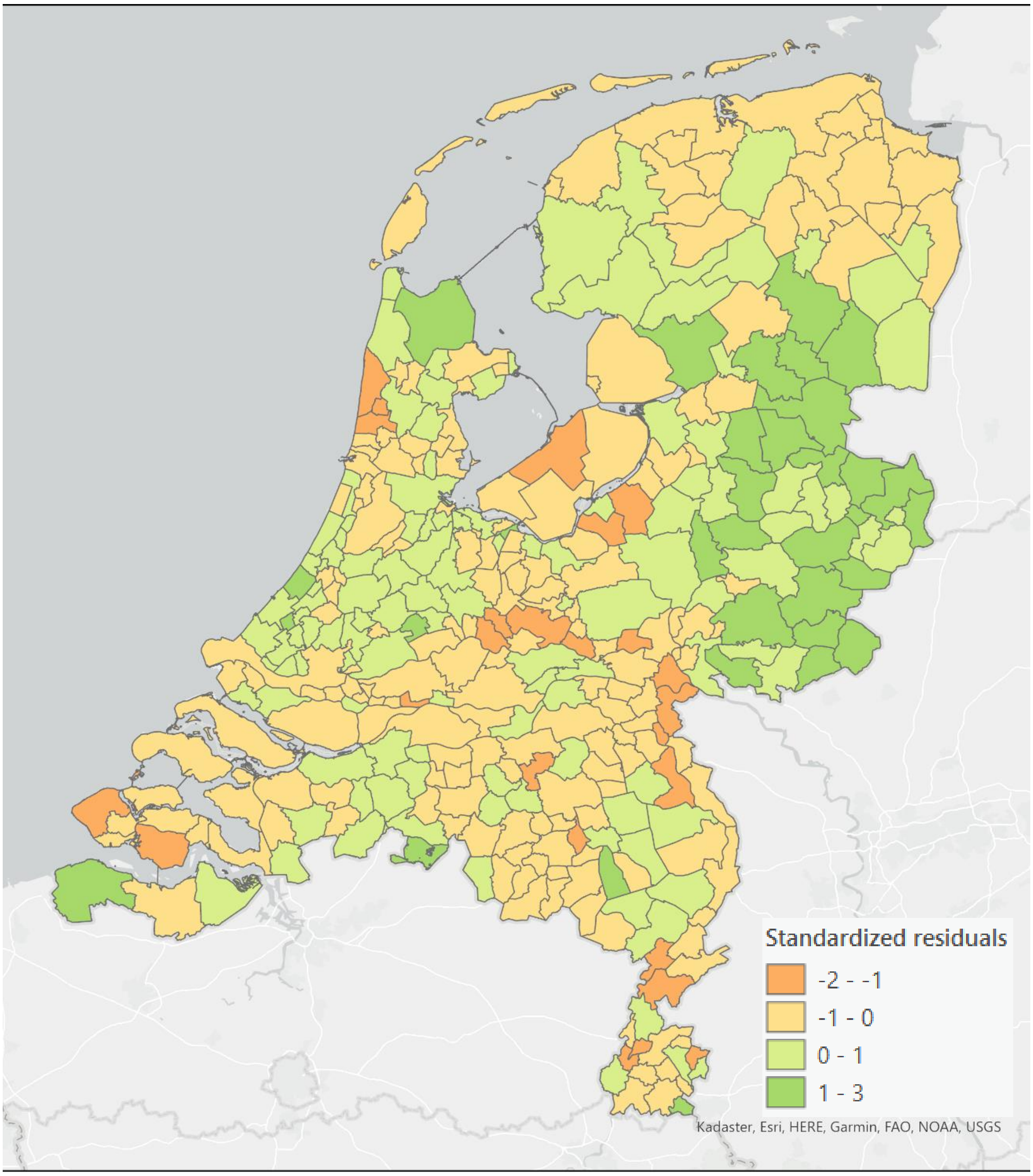

Figure 8.11.1: Standardized residuals of the scale analysis per municipality

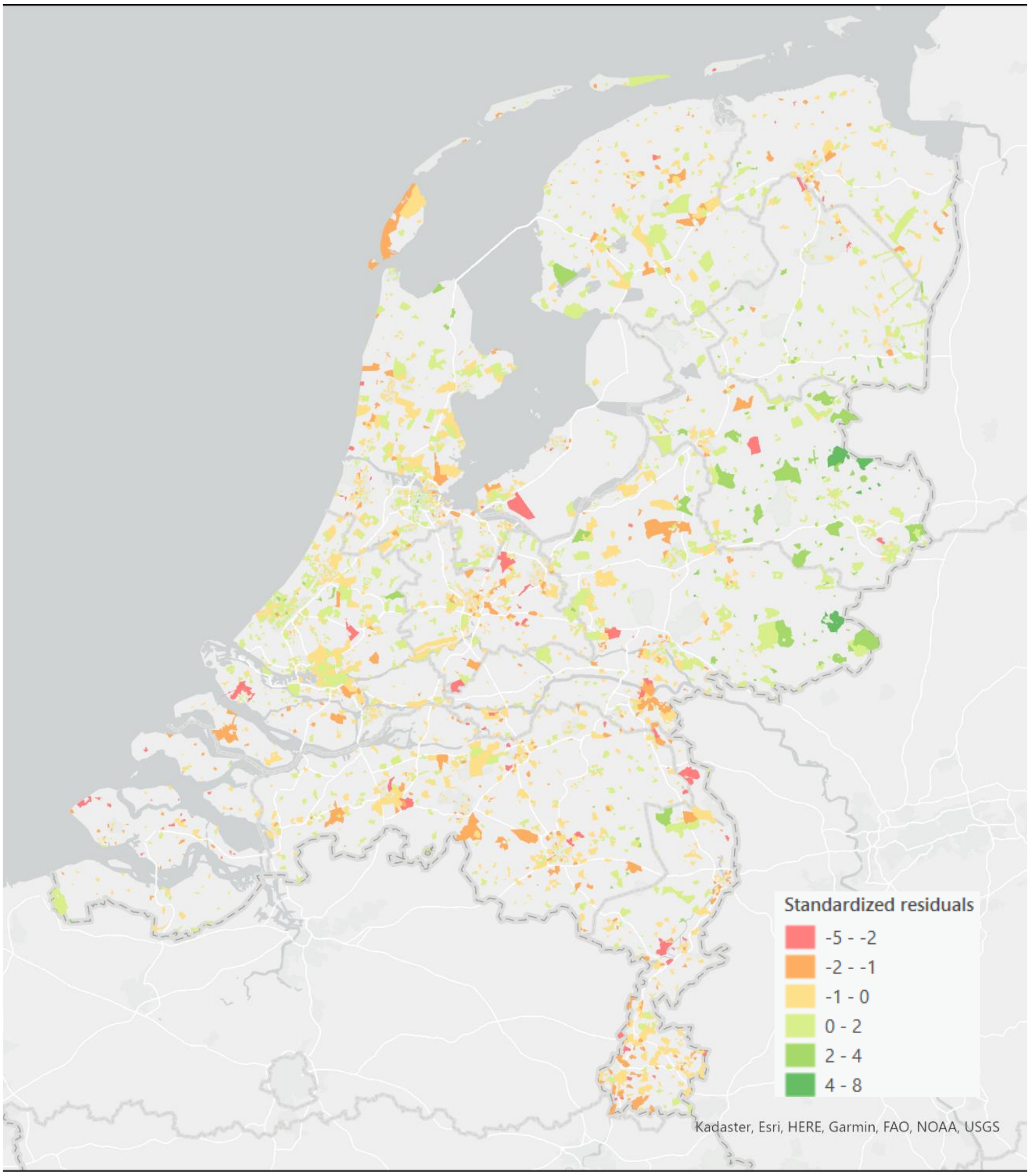

Figure 8.11.2: Standardized residuals of the scale analysis per neighbourhood

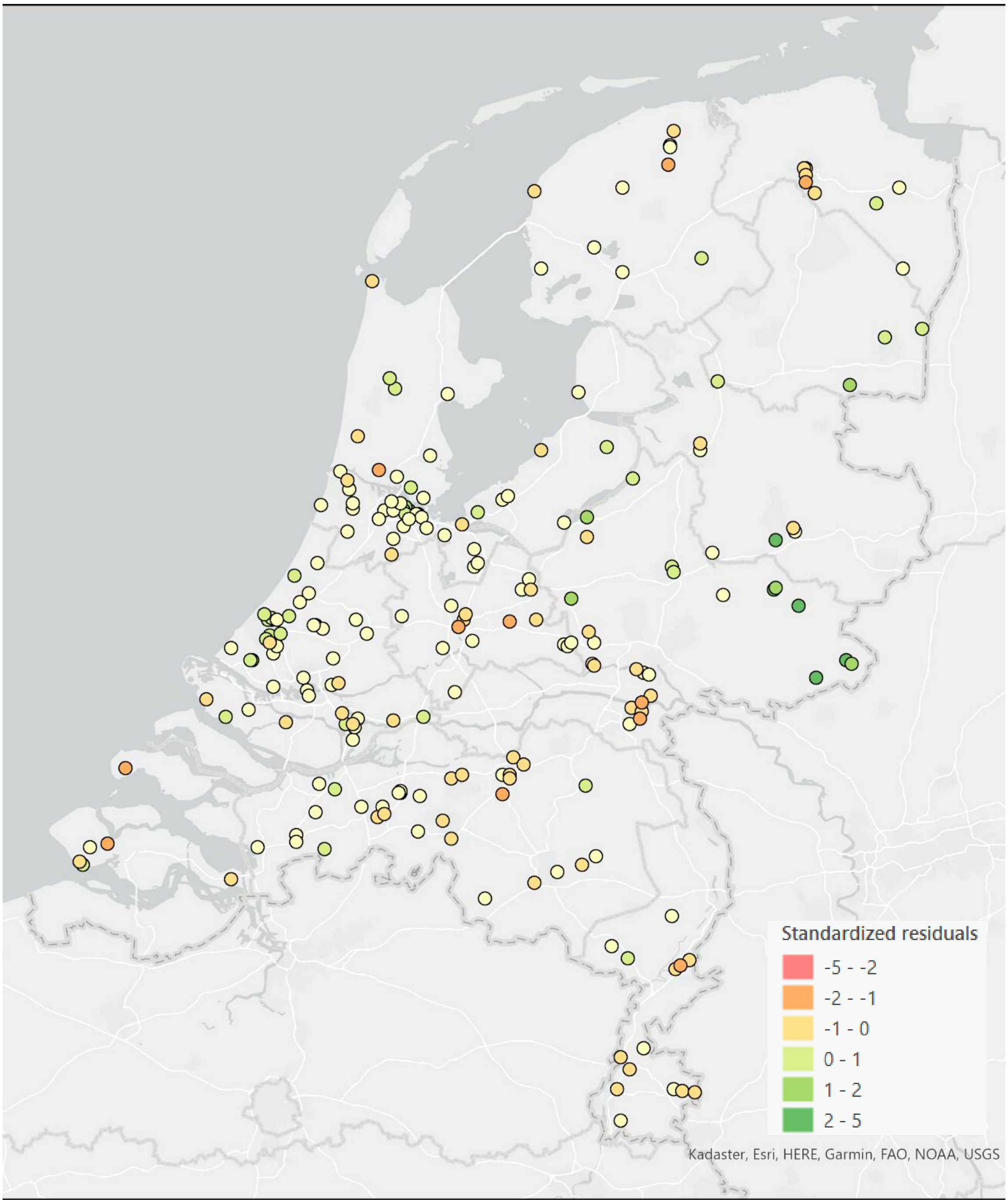

Figure 8.11.3: Standardized residuals of the scale analysis per grid cell. The grid cells have been transformed to circles to make them visible in the map.