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Faculty of Social Sciences

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The changing electoral geography of England and Wales: varieties of 'left-behindedness'

by

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Abstract

A well-established narrative has existed for some time in British politics: 'left behind' places are gradually moving to the Conservatives as Labour dominate in urban, 'cosmopolitan' areas. Merging constituency-level census data with election results, in the first empirical chapter this thesis applies various regression techniques to test this idea on multiple definitions of 'left-behindedness' at every General Election between 1979 and 2017 in England and Wales. Conclusive results indicate that the Conservatives have gained support at Labour's expense in largely older, white, working class constituencies. However, Labour remain dominant in disadvantaged areas with high levels of insecure employment and poverty remains the most important positive predictor of Labour's support. In the second chapter, 'left-behindedness' is understood as a dynamic process of decline. In areas that have declined the least between 1979 and 2017, Labour's mean vote shares have increased relative to the Conservatives. In areas that have seen the sharpest economic decline, there has been more recent decreasing relative support for Labour. In the third empirical chapter, spatial analytical techniques are used to identify areas that do not fit these trends. Following interviews with political actors, two case studies in Merseyside and south Lincolnshire explore the place-based factors behind the over-achievement of Labour in the former and the Conservatives in the latter. The thesis concludes that it is premature to argue that 'left behind' places are moving from Labour to the Conservatives, providing that 'left behind' is re-conceptualised to refer to the most disadvantaged areas rather than older, white, 'traditional working-class' populations.

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Research thesis: declaration of authorship

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I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

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This work was done wholly or mainly while in candidature for a research degree at this University;

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Definitions and abbreviations

BES British Election Study

BME Black and Minority Ethnic

BNP British National Party

CoB Country of Birth

DfT Department for Transport

EU European Union

GIS Geographic Information System

GLM Generalised Linear Model

GWR Geographically Weighted Regression

LISA Local Indicators of Spatial Association

NS-SEC National Statistics Socio-Economic Classification

OLS Ordinary Least Squares

ONS Office for National Statistics

SDM Spatial Durbin Model

SEG Socio-Economic Groups

SEM Spatial Error Model

SIC Standard Industrial Classification

SLM Spatial Lag Model

SOC Standard Occupational Classification

SUR Seemingly Unrelated Regression

UCAS The Universities and Colleges Admission Service

UK United Kingdom of Great Britain and Northern Ireland

UKIP United Kingdom Independence Party

USA United States of America

VIF Variance Inflation Factor

Chapter 1. Introduction

1.1 Unstable politics and the 'cosmopolitan-left behind' divide

The UK is gradually becoming an aged, educated and ethnically heterogeneous country in which traditional notions of race, ethnicity and 'Britishness' are increasingly ambiguous. At the same time, deindustrialisation, the growth of the service and university sectors and a rise in insecure labour have fragmented traditional class structures (Savage *et al.*, 2013) and advanced the decline in size of the manual working class (Heath, Jowell and Curtice, 1985, 2001). However, these changes do not occur uniformly across time or space. Areas of the UK with growing, young populations with easily marketable skills appear to be thriving; other areas with shrinking, low-skilled and ageing workforces are in decline. These two diverging groups of people and places may be referred to as the 'winners' and 'losers' of globalisation (Rodrik, 1997; Kriesi *et al.*, 2006) or as 'cosmopolitan' and somewhat pejoratively, 'left behind' (Ford and Goodwin, 2014), or a more economically-oriented 'let down' (Watson, 2018). These places need not be separated by significant distances: London's demographic makeup, for example, has been changing so rapidly for so long that, despite being only sixty kilometres from the seaside towns of Essex, they have remarkably different sociodemographic compositions. More than simple manifestations of traditional occupational social class, these geographical divisions instead reflect a complex mix of demographic, socioeconomic, geographic and cultural patterns that are potentially restructuring voting behaviour as we continue to move beyond a 'two-class, two-party' system.

Across Western Europe, there is significant evidence to suggest that the so-called 'left behind' – older, poorer, white residents with low levels of education – are more likely to register authoritarian, parochial and Eurosceptic viewpoints and offer support for extreme right-wing parties (Lubbers, Gijsberts and Scheepers, 2003; Hakhverdian *et al.*, 2013; Teney, Lacewell and De Wilde, 2014; De Vries, 2017). In the UK, whether cultural or economic explanations for the patterns are favoured, these same demographic groups and the areas in which they live have been associated with hostility to immigration, support for UKIP and the vote to leave the European Union (Ford and Heath, 2014; Hobolt, 2016; Wheatley, 2016). In the post-Brexit 2017 General Election,

there was a broad expectation that, with the collapse of UKIP, and an increasingly 'cosmopolitan' Labour Party, voters living in so-called 'left behind' areas of the country would abandon Labour for a more nativist Conservative Party. Indeed, many areas that have experienced long-term decline and recent support for UKIP, most notably ex-mining constituencies in South Yorkshire and the Midlands, saw a clear swing from Labour to the Conservatives, with growing urban areas moving in the opposite direction. This 'continued tilting of the political axis', according to Jennings and Stoker (2017, p. 367), is restructuring English politics and its electoral geography. It reflects a geographical division between areas that are considered 'cosmopolitan' - younger, more educated, more ethnically diverse and urban – and those that considered 'left behind', characterised by ethnic homogeneity, low education levels, ageing populations, long-term economic stagnation and under-investment.

While the political manifestations of these geographical divisions have been explored in some detail in relation to the rise of UKIP and the vote to leave the EU, little attention has been given to the relationships with the two dominant British political parties – Labour and the Conservatives. Jennings and Stoker (2016b, 2017) provide some contextual-level analysis, though only consider elections since 2001, presumably due to boundary changes. However, in order to understand and contextualise the long-term trends in voting patterns, there is a need to go further back in time. This thesis takes as its starting point the 1979 General Election – perhaps one of the first elections when commentators and academics alike began noting the declining relevance of social class to explain voting behaviour. Until the 1970s, the 'two-party, two-class' voting system dominated post-WW2 British politics: generally, working classes and subsequently many of the areas they inhabited, sided with Labour; middle classes were generally represented by the Conservatives. As the relevance of the class cleavage in explaining geographical voting patterns in British elections has faded, attention has been drawn to this idea of a 'left behind-cosmopolitan' divide. However, before the extent to which any 'left behind' concept can be used to understand the changing electoral geography of England and Wales can be established, it is essential that we establish precisely who and what areas are being referred to as 'left behind'.

Ever since Ford and Goodwin (2014) coined the 'left behind' concept, it has been blithely applied by political commentators and journalists searching for the people and places whose anguish and frustrations could explain the Brexit vote. Yet the differentiation between white, working class and 'left behind' has never been made

especially clear. Nor has there been adequate explanation given for considering older, white, working class residents with low levels of education as 'left behind', when objectively, the economic conditions experienced by ethnic minorities living in diverse, highly unequal urban areas are often worse. At the same time, there is a growing trend towards non-standard forms of labour and insecure service-sector employment that might give reason to consider 'precariats' a 'left behind' population (Standing, 2015). To understand the extent to which an area is 'left behind', we should not simply apply the conventional definition of 'left-behindedness' employed by Ford and Goodwin (2014) as other measures may better capture economic deprivation and the precarity of local employment.

One might wonder why it matters how we determine which areas are categorised as 'left behind' or 'cosmopolitan'. It matters because, if, like Ford and Goodwin (2014), we begin any conceptualisation by identifying where support was strongest for UKIP or Brexit, we inevitably overlook ethnically diverse areas with the most pronounced economic problems. Areas with large proportions of older, white working-class residents can be somewhat pejoratively framed as *the* 'left behind' whilst ethnic minorities are blithely grouped together with any other urban residents as being part of a 'cosmopolitan' environment. It is also crucial to understand that a place might be considered 'left behind' not only relative to other places but relative to its own history. In this sense, the concept might be understood as a process of relative economic decline rather than a snapshot of the characteristics of a place at a particular point in time. The value of a thorough conceptual discussion is clear: the importance of any 'left behind-cosmopolitan' geographical divide in explaining Britain's changing electoral geography rests on whatever definition of 'left behind' or 'cosmopolitan' is chosen. This research begins from the notion that, in the broader context of particularly unequal cities and the increasingly insecure labour associated with the service sector, there are many ways that a place could be considered 'left behind'.

Even after using a multidimensional conceptualisation of 'left-behindedness' to explain the changing electoral geography of England and Wales, some areas of the country are simply not going to fit with expectations. Often, this is a product of a spatial processes and local cultural and historical factors that are not easily accounted for by any definition of 'left-behindedness'. Most approaches to understanding changing electoral cleavages have been aspatial in character and have assumed that the distribution of

votes across constituencies and electoral wards in the UK is largely a reflection of only the socioeconomic or demographic composition of those areas. This compositional, aspatial approach cannot explain how, for example, the Conservatives have come to be so dominant in largely working-class parts of Lincolnshire and Labour so dominant in middle-class areas of Merseyside. Voting is not conducted in a vacuum – people are situated in neighbourhoods, towns, cities and wider regions that all can influence their voting behaviour. Even in British electoral geography, there is little research that has applied spatial analytical and qualitative methods to understand the effect that both space and place have on changing voting patterns. By using these methods, it is possible to better understand not only where the 'left behind-cosmopolitan' cleavage has less explanatory power, but why this is the case.

1.2 Research questions and study objectives

At its broadest level, this research provides a detailed understanding of the changing characteristics of places that are associated with Labour and Conservative support between 1979 and 2017. It addresses the need for a more detailed spatiotemporal understanding of the changing electoral cleavages across constituencies in England and Wales. As the influence of occupational social class on the electoral geography has declined, this thesis uncovers the sociodemographic and geographical factors associated with different conceptualisations of 'left-behindedness' that have simultaneously grown in importance. It begins this complicated task from the notion that there are many ways to understand what constitutes an area being 'left behind', from the conventional definition used by Ford and Goodwin (2014) to a more economically-oriented definition and a definition focusing on precarious forms of employment. The research is structured around three compositional definitions of 'left behind' areas:

Conventional: The conventional definition is broadly based upon the demographic characteristics associated with Ford and Goodwin's (2014) 'left behind' group, variants of which have been widely used in academia and in the media. In this research, it encompasses constituencies with older age profiles, lower educational levels, higher proportions of routine/semi-routine and manufacturing occupations, few 'cosmopolitan' jobs, limited ethnic diversity and gross migration and a less urban population that live a large distance from the closest 'cosmopolitan' city.

Economic deprivation: The economic deprivation 'left behind' measure used in this thesis aims to capture those areas with high levels of relative poverty where the economic prospects of a significant proportion of the population are limited. It encompasses constituencies characterised by high levels of poor health, unemployment, deprivation and social housing.

Precarious employment: This measure reflects the growth in low-paid, insecure forms of employment. It includes those areas characterised by high proportions of 'precariats' (Standing, 2011) and insecure employment.

The three different conceptualisations of 'left behind' constituencies are applied to one overarching research question:

1) To what extent have 'left behind' places become more positively associated with Conservative support and negatively associated with Labour support between 1979 and 2017?

By structuring the research question around these definitions, it is possible to understand the extent to which Labour have become not only the party of 'cosmopolitan' cities, but also whether this has coincided with a decline in support across: largely white, geographically-isolated, working-class communities; some of the poorest areas of England and Wales; or areas characterised by insecure forms of employment. The extent to which the opposite trend exists in Conservative support is also examined. As well as examining the changing voting outcomes associated with the *level* of 'left-behindedness' according to different definitions, this research also explores the effects of the *change in the level* of 'left-behindedness' on changing political allegiances. The idea is that the extent to which places have become increasingly 'left behind' may impact on the change in support for parties over time. This informs the following sub-question:

2) How has electoral support changed for Labour and the Conservatives in places that have become increasingly 'left behind'?

By using different definitions of 'left behind' to address these two research questions, a third sub-question can be asked:

3) How do the relationships between 'left behind' places or increasingly 'left behind' places and Labour/Conservative support or changes in Labour/Conservative support depend on a particular 'left behind' definition?

The research questions above are addressed predominantly using Ordinary Least Squares (OLS) models to examine the changes in the explanatory variables associated with each definition of 'left behind' and Labour and Conservative support across constituencies in England and Wales over time. It is, however, highly unlikely that these relationships are uniform across the constituencies and regions of England and Wales. Rather, electoral outcomes are much more likely to be spatially structured, such that many neighbouring constituencies are likely to exhibit effects upon each other that cannot be accounted for by aspatial models. Beyond sociodemographic characteristics of 'left-behindedness', place-based effects result in a spatial clustering of areas where Labour and the Conservatives out- and under-perform any model expectations – areas where the 'global' associations between sociodemographic characteristics and Labour/Conservative support do not hold true. In order to account for these spatial processes, spatial lag and spatial error models are constructed and executed, with the following research question in mind:

4) To what extent were spatial processes important in explaining 2015 and 2017 vote shares above and beyond the demographic and socioeconomic makeup of constituencies?

Through this in-depth spatial analysis, constituencies and regions which deviate most significantly from the trends seen elsewhere are revealed. While spatial models are able to indicate *where* these differences occur, they are not able to explain *why* they produce such unusual electoral outcomes in recent General Elections. They cannot account for why, even after incorporating all of the characteristics associated with various conceptualisations of 'left-behindedness', Labour or the Conservatives perform so well or poorly in certain areas of the country. To do so, the research moves beyond a quantitative approach, using qualitative elite interviews with local political actors to consider the importance of historical, cultural and political factors that are unique to two regions with particularly unusual vote outcomes – Merseyside and south Lincolnshire.

1.3 The structure of the thesis

This thesis will be structured in such a way as to address these research questions chronologically. Chapter 1 provides a brief contextualisation of the research, outlines the research questions and presents the intellectual contributions that this study will make. Chapter 2 is the first literature review chapter in which most attention is given to the empirical evidence of the declining importance of social class in explaining voting behaviour in British elections. In Chapter 3, the idea is presented that, amidst class dealignment and the changing demographic and socioeconomic characteristics of the population, there is an emerging 'left behind-cosmopolitan' dichotomy structuring the electoral geography of the UK. The second part of this chapter is a robust critique of the 'left behind' concept on the grounds that it ignores some of the most economically deprived communities because they live in urban, ethnically diverse areas. Chapter 4 assesses the extent to which writers on the class cleavage ignored geography and then outlines key developments in the sub-discipline of electoral geography. Significant evidence is presented to show that voting is not an aspatial process, but is instead structured by the local environment in which one lives. The need to incorporate space into statistical models of voting is outlined alongside the need for research that understands the place-based factors that inform voting behaviour. Chapter 5 - Data and Methods - outlines the data sources, the construction of datasets, interpolation techniques, the selection and adjustment of variables and the statistical models used.

Chapters 6-8 are empirical, consisting of largely quantitative data exploration and model analysis that addresses the aforementioned research questions. In Chapter 6, separate statistical models predicting constituency-level Labour and Conservative vote shares are executed for each election from 1979 to 2017. The subsequent analysis focusses on the changing associations between sociodemographic and geographical characteristics of constituencies and Labour and Conservative support across the time period through the lens of different conceptualisations of 'left-behindedness'. Chapter 7 begins from the idea that a place being 'left behind' is not just a reflection of the relative socioeconomic or demographic characteristics at a specific point in time but is instead a dynamic process. Through the use of innovative methods of areal interpolation, there is a detailed analysis of the relationship between multidimensional processes of decline and changing support for Labour and the Conservatives across different time points between 1979 and 2017. Chapter 8 acknowledges that the OLS and Seemingly

Unrelated Regression (SUR) models executed in previous chapters fail to account for the fact that there are clear spatial determinants of voting outcomes. Descriptive spatial analysis alongside spatial lag and spatial error models are used to show that there are some areas of the country – most notably Merseyside and south Lincolnshire – with unusual voting outcomes which no ordinary OLS model can fully explain. Ultimately, any electoral cleavage, whether based upon social class, age or some kind of 'cosmopolitan-left behind' distinction, is not capable of explaining the politics of these areas. Chapter 9 - based on interviewing and focus groups - is dedicated to understanding why, at the 2015 and 2017 General Elections, these areas of the country have election results that are so poorly explained by their sociodemographic composition. The final chapter is a synthesis of the overall findings of the research in relation to the original research questions and the existing literature. It moves beyond these questions to consider the extent to which, at least at the constituency level, the organisational/behavioural element of a 'cosmopolitan-left behind' cleavage appears to be present in the politics of England and Wales.

1.4 Intellectual contribution

This study builds upon previous academic research in several ways. Firstly, the sheer scale of the analysis moves far beyond most constituency-level research on British electoral geography. Reliable census data across ten General Elections is utilised to provide conclusive evidence of long-term changes in the association between the sociodemographic characteristics of places and the party politicians that are elected therein. Careful harmonisation and areal interpolation of this census data has overcome issues of changing parliamentary constituency boundaries that have restricted most other geographical research to analysis of much shorter time periods. This approach has, for example, made it possible to estimate demographic characteristics and vote shares in 1979 notional to the boundaries used in 2017. As a result, a much more in-depth understanding is generated of the association between long-term demographic/socioeconomic changes and vote share changes at constituency level than has previously been produced. This fits with the broader achievement of this project – to acquire a far more detailed insight into the changing electoral geography of England and Wales between 1979 and 2017.

Secondly, as a result of these innovative methods and the long time period of analysis, I have created useful and hitherto non-existent datasets that will be made publicly available and should be used by political scientists in the future. Notional electoral results are fairly common, thanks largely to the work of Colin Rallings and Michael Thrasher at the University of Plymouth. However, creating notional census data and then merging this with electoral results to create merged datasets of electoral results and interpolated demographic data is uncommon, perhaps due to the time-intensiveness and the knowledge required of GIS programs. Rather than creating estimations of constituency-level census data for the actual election year, generally past research relied upon using the census conducted in the nearest year to that of the election. In cases such as 2005, demographic variables (such as the ethnic makeup of an area due to unequal spatiotemporal migration patterns) may change significantly enough between the year of the election and the nearest census to impact upon the association between demographic factors and voting. Therefore, for researchers that plan to conduct constituency-level analyses of General Election voting in England and Wales for some period between 1979 and 2017, this data should be invaluable to increasing the accuracy of their research. For this reason, I intend to make all datasets available on the UK Data Archive.

Thirdly, the level of detail generated from the long time period of analysis is matched by the complexity of multiple geographical approaches. Most research on elections has moved away from aggregate-level analyses in favour of the individual (Johnston and Pattie, 2004). Bar a limited number of multi-level analyses on neighbourhood effects, this has generally resulted in aspatial voting models that ignore any spatial or contextual determinants upon voting behaviour. Abandoning a spatial focus seems unfortunate at a time when, according to Lanchester (2016), 'geography is destiny' – it is something that, beyond social class and other demographic factors, determines our life chances but also our attitudes, beliefs and voting behaviour. In response to these shortcomings, this research is based on the notions that geography matters both in terms of space – the location of a constituency - and place – the meanings and human experiences contained therein.

In terms of space, the incorporation of measures of distance from the closest university and 'cosmopolitan' city in conceptualisations of 'left-behindedness' reflect a foregrounding of geography in explaining electoral results. In addition, this is the first

research of its kind in British electoral studies to analyse the spatial autocorrelation of errors present at different elections and measure the effects on predicted electoral outcomes of incorporating this into regression models. In doing so, the analysis in Chapters 8 and 9 highlight areas of England and Wales where, given their demographics, Labour or the Conservatives consistently out- or under-perform model expectations. Two case studies are selected – Merseyside and south Lincolnshire – where there is statistically significant spatial clustering of support that falls outside of model expectations. In-depth elite interviews with those involved in local politics in these regions reveal some of the reasons *why* these areas produce unusual electoral outcomes that cannot be easily understood in terms of ordinary political cleavages. In doing so, this research moves beyond most electoral geographical research by accepting that the socio-demographic composition of an area can only go so far in explaining its political allegiances. Instead, the cultural, historical and political factors unique to these regions are examined to understand their voting histories and why neither traditional nor more recently developed voting cleavages provide sufficient explanation of voting outcomes.

Finally, this thesis makes a timely and much needed conceptual contribution. Despite the widespread use of the 'left behind' concept since the Brexit vote, there have been few serious attempts critically to examine the vagueness with which is it used, Watson (2018) aside. This work responds to these shortcomings with a detailed critique which concludes that much of the 'left behind' literature is based on flawed assumptions, in particular that areas with more pronounced economic problems are overlooked because they are urban, ethnically diverse and not prone to voting for extreme right-wing parties or Brexit. Instead, a multifaceted conceptualisation is proposed and used to analyse constituency-level electoral outcomes from 1979 to 2017. It also applies the term to a different phenomenon: whereas existing research has generally sought to explain Brexit or UKIPs support through use of the 'left behind' concept, this study examines its relevance in the changing electoral geography of Labour and Conservative support.

Chapter 2. Social class and voting behaviour

2.1 The great British class cleavage: alignment and dealignment

> It was class voting which gave to British politics its electoral stability. Electoral behaviour came to display a considerable degree of geographical homogeneity since an elector in Cornwall would tend to vote the same way as an elector from a similar class in Glasgow regardless of national or locational differences.
>
> **(Bogdanor, 1983, p. 53)**

Although party allegiances in western elections have become increasingly dynamic (Maguire, 1983; Franklin, 1992), many mainstream political parties still rely on the support of 'core voters' - demographic or socioeconomic groups of individuals that consistently vote in their favour. This stability reflects major societal cleavages – 'fundamental divisions on basic political issues' around which a party can construct a core of support amongst particular social groups (Johnston and Pattie, 2006, p. 2). The cleavage framework was first outlined by Lipset and Rokkan (1967) who saw national and industrial revolutions as catalysts for the organisation of political parties around a set of particular political views. The former often led to 'church-state' and 'core-periphery' cleavages; the latter to 'town-country' and 'class' cleavages. The crux of Rokkan's theory, according to Lane and Ersson (1997, p. 191), is precisely this 'connection between the party system (macrolevel) and the social groups (microlevel) by means of cleavages'. It is also critical to any theorisation of electoral geography because it affords the researcher the means to establish connections between voting patterns and broad, long-term societal tensions and questions (Taylor and Johnston, 1979).

Bartolini and Mair (1990) define three conditions that must be met to refer to a cleavage: structural divisions between social groups (empirical element), each of which should have an identity formed of shared values and beliefs (normative element) that manifest in political expression and an association with institutions, organisations and political parties (organisational/behavioural element). The resulting bonds that exist between social groups and political parties should be sufficiently strong, durable and ultimately long-standing. Indeed, Lipset and Rokkan (1967, p. 44) observed that 'the party systems of the 1960s reflect, with few but significant exceptions, the cleavage

structures of the 1920s'. This notion that, from the 1920s onwards, European party systems had been 'frozen' in place with any deviations merely temporary, has since been referred to as the 'freezing hypothesis' (Mair, 2001). In most cases, only parties that are able to reflect the dominant cleavages can survive, resulting in significant stability over time in the political behaviour of the electorate.

Of the longstanding cleavages first outlined by Lipset and Rokkan (1967), it was the class cleavage that structured and dominated twentieth-century European politics (Triandafyllidou and Gropas, 2015; von Schoultz, 2017). The 'rising masses of wage earners' required representation for their material interests, giving birth to labour unions and socialist political parties (Lipset and Rokkan, 1967, p. 21). Accordingly, a bond developed between the newly formed industrial working classes and socialist political parties and between the owners of capital, their supporters and conservative parties (Johnston and Pattie, 2008). In Britain, this manifested in a 'two-class, two-party' model with the typically unionised working classes identifying with Labour and the middle classes with the Conservatives (Butler and Stokes, 1969) - a pattern that broadly structured the electoral geography, albeit with additional contextual effects. However, the extent to which this class cleavage persists today is highly debatable and can depend on the chosen measure of social class and the extent to which changes in the size of social classes are accounted for.

In this section, the overwhelming evidence of a stable class cleavage across Europe and the UK in the mid-twentieth century is first outlined. Following this, the extent to which there has been a decline in significance of class-based voting is considered. I then assess whether this is likely to be the result of changing voter behaviour, poor operationalisations of social class or a changing social structure that has seen the manual working class decline in size. Finally, it is considered whether, as employment has become more insecure and precarious, a new politically engaged 'class in the making' has been created – the 'precariat'.

2.1.1 The mid-twentieth century class cleavage

Although the class cleavage has been the most critical sociological structuring force of Western European party politics (Bartolini, 2000), it has typically been crosscut by a church-state cleavage (e.g. Germany and Netherlands) and by both religious and centre-

periphery cleavages (e.g. France and Italy). In the UK, owing to the nineteenth century decline of the religious and rural-urban cleavages, class has been by far the most important structuring force, such that its effect has been stronger than in most other Western European countries (Nieuwbeerta and Ultee, 1999; Gallagher, Laver and Mair, 2011). Alongside Scandinavia, elites and land-owners in the UK - when compared to other Western European countries - often had a more open and less oppressive attitude to the claims of the workers, allowing large, mainstream Labour parties to develop (Lipset and Rokkan, 1967). Workers thus became more easily integrated into mainstream party politics rather than radical alternatives (Gallagher, Laver and Mair, 2011).

Based on the cleavage model of voting, most British studies between the end of the Second World War and the 1960s demonstrated that the working class voted consistently for the Labour Party and the middle class tended towards the Conservatives – differences that were thought to explain geographical variances in voting outcomes. The most significant theorisation of the British class cleavage is Butler and Stokes's (1969) *Political Change in Britain* – the 'foundational text of British voting behaviour' which extended the partisan identification model used by the Michigan school to appropriate occupational class in the British context (Campbell, 2013, p. 42). Their work paved the way for future understandings of the 'two-class, two-party model' of British politics (Webb, 2000, p. 44). Although Butler and Stokes (1969) are quite unequivocal in their refusal to adopt any single model explaining voting change, their broad approach can be summed up as follows:

$$V = \beta X_1 + \beta X_2$$

Where V is the voter's party identification; X_1 is social class, their parents' social class and their parents' party allegiances; and X_2 is short-term influences (candidates, economy, party image, party position on key issues); and β is a model parameter.

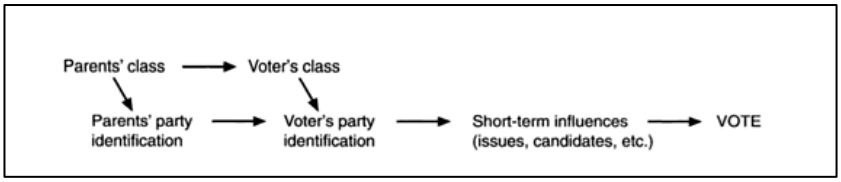

Figure 2.1 Webb's (2000, p. 45) model of Butler and Stokes's theory of voting behaviour.

Webb's diagram of Butler and Stokes's (1969) theory of class voting in Figure 2.1 clearly shows how influences on voter identification are dependent on parental social class. In short, class partisanship is explained by Butler and Stokes (1969) by various social mechanisms that encourage the political socialisation of the individual. Early in life, children develop political preferences in line with those of their parents. Over time, this socialisation process extends beyond the family, when the values and preferences absorbed in childhood are either reinforced or diluted by one's experiences and surroundings (Franklin, 1985). In this way, whole communities and family/friendship networks are likely to show strong preferences for Labour or the Conservatives based largely on the social class of each individual and their parents.

During the 1950s and 1960s, social class was the critical sociological characteristic that structured voting behaviour in the UK. Pulzer (1967, p. 98) famously concluded that 'class is the basis of British party politics; all else is embellishment and detail'. The extent to which this strong class cleavage persisted into the latter part of the twentieth century and beyond has been somewhat contested. The most dominant narrative is that there has been a significant decline in class voting, resulting from various processes: the 'embourgeoisement' of the working class; new post-industrial cleavages; the growth of post-material values; and the declining size of the working class (Evans, 2000).

2.1.2 The class dealignment thesis

> At the end of the twentieth century class had come to play a very limited role in determining the voting preferences of the British electorate.
>
> **(Clarke et al., 2004, p. 50)**

By the 1970s, it was widely thought that there was an emerging 'new age of mass politics' across Western Europe in which the influence of the social structure upon voting outcomes was declining and cleavages were 'unfreezing' (Mair, 1990; Pedersen, 1997). This process of dealignment between social class and party has been widely observed in research across Western Europe and North America throughout the latter twentieth and early twenty-first century. As early as 1983, a study of post-war Western European electoral persistence and change concluded that 'it is clear that European party systems cannot now be regarded as inherently stable structures' (Maguire, 1983, p.

92). Following this, Franklin et al. (1992, p. 388) found that by the 1980s, only in two of sixteen countries could more than twenty per cent of the voting variance be explained by the social structure – a decrease of six countries since the 1960s. More recently, the association between the working class and social democratic parties has been shown to be consistently in decline across Western European democracies (Best, 2011). Similarly, Oskarson (2005, p. 96) identified a considerable decrease in class voting since the 1960s across six western European countries, although in Britain they found 'trendless fluctuations'.

In the UK, even Butler and Stokes (1969) noted some softening of class partisanship during the 1960s, resulting largely from lower working class turnout due to more widespread affluence, the subsequent blurring of material circumstances and the ideological convergence in the policy positions of the two main parties. In spite of a resurgence in party-level ideological polarisation, this deterioration in class loyalty to the two main parties continued during the 1970s, such that by 1974, 'barely half of the electorate identified (let alone voted) with their 'natural' class party' (Crewe, Sarlvik and Alt, 1977, p. 183). Franklin (1985) attributed around half of Labour's decline between 1966 and 1979 to a diminishing appeal amongst its traditional, working class supporters. A similar decline in the association between Conservative voting and the middle/upper classes led Franklin (1985) to describe the widespread phenomenon of a decline in class voting. It seemed that 'the end of cleavage politics' was near as voter preferences were no longer sociologically structured by the material conditions associated with one's social class (Evans, 1999, p. 1).

At the 1997 General Election, research by Sanders (1998) and Tonge (2000) provided clear evidence of class dealignment, with the Labour Party consuming a significant percentage of the non-manual Conservative support. At the 2001 and 2005 elections, Johnston and Pattie (2006) showed that, in spite of the continued importance of class voting, its effect was increasingly muted. Similar results were revealed by Denver (2007, p. 69), who used the 'Alford Index' (see Alford, 1964) to show the relative decline in Labour's working class vote and the Conservative's middle-class vote. He reached a similar conclusion in a comparison of the 1964 and 2015 General Elections (Denver, 2017). More recently still, whilst the 2017 General Election marked a return to a two-party politics, this was not a return to the dominance of class-based voting. Between 2015 and 2017, Labour's support amongst those in higher social grades A, B and C1

appeared to increase much more significantly than amongst social grades C2, D and E (Skinner and Mortimore, 2017). Curtice (2017c) also showed that Labour's support in 2017 remained at the same level amongst older, working class voters yet grew significantly amongst the 'Liberal Elite' – predominantly graduates in professional jobs – and the 'Liberal Youth' – young people in middle-level employment. This acceleration of class dealignment in 2017 has also been reported in post-election surveys coordinated by Lord Ashcroft (Lord Ashcroft, 2017) and YouGov (Curtis, 2017) who concluded that class 'is no longer a very good indicator of voting intention'.

In spite of the strong evidence for class dealignment in British politics, its extent has been somewhat contested. Some academics were reasonably suspicious of claims of a major dealignment until the evidence became overwhelming. A lengthy assessment of voting patterns between 1964 and 1983 by Heath, Jowell and Curtice (1985) found more evidence of 'trendless fluctuations' in voting according to wider attitudes towards the main political parties than any class dealignment. These findings were supported by Goldthorpe (1999), who used a topological model derived from the notion of natural class parties to show that there was little weakening in the net association between social class and voting in British elections between 1964 and 1992. Instead, a zigzag pattern emerged from 1970 onwards showing fluctuations in class-based voting. However, by the late 1990s, in the context of irresistible evidence, even proponents of this 'trendless fluctuation' thesis began to concede that a decline in class-based voting had occurred and it appeared that some consensus had been reached (Evans, 1999).

2.1.3 Class dealignment, changing class structure and party positioning

While the extent of class dealignment is still somewhat contested, there is now broad agreement that the process has at least occurred. Less clear are the reasons behind this change. As the aforementioned studies have tended to favour, it could be the result of changing voter behaviour in a process referred to as 'behavioural dealignment' or 'sectoral realignment' (Flanagan, 1984; Lachat, 2007). An alternative explanation is that class dealignment may be a manifestation of a changing social class structure – the declining size of the manual working class, the 'embourgeoisement' of the working class and a growing class heterogeneity. In short, a 'structural dealignment' or 'ecological realignment' may have occurred (Flanagan, 1984; Lachat, 2007).

Since the peak of class-based voting, higher education has become increasingly accessible, prosperity more widely attainable and once clear-cut divisions between economic sectors and occupations have become blurred (Gallagher, Laver and Mair, 2011). Deindustrialisation, tertiarisation and the decline of manual labour has led to arguably more amorphous social class boundaries, leaving no clear dichotomy between manual/non-manual workers around which Labour and the Conservatives can structure their appeal (Clarke *et al.*, 2004; Gallagher, Laver and Mair, 2011). Labour's demise in the 1970s and 1980s, for example, may not only reflect a loss of working class support, but also the shrinking size of the working class as the country transitioned into a largely service-based economy (Heath, Jowell and Curtice, 1985). As early as the 1960s, widespread improvements in living standards were already perceived to be reducing economic conflict along class lines (Butler and Stokes, 1969).

On top of behavioural or structural explanations, authors that have adopted a strategic approach to voting behaviour have favoured explanations for the declining class cleavage relating to the ideological positioning of parties. For example, the structuring effect of New Labour's centrist position was highlighted by Evans and Tilley (2012), who argued that rather than a blurring of class boundaries, dealignment resulted from a weakening of the left-right 'ideological signals' that parties sent to voters. The consequence was the breakdown in the association between Labour and the working class, many of whom did not have representation from any other party, so simply chose to stop voting. While emphasising the structural and sociological explanations, Johnston and Pattie (2006) similarly note the effect on class voting of Labour's policy shift to the centre ground. These ideas on class voting reflect that of Przeworski (1985, pp. 100–1), who determined that voting and to some extent class identification were fundamentally 'an effect of the activities of political parties' rather than divisions within society.

Any analysis of the changing relationship between social class and voting must acknowledge that findings can be affected by the operationalising of social class – a fluid, changing and multifaceted concept. Early studies that pointed to significant class dealignment have been subsequently criticised for using a crude manual/non-manual occupational dichotomy that conceals differences within manual and non-manual classes and fails to account for changes in class composition (Evans, 1999, 2000). More recent research has tended towards using variants of the Goldthorpe schema - an eleven category classification with a more refined differentiation based on employment

relationships between individuals and their employers (see Erikson and Goldthorpe, 1992; Evans and Mills, 2000; Rose, Pevalin and O'Reilly, 2005). In more recent work, Evans and Tilley (2017) diverge further from the Goldthorpe schema by categorising three forms of middle class: the 'old middle class' (managers, farmers, self-employed), the 'new middle class' (professional workers, non-manual supervisors) and the 'junior middle class' (junior non-manual workers). Even using this more complex measure, they present clear evidence that during Tony Blair's premiership, there was a convergence between all middle-class groups and the working class in their likelihood to vote Labour. In 2015, the 'new middle class' were in fact just as likely as the working class to vote Labour.

2.2 The 'precariat': a 'left behind' 'class-in-the-making'?

As a result of the growth of de-standardised forms of labour in a competitive globalised economy, traditional manual/non-manual social class divisions are also being replaced by divisions between secure and insecure employment (Beck, 1992). An unforeseen consequence of the spread of flexible labour and the growth of inequalities since the 1980s is the emergence of an insecure 'class-in-the-making' – the 'precariat' (Standing, 2011, 2015). They have distinctive relations of production characterised by 'casualization, informalisation, agency labour, part-time labour, phoney self-employment and the new mass phenomenon of crowd-labour' (Standing, 2015, p. 6). Their employment lacks the salary of the middle class and the stable, fixed-hour contracts and options to unionise associated with the working class. Subsequently, they belong to neither. These increasingly insecure employment conditions are 'impacting upon areas and communities that have not been previously characterised by precarity', with particularly strong effects felt in education, the creative industries and care work (Lazar and Sanchez, 2019, p. 9). For Ainsley (2018), people working on low to middle-incomes in service sector employment such as social care, retail and catering, comprise a 'new working class' that is ethnically diverse, disparate and lacking in any collective identity. Yet the notion that the 'precariat' represents a class or even a 'class in the making' is contested, most notably by Munck (2013), who argues that flexible working conditions are not necessarily more exploitative, nor do any characteristics of the 'precariat' represent a new role in capitalist relations of production.

The atomising economy has sidestepped structures, such as unions, that once linked parties with workers and has accelerated the loss of a collective working class identity (Harris, 2016; Ainsley, 2018). As a result, mainstream political parties have struggled to reposition themselves to appeal to the 'new working class' or the 'precariat'. Although Standing (2011) sees the 'precariat' as having the potential to be politically dangerous, he describes an overwhelming feeling of alienation and anomie that is likely to manifest in disengagement from mainstream politics. If they are part of the older, working class, they might embrace the far right. If they are part of an insecure migrant workforce, they might be relatively passive, and if they are part of the young, educated population, they are likely to favour progressive social movements. The impact is, for Standing (2015), felt more strongly in social democratic parties, for they are seen as 'relevant only for the remnants of the proletariat and lower parts of the salariat' and 'seem to offer a return to the past, without realising that the core of the precariat is alienated from that as well'. Yet it would seem that the 2015 Labour leadership election and the 2017 General Election appear to have awakened the political potential of the precariat:

> Thousands of mainly young, insecure people joined the [Labour] party to vote for radical change, bemusing the New Labour cohorts who were shown to be visionless, timid and unwilling to distance themselves from the policies that had contributed to the precariat's growth.
>
> **(Standing, 2011, p. xi)**

Speculative analysis has attributed the rise of Jeremy Corbyn and the relative success of Labour in 2017 to the support of precarious millennials – a digital generation that have been politicised by the recent economic crisis and their exclusion from the social contract that is conditional on full-time employment (Foti, 2017; Korkmaz and Telek, 2018). Recent analysis by Jennings and Stoker (2017) confirmed that Labour succeeded in the 2017 election in constituencies with higher proportions of people in typically precarious occupations. This mirrors the support in the USA for Bernie Sanders that came from the youth precariat (Kotkin, 2016) – a group that may have a 'status discord' from their relatively high level of educational qualifications but insecure work and relatively low income (Kosugi, 2008). It would appear that, just as older, white, working classes are moving towards the Conservatives, younger, precariously-employed workers are aligning to Labour.

Chapter 3. An emerging 'left behind-cosmopolitan' cleavage?

3.1 Introducing the 'left behind' concept

The uneven impacts of globalisation, tertiarisation and government policies have not only created precarious forms of employment but also broader groups of 'winners' and 'losers' (Rodrik, 1997). The so-called 'winners' are frequently theorised as 'cosmopolitan' people and places and the losers those people and places that have been 'left behind' in a globalised, post-industrial economy. A so-called 'left behind' population and areas of the country have been used to explain UKIP's success at the 2015 General Election and the subsequent vote to leave the European Union in 2016. The extent to which their dissatisfaction lies in economic insecurities or a desire to register a 'cultural backlash' against recent social and cultural changes is unclear (Norris and Inglehart, 2019). However, in spite of heated debates, there is nothing to suggest that economic and cultural factors are not interconnected (Carreras, Irepoglu Carreras and Bowler, 2019). The primary focus of this research falls on the relationships between the sociodemographic and economic characteristics of places and support for Labour and the Conservatives, rather than the extent to which any associations can be easily interpreted in economic or cultural terms.

In the following section, I will first consider the evidence that globalisation has had uneven impacts on different sections of society that have resulted in new cultural or socioeconomic oppositions. Secondly, the extent to which this has manifested as a new 'left behind-cosmopolitan' political cleavage both at individual and aggregate level is examined. Thirdly, a critical lens is applied to the 'left behind' concept, with discussions focussing on whether this represents either a re-structuring or a cross-cutting of the traditional social class cleavage. The conceptual discussion moves beyond the current literature to examine the multi-faceted ways in which places could be considered 'left behind'. Rather than simply focusing on the conventional conceptualisation of 'left behind' places as largely older, white, working class and low in education, it also considers measures of deprivation and the precariousness of work. It then considers the extent to which these measures might be associated with different electoral outcomes for Labour and the Conservatives across space and time.

3.2 The 'left behind' concept: a response to UKIP, mainstreamed by Brexit and caused by globalisation?

3.2.1 The 'winners' and 'losers' of globalisation

Whilst there are well-examined supranational and transnational political consequences of globalisation, some of the most significant responses are likely to be at the national level, since it is at this level that citizens have democratic political representation (Kriesi *et al.*, 2006). Rodrik (1997) provoked intense debate when he dissented from the economic orthodoxy by arguing that, even within western societies, globalisation has 'winners' and 'losers', and that the widespread resentment of the latter groups might explain unusual and seemingly disparate political behaviour. French labour strikes in 1995, the popularity of white nationalist ideas in the US Republican party and the success of communist ideas in post-Soviet states all had a common element: 'the international integration of markets for goods, services, and capital is pressuring societies to alter their traditional practices, and in return broad sections of these societies are putting up a fight' (Rodrik, 1997, p. 1).

But who are the so-called 'winners' and 'losers' of globalisation and what is the evidence that globalisation has had this dichotomising effect? Kriesi et al. (2008) identify three mechanisms that contribute to the creation of 'winners' and 'losers' of globalisation. An increase in *economic competition* has created a sectoral cleavage between those working in sectors exposed to, and those that are 'sheltered' from, the international market. In developed economies, low-skilled workers in exposed sectors might be considered 'losers' of globalisation, for the products of their labour are typically cheaply available abroad and accordingly their job itself is more likely to be moved overseas (Walter, 2010). In contrast, highly-skilled workers in exposed sectors are able to sell their in-demand skills to a wider market. It is no surprise then that within internationally exposed industries, wage distributions are significantly more unequal than those in sheltered industries such as healthcare and school education (Dancygier and Walter, 2015). The result is a sectoral cleavage that 'cuts across the traditional class cleavage and tends to give rise to cross-class coalitions' (Kriesi *et al.*, 2008, p. 6).

The second mechanism is an increase in *cultural diversity* from significant immigration. This results in a perception from some of the native population of a competition for

resources (economic competition) and a threat to their collective identity and lifestyles (cultural competition) from the non-native population. The evidence of perceived cultural (Fetzer, 2000; Ivarslaften, 2005; McLaren and Johnson, 2007) and economic threats (Wilkes, Guppy and Farris, 2008; Gorodzeisky, 2010) in the western context is compelling. For Kriesi et al. (2008), those with higher levels of education are less likely to perceive immigration as an economic or cultural threat as result of the 'liberalising effect' of education and their possession of marketable skills that leave them more likely to thrive in internationally competitive industries. Various analyses have confirmed the heightened threat felt by poorer, less educated white residents in the UK and how this can manifest in greater levels of hostility towards immigrants and ethnic minority groups (e.g. Scheepers, Gijsberts and Coenders, 2002; Saggar, 2003).

Finally, the third mechanism of globalisation is increased *political competition* between nation-states, which are losing their ability to act independently. One consequence of this is the hollowing-out of citizens' political rights that are tied to the nation-state. For Kriesi et al. (2008), the perceived 'losers' of this process are likely to be those who identify strongly with the national community and feel loss at the weakening of the nation state. In contrast, the 'winners' are those with universalist norms and marketable skills that increase their 'exit options' to take advantage of weakening national boundaries.

To conclude, the 'winners' of globalisation appear to be the highly-qualified with a 'cosmopolitan' outlook and marketable skills in industries exposed to competition from overseas. The 'losers' might be those without qualifications in sectors open to international competition and those that identify strongly with the nation state. These groups constitute *political potentials:* they express the structural divisions (empirical element) and shared values and beliefs (normative element) necessary for cleavage formation. However, it remains unclear precisely how this affects political representation, in part because of the heterogeneous composition of the 'winners' and 'losers' of globalisation, which makes for a complicated alignment upon traditional class-based political divisions. Kreisi et al. (2008) expected an integration-demarcation cleavage to open up, with the 'winners' advocating relaxed national boundaries and greater international integration, and the 'losers' tighter border controls and higher levels of protectionism. In the UK context, while it seems highly likely that this division

played a key role in the vote to leave the EU (Hobolt, 2016), it is not yet clear how it will align with party politics.

3.2.2 The 'left behind': explaining UKIP and Brexit

There is clear evidence that populist-right parties across Western Europe have been able to capitalise on the economic and cultural insecurities felt by those opposed to increasing European integration (Hooghe, Marks and Wilson, 2002; Rooduijn, 2015; Hooghe and Marks, 2018). Populist right-wing parties have perhaps appealed more to the 'losers' of globalisation than radical left parties as fears around national identities have been more easily mobilised than economic concerns (Kriesi *et al.*, 2008). In the British context, prior to the 2015 General Election, UKIP voters seemed to more closely resemble Conservative supporters both demographically and attitudinally (Curtice, 2013; Evans and Mellon, 2014). Nonetheless, Ford and Goodwin (2014) identified their support as coming from a group they identify as being 'left behind'. Demographically, the archetypal 'left behind' voter is older, white, male, less educated and working class. They are likely to be economically insecure and feel 'profoundly uncomfortable' in an outward-looking and ethnically diverse Britain (Ford and Goodwin, 2014, p. 11). Politically speaking, they may be somewhat conflicted between redistributive economic values and a more assertive sense of nationalism and an ethnic conception of 'Britishness': 'their 'heads' are Labour, as this is where their economic interests lie, but their 'hearts' are often with the social values of the Conservatives' (Ford and Goodwin, 2014, p. 173). Nigel Farage (cited in Ford and Goodwin 2014, p.176) identified that attracting a disillusioned segment of the white, working class population would pose more of a threat for Labour than the Conservatives: 'In four or five years' time, if you come to see me, UKIP will be a party that has far more Labour support than Tory support'.

The seemingly incongruous findings of a largely working-class UKIP support base and a larger number of defections to UKIP from the Conservatives than Labour is explained by two factors. Firstly, many of the former Labour voters had stopped voting Labour in the 1990s and early 2000s and prior to voting UKIP were unaffiliated. This reflects longstanding evidence of a negative association between turnout and economic insecurity (Wolfinger and Rosenstone, 1980; Dempsey and Johnston, 2018; Heath,

2018). Secondly, rather than taking wealthier, middle-class voters from the Conservatives, UKIP 'peeled off the blue-collar section of David Cameron's electoral support (Ford and Goodwin, 2014, p. 171). Evans and Mellon (2015) argue that Ford and Goodwin misrepresent and overstate the working class basis of UKIP's support, in part because of poor measures of social class that have failed to make distinctions between the working class and the petty bourgeoisie. In fact, using panel data analysis, they show that rather than being a party of the disadvantaged 'left behind', UKIP supporters were more of 'an alliance of the working class and self-employed' (2015, p. 11). However, their interpretation of 'left behind' was rather reductionist, focusing narrowly on social class as measured by occupation alone, rather than considering education, age and a broader sense of pessimism (Ford and Goodwin, 2015). Whilst they agree that UKIP's support does consist of a mix of self-employed and manual workers, Ford and Goodwin (2015, p.4) emphasised that the latter group is numerically much larger: 'it is blue-collar manual workers who comprise the backbone of UKIP's support, even if other, smaller, sections of the labour force with distinct concerns also find the party appealing'. Mellon and Evans (2015) responded by showing that in fact the greatest source of UKIP's support is from 'lower professionals and managers'. The debate regarding the extent to which the working class moved towards UKIP was clearly not fully resolved.

Mellon and Evans (2015) also contested that the potential of UKIP in poorer areas of Northern England was overstated by Ford and Goodwin (2014). Some areas of the North West, particularly Merseyside, have been largely reluctant to embrace UKIP despite many constituencies having so-called 'left behind' characteristics: low ethnic diversity, low levels of educational qualifications, high numbers of routine/semi-routine occupations, low mean incomes and ageing populations. Indeed, when Goodwin and Milazzo (2015) produced a ranking of places with compositions that would likely make them more receptive to UKIP, alongside many places on the East coast, places such as Knowsley, Merseyside were highly ranked. In 2015, UKIP received 9.8% of the vote in Knowsley, versus a mean across England and Wales of 14.3%. This lack of success across parts of the Merseyside might be explained by long-lasting cultural identifications with the Labour Party and the tendency of the large Catholic population to support Labour (Clements and Spencer, 2014). This contrasts quite significantly with the media's representation of de-industrialised, so-called 'left behind' areas as breeding grounds for the far right. In Stoke-on-Trent, the media have consistently depicted 'the angry locals

fired up, vivid in their language, often disobliging about immigrants or people who run things' (Yates, 2017). Labour's victory over UKIP in the 2017 Stoke-on-Trent Central by-election indicated that, while anti-immigrant sentiment and disaffection might be a feature in former industrial heartlands, a mass exodus from Labour to UKIP never materialised.

The relationship between conventional 'left behind' individuals/areas and voting Leave in the EU referendum appears stronger than any association with UKIP. Support for leaving the EU was systematically higher in regions more negatively affected by economic globalisation (Colantone and Stanig, 2018), adding some support to the idea that the Leave vote was highest amongst the 'losers' of globalisation (Hobolt, 2016). Likewise, countless newspaper articles sought explanations for the vote in the 'devastated communities throughout industrial England' (Carter, 2016), 'the loss of close, industrial communities' (Goodhart, 2016). Despite the large Leave vote in many reasonably wealthy, rural areas of England, a key narrative that emerged from the referendum was that Leave voters were predominantly angry, white and working-class (Antonucci *et al.*, 2017). According to Goodwin and Heath's (2016) analysis, areas with high proportions of low-skilled, less well-educated, older residents registered higher levels of support for exiting the EU. These conventionally 'left behind' places have also typically witnessed significant declines in General Election turnout - evidence of a growing class-based participatory cleavage (Heath, 2018). This suggests that the link between often Labour-held 'left behind' constituencies and the Leave vote might be a long-term unmooring from mainstream politics more generally (Goodhart, 2016). Indeed, one of the key characteristics of voters that are economically insecure is low levels of turnout (Wolfinger and Rosenstone, 1980; Dempsey and Johnston, 2018; Heath, 2018). This all lies in sharp contrast to wards that returned high Remain votes: urban, ethnically diverse with high levels of education and younger residents – even if they were located within larger so-called 'left behind' constituencies (Rosenbaum, 2017).

Yet there remains some evidence that the interpretation of the Leave vote as largely embedded in 'left behind' regions where the 'losers' of globalisation reside is based as much on exaggeration as empirical evidence. For Kaufmann (2016a, 2016b), economic position was less important than cultural values, as for example, income had a weaker association with voting Leave than beliefs about the death penalty. Dorling (2016) argues that the Brexit vote has been 'unfairly blamed on the working class in the north of England' whilst the majority of Leave voters were middle-class and most lived in the

south of England. A more detailed analysis by Antonucci et al. (2017) found that, rather than those with no qualifications, people with GCSEs and A-levels were more likely to vote Leave alongside those that self-identify as 'middle-class' rather than 'working class'. In short, they conclude that rather than the 'left behind', it is the 'squeezed middle' who are strongly associated with Brexit, typically those with declining economic security. This raises the possibility that the process of *becoming* 'left behind' might be a more significant catalyst for voting for Brexit or a Brexit-supporting party than *being* 'left behind' at a specific point in time.

3.2.3 The conventional 'left behind': moving away from Labour towards the Conservatives?

The following section examines the relationship between three key characteristics of the 'left behind' demographic outlined by Ford and Goodwin (2014) – older age, low educational qualifications and ethnically white – and Labour and Conservative support. The relationship between age and the Brexit vote has been well documented, with support for leaving the EU increasing with age (Becker, Fetzer and Novy, 2017; Nouvellet, 2017), albeit with only the youngest age groups being substantially pro-Remain (Liberini *et al.*, 2017). It appears that this generational politics that the EU referendum has either encapsulated or facilitated is likely to become critical to understanding voting behaviour in General Elections. Initially, after the 2017 General Election, the collapse of the Conservative majority was explained by swelling turnout amongst the youngest age groups who registered high levels of support for Labour – a phenomenon widely referred to as a 'youthquake' (Whiteley *et al.*, 2018). The evidence of a turnout-based 'youthquake' has since been refuted, with more reliable data from the BES indicating that there was likely a small increase in turnout for those aged 30-40 but not for younger groups (Prosser *et al.*, 2018). However, this has not settled the debate, as more recent research using data from the UK Household Longitudinal Survey found a marked increase in turnout in 2017 amongst electors under thirty years old (Sturgis and Jennings, 2019).

What is much less disputed is that there was an 'unprecedented rate of youth support for the Labour party' – an age demographic largely characterised by 'cosmopolitan' cultural values (Sloam, Ehsan and Henn, 2018, p. 6). While Labour have traditionally

held high levels of support from younger people and the Conservatives older people, the difference between the two has never been as large (Curtice, 2017a). This led Bell & Gardiner (2019, p. 128) to conclude that generational politics is 'eclipsing in some ways the traditionally dominant role of class' as both Labour and the Conservatives 'now rely on age-based coalitions of support'. At the aggregate-level, the same patterns held true between 2015 and 2017, with Labour making disproportionate gains and the Conservatives losses in constituencies with higher proportions of young people (Heath and Goodwin, 2017). Most notable were seats gained by Labour in areas with large universities such as Canterbury, Sheffield Hallam and Derby North.

This may also be an indication of an emerging educational division in British politics that is likely a reflection of the growing importance of cultural rather than economic drivers of voting behaviour. Post-compulsory education in the UK has been shown to have a 'liberalising effect' on students through a likely socialisation mechanism (Surridge, 2016), though this is a well-established trend rather than something new (Weakliem, 2002). Given the increasing 'cosmopolitan' image of the Labour Party, it is no surprise then that it has become a more attractive home for those with university degrees. Indeed, using BES post-election survey data, Hobolt (2018, p. 45) found that compared to those with no qualifications, university graduates were 10 percentage points more likely to vote for Labour in 2017. Though, it should be noted that the educational divisions were less pronounced than in the EU referendum – perhaps a reflection, Hobolt (2018) explains, of the remaining legacy of class divisions in Westminster politics. Other research has uncovered similar educational divides in 2017 findings: Ipsos Mori showed that the Conservatives had a 17-point lead amongst those without educational qualifications (Skinner and Mortimore, 2017) and Surridge (2018) revealed that the Conservative vote share increased substantially amongst those without degrees and decreased slightly amongst those with degrees in 2017. However, her research also showed that while 2017 saw a larger gap between those without and those with degrees, at least since 2005, support for the Conservatives has always been higher amongst those without degrees. At the aggregate-level, the Conservatives were more likely to increase and Labour decrease their relative support between 2015 in constituencies with low educational levels (Heath and Goodwin, 2017). Yet, when actual 2017 vote share is considered rather than vote share change, the same research found that the proportion of the population with a degree was positively associated with Conservative support and negatively associated with Labour support. This indicates that

the positive association between holding a degree and voting Labour is likely to be an individual-level not constituency-level phenomenon.

The extent to which this individual-level age effect existed at elections prior to 2005 is not especially clear. Research comparing the 1992 and 1997 elections indicated that those with degrees were more likely to vote Labour but those with A-level and GCSE qualifications were still more likely to vote Conservative than those without qualifications (Johnston *et al.*, 2005). Further analysis of the 1997 election came to similar, though less significant, findings (Pattie and Johnston, 2001). In a much earlier piece of research, Rallings (1975) notes that Labour's middle-class support were more likely to have left school earlier than the Conservatives' middle-class support. However, while a lack of data inhibited analysis of degree-holders, Rallings (1975, p. 109) speculates that there might be 'a threshold after which Labour voting would become more common, the hypothesis being that higher education - and the departure from a home environment that it often involves - might induce a greater tendency towards left voting'.

The third key characteristic of the conventional 'left behind' definition is that it refers to a population that is predominantly white in a time in which Britain is becoming considerably more ethnically diverse. At the 2011 census, over a third of all constituency seats had a BME population of over 10% and over a fifth were more than 20% non-white – figures that will have increased since (Holloway, 2013). Early research into ethnicity and voting in British elections generally summarised Labour's high levels of support amongst the non-white population that could not be explained by social class position alone (see Anwar, 1986; Charlot, 1985; Heath et al., 1991). By the mid-1990s, the UK began to experience more widespread immigration, yet still the Labour Party maintained a virtual monopoly on the votes of ethnic minority groups (Saggar and Heath, 1999). Ethnicity was becoming an increasingly important predictor of voting intention, such that in the 2010 General Election, the Conservatives secured only 16% of the ethnic minority vote compared to 68% for Labour (Heath *et al.*, 2011). These findings have caused some writers to suggest that future electoral victories for the Conservatives are under threat because of their lack of appeal to a growing black and minority ethnic population (Dodd, 2013; Hannan, 2014).

At the 2015 General Election, using survey data of BME voters, British Future (2015) showed a narrowing in support between Labour and the Conservatives. Notably, British

Asians were as likely to vote Conservative as the White British population whereas Labour maintained a strong lead amongst the Black population. A geographical dimension was observed with Labour's lead over the Conservatives amongst the BME population in the South of England only 3 percentage points compared to thirty-four percentage points in the North. Other research by Ford et al. (2015) suggested instead that partisan loyalties to Labour were untying amongst ethnic minorities only at the same rate as for the population as a whole. Whether the Conservatives made progress amongst BME voters in 2015 is perhaps disputed, but in 2017 it is clear that they fell back on aims to widen their appeal. It is estimated that 65 per cent of ethnic minority voters voted for Labour at the 2017 General Election (Andrews, 2017). According to estimates by Katwala and Ballinger (2017), if the Conservatives had appealed equally to white and non-white voters, they would have acquired an extra 28 seats and achieved an overall majority. Overall, one in seven of all voters declared that they would only ever vote for Labour compared to one third of ethnic minority voters – a greater proportion than other 'core groups' such as the under-24s and those in social classes D and E (Katwala and Ballinger, 2017, p. 18).

The effect of contextual ethnic change on the voting habits of the white British population is less clear-cut. Impacts at the local or regional level have received significant attention in the context of increasing votes, initially for the BNP and recently for UKIP. Kaufmann and Harris (2014) found that residents who lived in locales in which there was significant ethnic diversity reported much lower anti-immigration sentiment than those residing in white dominated areas. Supporting similar research by Rydgren and Ruth (2013) in Sweden, they also revealed a 'halo' effect to BNP voting with their support highest in white locales in close proximity to rapidly diversifying urban areas. Contextual research moving beyond the populist and extreme right has been lacking. One such study is Spencer's (2014) assessment of the relationship between changes in the ethnic diversity of London wards (2001-2011) and changes in Labour's ward-level vote share in Local Elections (2002-2010). The analysis reveals that the change in ethnic diversity was a statistically significant positive predictor of the change in Labour vote share. She suggests that Labour's successes may be a two-pronged consequence of increased ethnic diversity: the direct political effects of a higher BME population who predominantly vote Labour and the effects on other resident's voter preferences from contact with the increasing BME population.

To conclude this understanding of the emerging 'left behind-cosmopolitan' divide, it helps to locate these ideas within broader political shifts. It appears as though a new fault line has emerged in British politics, in which socially liberal younger, more highly educated voters are switching to Labour and older, less well-educated voters are moving to the Conservatives. The implication is that the 'left behind-cosmopolitan' division or 'communitarian-cosmopolitan' division (Kriesi et al., 2006) is, at least in part, a reflection of a new cultural dimension in politics that has superseded economic drivers of voting and the class cleavage. However, the economic versus cultural determinants of voting is hardly a settled debate: after analysing vote choice in 2017, Hobolt (2018, p. 45) concluded that 'classic left-right economic attitudes are still the primary driver of vote choice in Britain'. While there is evidence that a 'communitarian-cosmopolitan' divide structured UKIP (communitarian) and Green Party/Liberal Democrat (communitarian) support bases, the positioning of Labour and the Conservative may still be more ambiguous (Wheatley, 2016). This perhaps reflects longstanding tensions within the parties on both economic and cultural axes, as well as the need to hold together broad political and demographic coalitions in the First Past the Post electoral system.

3.2.4 'Left behind' and 'cosmopolitan' places

> [T]he great divide is not north versus south or cities versus towns or left versus right, or even working-class versus middle-class. It is between those communities that have found a way to thrive in the economic circumstances conscribing England today—a high-wage, Anglo-Saxon service economy on the edge of Europe—and those that have not been able or (debatably) willing to do so.
>
> **(Cliffe, 2014)**

Following UKIP's rise and the Brexit vote, political scientists have sought explanations for the discontent in geographical divisions across the UK. Scholars have written of 'left behind' and 'cosmopolitan' neighbourhoods, towns, cities and regions in much the same way as 'left behind' and 'cosmopolitan' individuals based on certain demographic, socioeconomic and attitudinal characteristics. According to columnist Jeremy Cliffe

(2014, 2015), the most critical division in Britain is no longer on the grounds of social class or regional North-South geography, but on the uneven pace at which different areas of the UK are moving towards cosmopolitanism - a term he rather too loosely defines as 'the growing comfortableness in an ethnically diverse society, the live-and-let-live attitudes of young Britons, the new self-confidence and swagger about Britain's cities' (Cliffe, 2015, p. 3). The separation he identifies is not London versus 'the rest', but rather between places that are increasingly like London and those that are not. The former will eventually outnumber the latter as a process he terms the 'Londonisation of Britain' takes hold: Britain becomes increasingly diverse; diversity spreads beyond large cities; cities and their cores expand; cities inflict a more exaggerated economic pull on neighbouring areas, creating more connected, diverse dormitory towns; the class system continues to fragment; heterodox lifestyles become more popular; monolithic institutions (e.g. religion) decline; global links increase; and the university-educated population increases (Cliffe, 2015). This 'spreading out' of 'cosmopolitan' values, has already began – out of cities and into nearby towns and suburbs that are becoming more closely economically and culturally connected. For example, the residents of towns in the Colne Valley are finding a more prosperous economic future by commuting longer distances into nearby 'cosmopolitan' cities – Manchester, Leeds and Sheffield. Perhaps then, areas might be geographically 'left behind' in a sense that they are disconnected from or a large distance away from larger, 'cosmopolitan' cities.

Jennings and Stoker (2016b) use a more statistically rigorous approach to identify the way in which processes of uneven development have created 'two Englands' consisting of growing 'cosmopolitan' areas and shrinking 'backwaters'. Cosmopolitan areas, such as London, Manchester or Cambridge, are 'marked by their intellectual assets, cultural strength and the capacity of their infrastructure to attract people, ideas and skills' (Stoker and Jennings, 2015, p. 3). Their 'cosmopolitan' urbanism includes a more global, outward-looking perspective with high connectivity and an innovative environment that attracts skilled workers, thus encouraging inward migration. In contrast, provincial 'backwaters', such as Clacton-on-Sea and the Isle of Wight are characterised by economic decline with low growth, low pay, low skilled employment and consequently outward migration of their skilled, educated, young population. Economic decline is inevitably tied to a relative decrease in population: 'It's not just the mines and mills that have gone. It's the people too. Realising that opportunity was somewhere else […] they went somewhere else' (McGovern, 2017). In these economically declining and shrinking

areas, Jennings and Stoker (2016b, p.372) describe an England that is 'inward-looking, relatively negative about the EU and immigration, worried by the emergence of new right for 'minorities' and prone to embracing nostalgia'. Political attitudes and engagement are becoming increasingly polarised in 'left behind' and 'cosmopolitan' areas, as a result of some location-based contextual and self-selection effects that are not fully identified by the authors.

Whether British politics is framed in a way that divides voters and the places they live into 'winners' and 'losers' (Kriesi *et al.*, 2008), 'cosmopolitan' and 'left behind' (Ford and Goodwin, 2014), 'cosmopolitan' and 'communitarian' (Kriesi *et al.*, 2006; Wheatley, 2016) or 'Anywheres' and 'Somewheres' (Goodhart, 2017), the notion that the country can be divided into a binary classification, whatever words are used to describe it, is of course far too simplistic. Nonetheless, according to Flinders (2018, pp. 226–227), the distinction offers a broad account of a fundamental shift that has taken place in British politics from 'a relatively simple and class-based divide between traditional Tory and Labour voters' to 'a more diagonal, fluid and opaque political axis in which traditional voting groups have been splintered'. As evidence presented by Hobolt (2018) has indicated, this does not remove the importance of a left-right economic axis, but instead adds another, multifaceted layer on top of the traditional class model (Flinders, 2018). In Figure 3.1, the key characteristics of this emerging dimension are summarised to give an overview of the broad-brush distinctions that can be made on sociodemographic, economic, geographical, psychological and attitudinal grounds between these two 'tribes'.

The new tribes

	Cosmopolitan	Backwater
Exemplar	Cambridge	Clacton
Outlook	External/Global	Internal/National
View on European Union	Relatively Positive	Generally Negative
View on immigration	Relatively Positive	Generally Negative
Ethnicity	Diverse/Integrated	Generally White/Polarised
Dominant spatial features	Integrated transport, bright, fast-paced, 24/7	Limited public transport, dilapidated public infrastructure, etc.
Urban Geography	Apple stores, juice bars, out of town mega-malls, university buildings, etc.	Pit villages without pits, fishing ports without fish, steel cities without steel, railway towns without railways, seaside piers without tourists.[1]
Employment sectors	Knowledge economy, entertainment, financial services, service sector, etc.	Food production, agriculture, call centres, etc.
Employment status	Precarious-gig economy, fluid, flexible, 'portfolio careers'	Precarious-seasonal, minimum wage, zero hour contracts
Progressive values	Likely	Unlikely
Orientation	Future-focused	Backward-looking
Age/Education	Young/Educated	Older/Less Educated
Anti-Political	Yes	Yes
Psycho-geography	Anywheres	Somewheres
Identity profile	Achieved identity (via success)	Ascribed identity (via place or group)

Figure 3.1 A table created by Flinders (2018, p. 226) outlining the two new 'tribes' of British politics.

Table 4: Vote share in the 2015 general election, English constituencies

Reported vote+	Cosmopolitan (%)	All (%)	Backwater (%)
Conservative	34	44	55
Labour	42	34	16
Liberal Democrat	10	7	11
UKIP	6	11	13
Green	6	4	2

Figure 3.2 Vote share in the 2015 General Election, English Constituencies (Jennings and Stoker, 2016b).

It is clear from Figure 3.2 that, at the constituency level in the 2015 General Elections, the Conservative Party maintained their appeal much more than Labour across the bifurcated political realm outlined by Jennings and Stoker (2016b). For Labour, their appeal was strong in 'cosmopolitan' areas but in 'backwater' areas they were only just the second most successful party by vote share. UKIP's vote, as Ford and Goodwin (2014) might have anticipated, was primarily located in 'backwater' constituencies, though even there is still relatively low given the possible strength of anti-immigration, anti-EU feelings. This, of course, is in part a consequence of a First Past the Post electoral system that discourages support for smaller parties as it can be a 'wasted vote'. Nonetheless, it remains clear that assumptions should not be made that in shrinking 'backwater' areas there is a homogeneous 'left behind army' who are 'inherently the natural voting fodder for right-wing populism' (Stoker and Jennings, 2015, p. 15). Instead, in 2015 at least, these areas were characterised by a broad support for the Conservative Party. This, for Jennings and Stoker (2016b, p. 372), is indicative of the importance of these place-based political divides in a period of class dealignment and uneven economic development: 'With the decline of traditional class cleavages and associated political loyalties, place-based experiences provide a new dynamic that is pulling 'cosmopolitan' and 'backwater' locations further apart and increasingly framing the political choices of citizens'.

Labour's poor performance in so-called 'backwaters' in 2015 is in part because of the measure that Stoker and Jennings (2015) use. Their inductive approach results in a

measure that preferences ageing, coastal towns over Northern towns with a recent history of declining heavy industry. Perhaps as Jennings and Stoker (2016a) have subsequently articulated, there may be a need to consider three rather than two Englands: 'cosmopolitan' areas, 'backwaters' and 'industrial relics' – the latter referring to former industrial towns with decaying infrastructure, ageing populations and a reliance on public sector employment. In 2017, it was largely expected before the General Election that, on the back of the Brexit vote, the Conservatives were going to make serious inroads into Labour's support in these largely working-class, 'left behind' heartlands. Former mining communities in South Wales and South Yorkshire, as well as deindustrialised areas of the North East, were expected to turn away from the so-called 'cosmopolitan', London-centric Labour Party of Jeremy Corbyn. These predictions were not wholly inaccurate, as the Conservatives increased their support most significantly amongst homeowners in ex-industrial areas (Warren, 2017). At the same time, their support waned amongst wealthy professionals, many of whom will have voted for the UK to remain in the EU.

However, it would be wholly inaccurate to paint a picture of the Conservatives as 'the party of the 'left behind'' and Labour as the 'the party of the 'cosmopolitans''. Labour still retained a majority among the lowest social grade DE and perhaps to some surprise, managed to attract 17 per cent of 2015 UKIP voters (Ashcroft, 2017). More recent analysis by Jennings and Stoker (2017) has shown, at the same time as Labour increasing their vote share between 2005 and 2017 most significantly in constituencies with high proportions of young, educated people employed in 'cosmopolitan' industries, they also improved in areas with higher shares of precariat workers and those in poor health. As they explain, this is 'somewhat at odds with characterisation of a party that has lost the 'left behind'' (Jennings and Stoker, 2017, p. 359), providing that this concept is extended beyond areas largely comprised of white, older, working-class residents with low levels of education. While the Conservatives have made some gains in less ethnically diverse and former manufacturing areas, Labour appear to have formed a kind of alliance between areas with high proportions of the insecure working class and an educated, urban population.

3.2.5 The geography of the conventional 'left behind' concept

> What strikes you if you travel to different parts of the country […] is that the primary reality of modern Britain is not so much class as geography. Geography is destiny. And for much of the country, not a happy destiny.
>
> **(Lanchester, 2016)**

The 'left behind' conceptualisation used by Ford and Goodwin (2014, p.255) is implicitly geographical in that the clustering of different demographic groups created a geography to UKIP's support: 'Low education and blue-collar voters concentrate in urban seats in the North and Midlands, while pensioners are more strongly concentrated in southern coastal towns'. However, it is not *explicitly* geographical: rather than geographical location or context being considered as a possible characteristic or cause of 'left-behindedness', a place becomes 'left behind' from this approach based on its sociodemographic composition alone. Even Jennings and Stoker (2016b, 2017), who dedicate significant attention to the geographical manifestation of a cosmopolitan-left behind axis, do not consider the spatial or place-based factors that could be driving these divisions above and beyond compositional characteristics. In what ways, above and beyond the spatial distribution of compositional variables, could *space* or *place* contribute to a sense of 'left-behindedness'? Or, how might two areas with the same demographic and socioeconomic characteristics potentially be 'left behind' to differing degrees due to geographical factors? In this brief section, different aspects of possible geographical 'left-behindedness' are outlined, from isolation and disconnectedness to the importance of geographical mobility.

Few western countries have a 'primate' capital city that is so disproportionately great in population and influence compared to the next largest cities (Jefferson, 1939). Much like Paris, London is a clear exception. Based on the immense economic, political and cultural importance of the London region relative to the rest of the UK, it seems logical that Britain can be construed in terms of a core-periphery geographical dichotomy, in which London occupies the *centre* of the core. The greater distance a place is from this core, the more peripheral it becomes in terms of culture, economics and politics. The periphery is typically characterised by 'declining primary sector urban economies and under-developed rural agricultural areas' (Pain, 2008, p. 1163). This *monocephalic* vision of Britain has informed the work of Gottman (1980), who identified the centre/core in

political terms as the location of the seat of authority. Rokkan and Urwin (cited in Steed, 1986, p. 98) employ a more detailed conceptualisation, in which the centre of the core is not only the meeting place for critical negotiations and decision-making by powerful stakeholders but, through impressive monuments and rituals, is also the centre-point of the identity of the country.

Steed (1986, p. 99) argued that the most important political divide in 1980s Britain was between the core (the South East lowlands with a centre of London) and the periphery (the uplands or the North West). This was a gradient, consisting of the core (London region), the inner core (the region surrounding London), the outer core (East Anglia, the Midlands, and Wessex), the inner periphery (Wales, the North of England, and the west of South West England) and the outer periphery (Scotland). A similar typology of regions was developed by Dorling and Thomas (2016), in which areas in the North and South are separated into London areas and Archipelago – both consisting of their respective cores, inner areas, suburbs and outer areas. Thus, one can envisage regional core-periphery distinctions in which an area might be defined as 'left behind' or peripheral because of its distance/disconnectedness from - expanding on Cliffe's (2014) idea - a regional core that is 'like London'. Very little research has incorporated any such measure of distance to a centre or core into models estimating individual-level voting behaviour or aggregate-level vote shares. Evidence has nonetheless shown how in England the vote to remain in the EU was much stronger in the South East in an almost radial pattern out of London (excluding heading eastwards) and the vote to leave was generally stronger with greater distance from this core (Furlong, 2017).

One weakness of using the core-periphery hypothesis to imply that distance from a 'cosmopolitan' core would increase the likelihood of an area being 'left behind' is that it ignores the importance of connectivity between places. Due to varying public transport and road infrastructure, some peripheral areas may have better economic and cultural links to large 'cosmopolitan' centres than areas which are physically closer yet rendered 'further away' in time. Fast, effective and cheap public transport can encourage the establishment of agglomeration economies and improve productivity substantially (Rice and Venables, 2004; Department for Transport, 2006). Still, simply having good transport connections to a 'cosmopolitan' centre does not necessarily result in local economic growth or a spreading out of 'cosmopolitanism'. In Tilbury, despite being only 40 minutes from London by train, 'most residents of the town, one of England's poorest places, are as likely to commute to the capital as fly to the moon' (The

Economist, 2014). Such towns may have reasonable connectivity to London or other large cities, but many of the ageing, economically deprived residents may not be in the position to take advantage.

It may also be the case that many residents of peripheral locations lack geographical mobility in a globalised economy that is inexorably tied to and reliant upon an increasingly geographically mobile workforce. Indeed, in this fast-paced and rapidly-changing world with fluid boundaries, perhaps best captured with Bauman's (2000) concept of 'liquid modernity', geographical mobility – just like social mobility - is not extended to all. In fact, in Bauman's typically dichotomising work, the geographically mobile may be considered the 'winners' of mobility whilst the geographically immobile are the 'losers' of mobility. Mobility becomes the 'key stratifying principle' of this new globalised context, separating the 'extraterritorial elites' with the freedom to move and take opportunities in whatever location from the individuals who are rooted in one place whose local opportunities may be curtailed by capital relocation (Caletrío, 2017).

The 'winners' of mobility are akin to the 'cosmopolitan' individuals for whom crossing spatial boundaries for employment or pleasure and achieving a kind of 'placelessness' has become more possible. Mitchell (2007, p. 707) captures this well: 'The pleasures of dislocation and mobility that used to be the sole provenance of the aristocracy are now linked with the knowledge-seeking, jet-setting, modern-day professional'. This creates possibilities for the formation of a 'cosmopolitan perspective' – global in outlook, contrary to notions of a confined nation-state and rather than treating foreign as 'Other', 'everyone has to locate himself in the same global space and is confronted with similar challenges, and now strangeness is replaced by the amazement at the similarities' (Beck, 2000, p. 88). In this sense, 'cosmopolitan-ness' and thereby its opposite, 'left-behindedness', might be understood as an attitudinal response to the 'time-space compression' associated with globalisation – to cultural fluidity, growing ethnic diversity and a loss of a clear localised sense of the place and rootedness (Held, 1995).

Yet possibilities of geographical mobility and its associated 'cosmopolitan' outlook are not bestowed upon even the majority of individuals. The 'hidden 'truth'' of liquid modernity is simply that 'those unable to move will be left behind' (Jacobsen and Marshman, 2008, p. 27). They become the 'losers' of mobility, unable to leave neighbourhoods, towns or regions where their possibilities are restricted. In research about the geography of young people's aspirations living in deindustrialised urban areas

in the UK, Allen and Hollingworth (2013, p. 500) emphasise that 'mobility has come to be associated with a bourgeois 'cosmopolitan' subjectivity – highly individualised, flexible and able to move seamlessly through various spaces –while the immobility and attachment to place of the working class has acquired connotations of defeat, fixity and failure'. The younger, more highly educated and affluent may move away to growing cities to attend university and seek employment; many others will have little option but to remain and as such risk becoming 'left behind'. Recent research has shown that the vote to leave the EU was significantly higher amongst geographically immobile people who lived in areas experiencing economic decline (Lee, Morris and Kemeny, 2018).This thesis aims to extend the conventional conceptualisation of 'left-behindedness' to account for the possible effects of divisions between places with highly mobile and immobile populations by including a measure of gross migration.

3.3 Critiquing the conventional 'left behind' concept

If a person or place is 'left behind', it must be *from* something. In this case, the term implies being 'left behind' from cosmopolitanism and the associated progress of larger, more educated, affluent and ethnically diverse cities, to which apparently every place is on a linear path to become more like. In order to progress, Stoke-on-Trent has to become more like Cambridge, Oldham more like Brighton and everywhere more like London. The problem is that to some extent, if the UK remains in an economic system that has become so dependent on London (McGough and Piazza, 2016), this is likely to be true. One only has to look at the uneven geography of the recovery from the 2008-9 recession: towns and cities with low-skilled populations, limited business bases and increasing distance from London and the South East struggled most significantly (Hutton and Lee, 2012). Furthermore, in many deindustrialised towns and cities, a heavy reliance on one major declining industry has restricted their socio-economic development in a globalised, deindustrialised, service-led economic structure (Bailey and Cowling, 2011). If referring to these areas as *economically* 'left behind' draws attention to, and encourages solutions for this plight, then it would seem a reasonable term to use.

However, Ford and Goodwin's (2014) 'left behind' conceptualisation begins not by identifying the most economically disadvantaged, but instead, the sociodemographic and attitudinal characteristics of individuals that were inclined to vote for UKIP. When

it is found that this group is 'old, male, working class, white and less educated' - a shrinking demographic that sees cosmopolitan, multicultural Britain as 'alien and threatening' – they are termed the 'left behind' (Ford & Goodwin, 2014, pp.159, 126). The argument then follows that it is the left behind that fuelled the rise of UKIP and the subsequent vote to leave the European Union. This of course rests on tautological logic: if propensity to support UKIP is used to define the 'left behind', it will always be true that the 'left behind' were responsible for the rise of UKIP.

It should be considered very carefully whether this group constitute *the* 'left behind' or whether there are multiple forms of 'left-behindedness'. Firstly, it is not possible to possess 'left behind' political views or attitudes as this assumes linear attitudinal changes over time. It is not sufficiently clear, for example, that long-term attitudes towards immigration and the EU are becoming substantially softer and more integrationist (Blinder and Richards, 2018; Simpson, 2019). Secondly, defining the 'left behind' in relation to support for UKIP or leaving the EU leads to ethnic minorities and a predominantly highly-qualified white population being grouped together as 'cosmopolitan'. This overlooks the fact that ethnic minority groups in urban areas are disproportionately affected by austerity, welfare-dependent, living in poverty, unemployed or in low-skilled, insecure work and without degrees (Barnard and Turner, 2011; Sunak and Rajeswaran, 2014; Bhambra, 2017). Presenting the white, working class as the 'injured population' ignores the fact that their economic grievances are likely to be shared, or even felt more strongly, by ethnic minorities (Rhodes, 2012).

Indeed, being 'left behind' is clearly also about subjective feelings. Borrowing ideas from relative deprivation theory (Runciman, 1966), it might be expected that when an individual perceives themselves, against their expectations, to be poorly treated by the political or economic system, they switch voting allegiances or align with an insurgent party or politician (Whiteley *et al.*, 2018; Altomonte, Gennaro and Passarelli, 2019). For example, Gest found a significant link between 'nostalgic deprivation' – a perceived loss of economic, political and social status – and voting for UKIP (Gest, Reny and Mayer, 2017). However, from an examination of British Election Study (BES) Wave 14 data (Fieldhouse *et al.*, 2018), there is little indication that, compared to poorer ethnic minorities in 'cosmopolitan' areas, it is white, working-class respondents living in 'non-cosmopolitan' areas feel more negatively towards the two main parties or feel at greater economic risk (Appendix J). Both objectively and subjectively, there is little to indicate

that older, white working-class people and the areas in which they live are more 'left behind'.

It may also be the case that because a significant proportion of ethnic minorities have 'taken part' in globalisation as international migrants who possess geographical mobility, they are cast as "winners' of globalisation'. However, this would overlook Bauman's (1998) distinction between 'tourists' and 'vagabonds' - two types of geographically mobile individual. The tourist can 'go just about where they want, when they please', moving around because they *want* to, whereas the vagabond is forced to move because they are fleeing persecution or poverty or simply because they need to find employment and security (Ritzer, 2012, p. 1). Professional and skilled workers who migrate across borders despite having opportunities at home might be considered tourists. Vagabonds include asylum seekers, refugees and labour migrants who move from places with little or low paid employment to places with significant, better-paid employment. Whilst clearly not all ethnic minority groups in the UK fall into this vagabond category, it does question whether those that have migrated to the UK should be understood as 'winners' of globalisation.

Defining the 'left behind' according to support for UKIP or Brexit also serves to conceal the challenging economic circumstances in highly unequal, 'cosmopolitan' cities where the poorest face 'a daily battle against poverty and hardship, with a front row seat to wealth and opportunity but no share in its advantages' (Nandy, 2017). Goodwin (2016) writes that:

> the places that gave the lowest levels of support to Brexit include Hackney, Lambeth, Haringey, Islington, Cambridge, Edinburgh, Richmond-upon-Thames, Kensington and Chelsea and Tower Hamlets — all urban, diverse and relatively affluent areas.

To categorise these urban areas as 'relatively affluent' conceals the presence of serious disadvantage and localised economic inequality. In fact, ranking 326 English local authorities by the proportion of the population living in the most deprived Lower Super Output Areas (LSAOs), Tower Hamlets is third, Hackney eleventh, Islington twenty-sixth and Haringey twenty-eighth most deprived (Office for National Statistics, 2015b). By identifying 'left behind' places by propensity to vote Leave or UKIP, urban areas with serious economic disadvantage are overlooked in favour of places with lower levels of poverty and deprivation.

Similarly, aside from Jennings and Stoker (2017), there is little consideration for areas where a substantial proportion of the population are precariously employed. Even within the precariat definition of 'left-behindedness' alone, there is likely to be significant variation. Standing (2011) identifies three 'precariat' factions: the low-skilled old working class; migrants and ethnic minorities who struggle to feel at home; and a younger, educated demographic concerned about its future. Much like overlooked urban, low-income groups, the second and third 'precariat' factions appear to be missing from any conceptualisation of 'left-behindedness', perhaps because they are less prone to embracing far-right politics (Standing, 2011).

With the continued blurring of class boundaries and the decline of class-based voting, it is convenient to oversimplify complex socioeconomic, cultural, economic and geographical characteristics and processes into a neat dichotomisation of 'left behind' and 'cosmopolitan' areas. A more nuanced understanding of political change can be acquired by recognising varieties of 'left-behindedness', from shrinking areas with largely older, white working-class populations to areas characterised by highly insecure employment and the most economically deprived, ethnically diverse urban environments. It is not simply UKIP- or Brexit-prone places like Clacton that might be characterised as such, but also significant parts of post-industrial towns such as Oldham or large cities such as Liverpool or London – each with their own unique political landscape. There is simply far more to being 'left behind' than living in an old, white working-class area with low levels of education. This doctoral thesis calls for a simultaneous narrowing and widening of the concept: narrowing in that the term should not be applied to attitudinal characteristics; widening in that any conventional definition should encompass geographical isolation and mobility, whilst alternative definitions should focus not on propensity towards far-right politics, but poverty and employment insecurity – measures that are likely to incorporate urban, ethnically diverse areas.

Chapter 4. Incorporating a more explicitly geographical focus into electoral studies

4.1 Did key writers on the class cleavage ignore geography?

The majority of the research discussed so far has employed sociological models to explain voting behaviour and outcomes, relying largely on *compositional* approaches in which party choices are seen to be predominantly influenced by the socioeconomic or demographic characteristics of electors – positions that are allocated with little reference to geographical or spatial location (Johnston & Pattie, 2004). From this perspective, aggregate-level variations in voting outcomes are predominantly understood as a reflection of the spatial distribution of the population according to characteristics such as social class, occupation, age, ethnicity and home ownership. This lies in contrast, but not in opposition to, *contextual* approaches that have emphasised the milieu in which people live their daily lives, including the influences of everything from chosen newspapers to more place-based factors related to neighbourhoods or locales (Johnston & Pattie, 2006). The two positions of emphasising compositional or contextual factors are of course ideal types and are completely interdependent: 'we may argue that people occupying particular positions within society are likely to choose one party over another…but that tendency is stronger in some places than others because of the impact of local milieu on the development of class consciousness and its relationship to political ideologies' (Johnston & Pattie, 2006, p. 40).

Emphasising the need for more contextual research is not to discredit compositional approaches, nor to exaggerate how little seminal authors understood about spatial or place-based processes. For example, Butler and Stokes (1969) identified that working-class electors living in largely middle-class areas were likely to adhere to class norms and vote in the same way as the middle class. Similarly, they (1969, p. 145) showed that in seaside resorts, working-class Conservative voters outnumbered working-class Labour voters. Heath et al. (1985, p. 75) identified that on the basis of social class and housing alone, the Conservative vote in Wales would be predicted at 48% and the Labour vote estimated at 26% when in fact they were 34% and 40% respectively. Social class and housing differences in their study only accounted for around a third of the political differences between British regions. Furthermore, their examination of neighbourhood

effects at ward level showed the clear importance of the social milieu on the way in which people vote: working-class residents in largely 'salariat' neighbourhoods (i.e. those with high numbers of managers and semi-professionals) were much more likely to vote Conservative than working-class residents living in working-class neighbourhoods (Heath, Jowell and Curtice, 1985). For the salariat, the neighbourhood effect was weaker, perhaps because 'their 'life chances' are less affected by the character of their locality' (Heath, Jowell and Curtice, 1985, p. 79). Both key texts echo the same point concerning geography: 'no one would suggest that all regional differences have their roots, directly or indirectly, in class' (Butler and Stokes, 1969, p. 150). In spite of this, neither went beyond speculating the reasons for the existence of such regional and local variations.

Butler and Stokes (1969) and Heath et al. (1985) rely too heavily on what Reynolds (1990) terms 'fixing accounts' to address the fact that the geography of social class cannot explain the 'residual' local and regional effects. These 'fixing accounts' can be a) *compositional*: a broadening of the scope to also account for consumption cleavages (see Dunleavy, 1979), migration, local party activities, local political cultures and uneven spatial developments theorised in terms of core and periphery areas; b) *contextual*: usually focusing on 'neighbourhood effects' to explain the tendency for a 'dominant local opinion in a constituency either to enhance or to counteract the supposed 'effect' of social class' (Reynolds, 1990, p. 29). For Reynolds, this is not sufficient, for geography should be considered as intrinsic to the political process rather than as some kind of afterthought that can 'mop up' unexplained residuals. Electoral geography should be neither *epiphenomenal* – 'involving the mapping of electoral outcomes that are the product of aspatial processes', nor *residual* - simply offering potential 'explanations' for those aspects of the geography of voting that cannot be accounted for by generic, nongeographical variables' (Johnston, 2005, p. 580). Indeed, Johnston (2005) bases his ideas on the belief that there is a 'pervasive geographical constitution' that underlies the social, economic and political processes that are the building blocks for voting behaviour. These ideas are discussed in more detail in the section that follows.

The criticisms aimed at traditional compositional electoral studies are perfectly reasonable given the evidence that the vote 'is the end result of a multifaceted and complex decision-making process that does not occur in the vacuum of outer space, but in ever-changing geographical contexts that are shaped and mediated by social institutions, practices, and interactions' (Shin, 2015, p. 286). This idea gained credence

in the 1980s when it became clear that, against expectations, sectional and locational factors were not disappearing in either the British or American case (Shelley, Johnston and Taylor, 1990). Research on class dealignment, albeit relying on ecological data, pointed to evidence that similar people living in different places voted differently (Johnston, Pattie and Allsopp, 1988). As fewer scholars relied on a national picture of social class to explain electoral voting, there was greater examination of effects operating at local and regional scales. In recognition of the increasing inability of social class to accurately account for geographical variations in voting, *some* electoral geography research has embraced contextual explanations that argue 'in various ways for spatial location or place as the dominant influence on voting' (Reynolds, 1990, p. 33).

Arguably the most influential scholar to call for a more complete contextualised approach to understanding political attitudes and behaviour is John Agnew. In Agnew's (1987) seminal work, *Place and Politics*, he attempts to bridge the theoretical gap between hitherto bounded sociological and geographical enquiry – between 'social facts' and 'place facts'. Writing against the trend in a period when place was increasingly understood on a national scale that assumed local and regional forms of political expression were diminishing, Agnew (1987, p. 26) emphasised that 'people do not experience life in the abstract context of "mass society". People are *located* and their locations matter for 'it is still in places that lives are lived, economic and symbolic interests are defined, information from local and extra-local sources is interpreted and takes on meaning, and political discussions are carried on' (Agnew, 1987, p. 2). In short, political actions materialise in microsociological settings that are embedded in places that are themselves embedded in wider networks that extend beyond even national territories. Place for Agnew is an elastic concept that operates at different scales, but it is at the local scale where national and even international issues take on meaning. At this scale, he proposes three aspects of place: 1) *locale:* the setting of everyday life where social relations are constituted; 2) *location:* 'the geographical area encompassing the settings for social interaction as defined by social and economic processes operating at a wider scale' (Agnew, 1987, p. 28); 3) *sense of place:* the local structures of feeling – the meanings and perceptions held towards a place, perhaps generated in part due to historical and cultural factors. Where most geographers have tended to emphasise one of these aspects of place, Agnew acknowledges all three.

Much like Reynolds (1990), Agnew was highly critical of geographers for their ecological approach to politics 'which assumed the existence of universal laws waiting to be uncovered and which assumed that the differences between places could be attributed to the differences in composition of their populations, with at most a local correction factor to explain the "residuals"' (Pringle, 2003, p. 607). For example, if support for a party was positively associated with older, working-class voters and an area contained a large proportion of this demographic, it was simply assumed that they would automatically gain support. Such universal laws were 'assumed to be invariant in time and space' and so 'the places in question could, in effect, be anywhere' (Pringle, 2003, pp. 607–8). From Agnew's perspective, socioeconomic and demographic categories carry different meanings in different contexts and may therefore have geographically varying effects on the political attitudes and voting choices of electors. From this approach, we can begin to understand how two voters with identical sociodemographic characteristics can consistently vote differently from one another.

Agnew is certainly not the only electoral geographer over the last thirty years to demand the sub-discipline give more attention to place-based factors. Inspired by both Cox and Agnew, Ron Johnston has published a large number of articles that have sought to put 'voters in their place'. He has studied regional and local aspects of voting at successive elections, paying close attention to everything from neighbourhood effects to consumption practices and biases in the electoral system. Although Johnston has retracted ideas of a distinctive field of geographical electoral studies, he nonetheless consistently emphasises the importance of 'socialization in place' (Van der Wusten and Mamadouh, 2014, p. 8) – most fervently the case in *A space for place (or a place for space) in British psephology* (Johnston, 1986a). Like Agnew and Reynolds, Johnston calls for not just an empirical, but also a theoretical incorporation of a spatial perspective into electoral studies. He is highly critical of many key writers on the class cleavage for this shortcoming, particularly Butler and Stokes (1969), who despite mentioning the importance of social milieu, 'totally ignored it in the remainder of the book' (Johnston, 1986a, p. 575).

4.2 Developments in electoral geography: a chronology

4.2.1 Early twentieth century: from physical geography to class composition

From the criticisms made by Agnew, Johnston and Reynolds, one might be under the impression that notions of place and space were hitherto entirely ignored in electoral studies. However, this would be to overlook the history of electoral geography as a rather niche but evolving sub-discipline. According to Pattie and Johnston (2009, p. 405), the key question that guides research in electoral geography is 'why do particular parties draw more electoral support from some places than from others?' In short, electoral geographers typically seek to understand the way in which space, place and electoral processes interact to produce geographical patterns in political attitudes, voting behaviour and party support. Explaining these processes that underlie geographies of party support is complex, often context (both in time and space) dependent and has brought about a field of research that has examined a whole range of compositional and contextual factors.

Prior to Prescott's (1959) attempts at a formalisation of the field, the origins of electoral geography are frequently traced back to French political scientist André Siegfried (1913), and more precisely his *Tableau politique de la France de l'Ouest sous la Troisième République*. Although relying on the physical environment to explain social phemonena led to accusations of evironmental determinism, Siegfried's cartographic approach provided a 'classic prototype to the geography of voting' (Taylor and Johnston, 1979, p. 27). This early attempt to uncover the way in which the physical environment influenced the industrial nature of a region and thereby its politics was adopted by Edward Krehbiel (1916) in a study of British voting. Even before the enfranchisement of men and women over the age of 21, he showed that in constituencies with coal and ore deposits and a large, densely populated proportion of labouring classes, the Liberals and Labour Party had much support. Sparsely populated, wealthy agricultural and commercial regions with fertile soils tended towards the Conservative Party.

Studies of voting behaviour soon moved from examining the impact of the physical environment to examining the effect of the sociodemographic composition of an area. For example, Tingsten (1937), showed that the electoral participation of the working

class was larger in precincts of Stockholm where the working class were greater in number. Perhaps the most influential early work was a study of the American South by Key and Heard (1949). They uncovered the local factors that shaped the geography of party support in southern areas: the closer the proximity of the white population to an area with many black residents, the more threatened they felt. In short, proximity creates fear and interaction brings about conflict, all leading to a racial conservativism and a greater likelihood to vote amongst the local white population. Though it is worth noting that Key's findings were restricted to rural and small town settings (Cox, 1969), his work has remained influential, not only because of this concept of a white backlash, but because he spurred interest in the 'neighbourhood effect' in which people's voting intention is affected by their friends and neighbours.

4.2.2 The 1950s and 1960s: 'rampant empricism'

In the 1950s and 1960s, electoral geography experienced a 'modicum of popularity' as complex statistical approaches were encompassed in quantitative methodologies driving geographical research (Quinton, 2013). As a key writer in the rise of this spatial scientific approach, Cox (1969) developed a conceptual model of voting in which individuals exist as nodes in a communication network across which political information flows. The likelihood of someone's voting behaviour being influenced by other people is determined by several biases. The *Geographical distance bias* means that the greater the distance between the nodes, the less likely information will flow between them. The *Acquaintance circle bias* implies that 'the probability of information passing between two individuals is related to the likelihood that they belong to the same acquaintance circle, be it formal or informal in character' (Cox, 1969, p. 93). For this reason, he explained, close-knit rural areas with spatially-defined boundaries will have a higher connectedness and a strong bias leading to homogeneity in voting compared to cities. The *Force field bias* is a kind of 'drawing power' of certain elements e.g. clientelism or pressure from candidates making connections more probable. Finally, the *Reciprocity bias* implies that individuals who have a strong link between them (e.g. husband and wife), often connecting over a small spatial distance, are likely to influence one another's voting considerably. Fox's work informs research examining 'neighbourhood effects', 'friends' and neighbours' effects' and 'relocation effects' to this day. Through his

spatialized re-reading of contextual impacts on voting decisions, 'Cox opened the door for other geographers to the study of elections in a context dominated by other social sciences' (Van der Wusten and Mamadouh, 2014, p. 6).

In spite of Cox's influence, empirical election studies did not quickly or quietly take up a contextual or spatial approach – perhaps in part because his four biases would be very complex to model. Particularly in the US, more theoretically nuanced perspectives that might consider 'the geographical as intrinsic rather than epiphenomenal to the explanation of political behaviour' were lacking (Agnew, 1990, p. 15). Similarly, Shelley, Johnston and Taylor (1990, p. 1) described an uncertainty in electoral geography regarding how to weaken the dominance of 'rampant empiricism' by incorporating social theory. By the 1960s and 1970s, compositional research was dominant, starting from the premise that 'people's attitudes are a function of what they are, in particular their position within the division of labor' (Johnston, 1987, p. 10). In this sense, 'Great Britain was treated as a uniform political plain, with deviations from the general patterns relatively unimportant residuals' (Johnston *et al.*, 2001, p. 86). Any departures from model predictions were often attributed to 'unspecified regional 'effects'" or to 'underspecified sectional parochialisms' (Reynolds, 1990, p. 27). The dominant viewpoint was that regional effects were largely insignificant and would ultimately be consigned to history. Even studies such as Cox's (1969) have taken on what Agnew (1990) terms a 'nationalisation-modernisation' stance by assuming a spatial homogenisation of 'neighbourhood effects' over time as a result of urbanisation and industrialisation. Despite significant research reiterating the changing and increasing importance of local effects and sectional alignments in voting, political scientists have to some extent continued to overlook them in favour of strictly compositional approaches (Johnston, 1986a; Agnew, 1987). The strictly compositional approach supposes that unmeasured individual, local and regional effects are small and can be subsumed into the error term of any model. Below, I have contrasted a compositional model with a more general model that also encompasses contextual effects that can structure voting behaviour and outcomes:

$$\text{General model: } V = \beta X + \gamma Z + \varepsilon$$

$$\text{Compositional approach: } \varepsilon \approx \varepsilon + \gamma Z \rightarrow V \approx \beta X + \varepsilon$$

Where βX refers to 'cleavage' variables, typically class, occupation, income or age, γZ to individual, local and regional effects, ε the error term and V vote choice or vote share.

4.2.3 1970s onwards: studies of the neighbourhood effect

The most numerous contributions to research into contextual effects on voting have been made in studies of the neighbourhood effect - an idea that rests on the notion of a socio-spatial 'contagion' within places in which 'increasing exposure to locally dominant ideas breeds a consensus around those ideas' (Reynolds, 1990, p. 29). This fits with contextual theories of political behaviour which assert that people 'progressively assimilate through a variety of social-psychological mechanisms to the dominant political orientation of the environments in which they live' (Gallego *et al.*, 2016, p. 529). For example, assuming a degree of class partisanship still exists, a working-class person living in a middle-class environment would be more likely to vote Conservative than if they lived in a working-class environment – an idea that was already alluded to by Butler and Stokes (1969).

This idea of a neighbourhood effect became more fully entrenched in electoral geography following Cox's (1969) discovery of the impact that friends and neighbours and the wider local context could have upon voting. In the UK, perhaps the most significant early contribution was made by Miller (1977), whose ecological analysis of elections from 1966 to 1974 tested the importance of neighbourhood-level and individual-level characteristics in determining the likelihood of a person voting Conservative. He concluded that, 'How people voted depended significantly more on where they lived than on their occupations' (Miller, 1977, p. xiii). Class alignments in the UK were less about 'people like me' and more about 'people around here' (Miller, 1979, p.283). His argument, fitting with the notion of class dealignment, was that 'class sentiments and politics are being influenced more by aspects of life in residential neighbourhoods than by an individual's position in the labour market or in a functionally defined class structure' (Eagles, 1990, p. 100).

Miller (1978, pp. 265–267) developed four possible models to explain how people's interactions with their neighbours may or may not influence their voting behaviour: 1) *No environmental effect:* essentially a null hypothesis that supposes that the number of contacts with people of a different social class does not affect partisanship; 2) *Reactive*

environmental effect: 'people may be irritated, alarmed and antagonized by contact with those unlike themselves' leading them to vote for the party which best represent their own class (Miller, 1978, p. 265); 3) *Consensual environmental effect*: a tendency towards agreement (e.g. both working and middle-class residents living in a middle-class neighbourhood are more likely to vote Conservative because they have more middle-class contacts); 4) *The 'Przeworski environmental effect':* the two social classes work in contrary ways, so the middle class 'react' in working-class areas and the working class are more consensual in middle-class areas. Although Miller found that the consensual model better explained class polarisation in this period of British politics, he emphasised that this was no written law, and in different circumstances, each is a logical possibility.

Empirical evidence to support the neighbourhood effect has however been rather weak as a result of a lack of available voting data for smaller geographical areas than parliamentary constituencies. Local, neighbourhood-level effects could therefore be easily hidden by constituency- or regional-level analyses as 'such areas are almost certainly not commensurate in their size with the locales within which the social interaction associated with the neighbourhood effect occurs' (Johnston *et al.*, 2007). More recent multi-level analyses have sought to overcome this reliance on ecological data. By nesting electors within households, neighbourhoods, constituencies or regions, the extent of contextual effects at various spatial scales has been tested. For example, Johnston et al. (2007) employed a multi-level model design to test the extent to which regional effects upon voting were real or simply a reflection of decision-making processes that were occurring at smaller spatial scales. They concluded that whilst there was a clear geography to voting at the 1997 General Election, no significant variation was found in voting behaviour across sixteen different regions that could not have been accounted for by their household, neighbourhood and constituency. This supports Agnew's privileging of the local scale – the scale at which active socialisation occurs (Petrusewicz, 2004, p. 304). Agnew (2002, p. 20) explains that social relations are firmly rooted 'in physical settings or *locales* (everything from homes, schools, and shops to churches, workplaces, and places of recreation) that people constantly cross into and out of in the course of their everyday lives'.

The choice of spatial scale used for any analysis can have a significant impact upon the findings of the research. Due to data constraints, researchers are typically forced to rely upon data that is captured at spatial scales with arbitrary boundaries that people may

cross in their everyday lives. This can cause 'the researcher to fail to find an effect that is actually present given a different aggregation of the social context of interest' (Hipp, Faris and Boessen, 2012, p. 128). For example, boundaries of neighbourhoods are often drawn in such a way that they cluster people together with similar social characteristics based on the assumption that 'these [boundaries] represent break points in the social relations among residents' (Hipp, Faris and Boessen, 2012, p. 129). The assumption that is made, according to Hipp et al. (2012), is one of *homophily* – people will associate and interact more with people that share social characteristics with themselves. Innovative methodological approaches that have sought to overcome these problems have included the creation of bespoke neighbourhoods around people's homes of a certain number of households or a certain number of people (MacAllister *et al.*, 2001; Johnston and Pattie, 2004; Johnston, Jones, Burgess, *et al.*, 2004; Johnston *et al.*, 2005, 2007). In research by Johnston et al. (2007), these bespoke neighbourhoods were multi-scalar, existing as units containing the nearest *n* persons to an individual's home and also those living within *n* metres of their home.

The findings of these innovative studies offer support for neighbourhood effects as an explanation for the spatial heterogeneity in British electoral outcomes. Johnston et al. (2004) provided substantial evidence that between 1991 and 2001, voters with similar demographic and socioeconomic traits supported different parties if they lived in different neighbourhoods. By far the most salient neighbourhood effects were found concerning the level of socioeconomic disadvantage of the bespoke neighbourhood: 'the more disadvantaged the area the more likely both middle- and, especially, working-class individuals are to support Labour than either the Conservatives or the Liberal Democrats' (Johnston, Jones, Sarker, *et al.*, 2004, p. 398). Similarly, at both the wider constituency level and ward level, MacAllister et al. (2001, p. 50) identified a clear effect: 'the lower the area's status the greater the support for Labour relative to that for Conservatives, in each of the social classes'. However, they found the strongest evidence for Miller's consensual environmental effects model operating most strongly at very local scales *within* constituencies and wards. This provides support for the notion that many of the regional effects on voting that were highlighted by Butler and Stokes (1969) and Curtice and Steed (1982) may well have been aggregations of processes that were taking place at a much finer spatial scale.

In another multi-scalar approach to the neighbourhood effect, Johnston et al. (2005) show significant effects on voting both at the level of *locales* – individuals' immediate

social milieu – and *places* – the wider context of cities and city segments in the UK. Most notably, unlike almost all British studies before, they show the relevance of ethnicity: when an individual resided in an area in which there were many non-white residents within 250 metres and 500 metres from their home, they were less likely to vote for the Conservative Party; this relationship existed at neither the 1000 metre or 2000 metre scale pointing to extremely localised effects. In fact, they found that 'intense local pockets of ethnic minority residents stimulate very strong Labour support [in those pockets]; in the wider areas in which those pockets are set, however, the presence of the minority groups within their midst (but not their immediate locales) stimulates more people to vote Conservative rather than Labour' (Johnston *et al.*, 2005, p. 506). This supports Kaufmann and Harris's (2015) findings that diversity in one's immediate locale – as opposed to a wider geographical context - discourages anti-immigrant sentiment and likelihood of voting for far-right parties.

One problem with studies such as those by MacAllister et al. (2001) and Johnston et al. (2005) is that while they provide supporting evidence of some kind of neighbourhood effect, they neither show *how* or *why* this is operating. Books and Prysby (1995) note that if we are to reach a position of deep understanding of contextual effects, there must be some understanding of the mechanisms that lie behind them. The same authors (Books and Prysby, 1991) have created a theory of four types of possible contextual effects on voting: a) *personal observation* of events and situations in an individual's milieu; b) *informal interaction* meaning interpersonal communications in the sense Cox (1969) describes; c) *organisationally-based interaction* in workplaces, churches, unions and other local groups; and d) *mass media* of which much is locally-focussed. The first two of these explanations have received the most attention and will be addressed hereafter in turn.

4.2.4 Understanding neighbourhood effects 1: personal observation of events and situations

Following the findings of Sanders et al. (1987) that 'personal economic expectations' based largely on macroeconomic factors were critical to the support for Margaret Thatcher's government, many studies have re-examined the importance of local and regional economic conditions in shaping the perceptions and political attitudes of electors. Savage (1987) conducted an extensive study of local political processes in the

UK to uncover the ways in which they explain political alignments. Increased local variation, he argued, reflected the distinctive trajectories of localities that are often hidden by data. For example, two towns may share the same occupational profile at a certain point in time yet one may be deindustrialising and the other industrialising (Savage, 1987, p. 69). This may cause voters in each to interpret the economic conditions in their respective localities quite differently. In this sense, the local social structure, through the local labour market and housing market, is likely to impact upon political attitudes and voting behaviour. Reynolds (1990, p. 31) describes Savage's analysis not as historical-geographical but as place-specific, showing how voting behaviour is a consequence of 'social structures as they are mediated by materially significant aspects of place'.

The idea that the local economy influences voting behaviour is one fully supported by Johnston and Pattie (2001), who found that at the 1997 General Election, voting behaviour was influenced more by perceptions of the local situation than the national economy. On the back of earlier findings that people interpret the national economic situation differently according to where they live (e.g. Johnston, Pattie and Allsopp, 1988), Johnston and Pattie (2001) call for the inclusion of an intermediate regional scale in analyses. This scale would complement research that has sought to understand the effects of evaluations of both the national economy and personal economic situations. Evaluating 1997 British Election Study (BES) survey data, they discovered that electors' evaluations of local economic conditions had a more significant impact on their voting behaviour than the state of the national economy. For example, only regional and sociotropic economic evaluations determined the likelihood of a Conservative voter in 1992 remaining loyal to the party in 1997 (Johnston *et al.*, 2001). At the 2010 General Election, the influence of the majority economic view of others on an elector's vote choice was shown to be strongest at the regional level rather than the constituency or county level (Pattie *et al.*, 2015). This contradicts the fairly dominant notion in electoral geography that the strongest contextual effects will operate at the smallest spatial scale. This is perhaps the case when considering the importance of political conversations with others (less likely at a regional scale), but other factors, such as television and wider media, may operate significantly at a regional scale (Pattie et al., 2015, p. 1572). Indeed, the media helps to embed regional identities into the public's consciousness: 'so much media attention is paid to regional variations – often expressed as the 'north-south' divide – that it is not surprising that such broad variations become ingrained in the

public consciousness, as part of a 'them-and-us' set of attitudes' (Pattie *et al.*, 2015, p. 1572).

4.2.5 Understanding neighbourhood effects 2: people who talk together vote together

Perhaps the most common explanation for the neighbourhood effect implies that 'the social character of any area helps structure the pattern of an individual's social intercourse' (Curtice, 1995, p. 196). In short, 'people who talk together vote together' (Miller, 1977, p. 65), or, to use Cox's (1969) terminology, political cues flow through social networks or *acquaintance circles* where they stimulate attitudinal and voting outcomes. Pattie and Johnston (1999) find support for this argument at the 1992 election where they show that when someone discusses politics with partisan supporters of a party, they are statistically more likely to convert to vote for, or to continue to vote for, the same party. Although using BES data with a very small sample size, a further study of the same election (Pattie and Johnston, 2000, p.43) came to similar conclusions with particularly poignant effects when conversations took place between family members:

> If the information reaching an individual through her/his conversations predominately favours one party, then he/she is more likely to vote for that party, irrespective of prior predispositions, than if the information was less biased in that particular direction.

However, other studies have shown less support for Miller's (1977) argument. Curtice (1995, p. 207) concluded his research using 1987 BES data:

> While political talk may well influence voting behaviour, it does not appear to be a significant mechanism for the existence of the neighbourhood effect. The political content of social intercourse is not sufficiently structured by the social character of the neighbourhood – and the neighbourhood effect appears to exist irrespective of whether any political talk has happened at all!

Fitton's (1973) in-depth research of three streets in Salford, Greater Manchester - perhaps the earliest to address the impact of local conversations on voting - came to an equally damning conclusion. Using sociograms to examine interactional patterns

amongst residents, he reported a lack of salient political discussion between individuals and where there was any, it was largely between two respondents who already shared the same viewpoint (or if not, it had no impact). It must of course be noted that this research, while in-depth, used what would be considered today to be quite elementary sociometric methods that bias interactional effects (Fitton, 1973, p. 472). More positive findings of interactional effects have been found in the US. Huckfeldt and Sprague (1991) conducted perhaps the only major specially constructed survey of residents in a town – South Bend, Indiana – to find out the extent to which political preferences were affected by discussants and what types of relationships had most impact. They showed that even when partisanship and social traits of a voter were accounted for, 'the influence of the discussion partner continues to emerge' (Huckfeldt and Sprague, 1991, p. 156). Vote preferences were socially structured not only by one's own social characteristics but by those of others around.

Research examining neighbourhood effects has been plagued by various problems. The first is that whilst any results might show the importance of spatial propinquity for the perpetuation of political attitudes, 'that still begs the question of how locally dominant political attitudes are produced in the first place' (Reynolds, 1990, p. 30). As Reynolds explains, for the neighbourhood effect to have plausibility, research must link it to a place-based history of political development. This place-based history can be contextual, analysing aspects of the local culture, or it could be compositional, analysing changes in the socioeconomic, demographic or industrial structures over long periods of time. A second issue with research examining the impact of social interaction is their reliance on assumptions: 'we cannot simply assume that political alignment brushes off on people by rubbing shoulders on the street, as exponents of 'contagion models' invariably seem to imply' (Dunleavy, 1979, p.413). He argued that there was neither sufficient empirical evidence that extensive community social interaction was taking place nor that any interaction was having a direct effect upon the voting behaviour of individuals. However, social interaction may not be wholly necessary for the local political culture to encourage an individual to change political beliefs. All types of experiences in the local environment that conflict with an individual's held beliefs may cause a feeling of cognitive dissonance (Festinger, 1959) – at first a feeling of discomfort that then manifests in a change, weakening or alteration of existing beliefs.

4.2.6 Contextual effects or self-selection?

At its simplest, the contextual effects hypothesis states that the characteristics of a place result in some degree of homogeneity in voting behaviour of electors that could not be explained by their individual-level characteristics. However, rather than resulting from neighbourhood effects, this homogeneity may come from a self-selection process whereby 'individuals choose to live in areas dominated by people of a particular persuasion' (Johnston *et al.*, 2005, p. 488). The idea is that a significant proportion of individuals choose to live in a neighbourhood based on certain characteristics of both the existing residents and the neighbourhood itself – characteristics that are correlated with a particular political persuasion. For example, someone who sees immigration and multiculturalism in a positive light is likely to be attracted to large urban areas known for their cultural diversity and liberal attitudes. At the same time, people who dislike immigration are likely to move away from larger urban areas. These simultaneous processes that constitute geographical sorting are likely to exacerbate an urban-rural or large city-small town divide on immigration and other issues (Maxwell, 2019) . At the individual level, it may be less that one's political opinions are influenced by place characteristics and more that individuals that move to a place are already likely to share its dominant political attitudes. Providing evidence to support such a claim has been a challenge because of difficulties separating self-selection and contextual effects in cross-sectional data (Gallego *et al.*, 2016).

There is recent academic research in the US that has examined evidence for residential sorting and geographic polarisation – part of an American resurgence in electoral geography (Kinsella, McTague and Raleigh, 2015). The most seminal work suggesting that Americans are increasingly migrating towards areas more attuned to their own political beliefs is Bishop and Cushing's (2009) *The Big Sort*. Their thesis is that people are increasingly moving to areas to live amongst people with similar lifestyles that are in turn correlated with ideological standpoints. This sorting results in 'balkanized communities whose inhabitants find other Americans to be culturally incomprehensible' (Bishop and Cushing, 2009, p. 14). Areas become increasingly politically polarised across spatial scales leading to more frequent landslide majorities. McDonald (2011) offered supporting research for the Big Sort hypothesis, finding that at least at the level of congressional district, a migrant's destination is more likely to provide a near ideological match than their origin. In other words, those who *can* choose where they

will move to tend to go to areas that they find ideologically congenial. A more localised study in the Rocky Mountain West provides evidence of the political impact of the in-migration of Democrat voters not only on the destination area but also on neighbouring areas (Robinson & Noriega, 2010). Abrams and Fiorina (2012) are more sceptical of any notion of a *Big Sort* on the grounds that many residents in the US do not even communicate with their neighbours and are typically unaware of their lifestyle, attitudinal or political characteristics. However, they overlook the fact that even if people do not communicate with their neighbours, it is still possible to gain information about their character and choose neighbourhoods based upon externally visible characteristics such as the way their gardens are kept, the car they drive or even the contents of their recycling box.

The possibility that residential sorting has been driving changes in Britain's political geography has received little attention, perhaps due to lower levels of geographical mobility. One recent longitudinal analysis of the political viewpoints of people living in the UK by Gallego et al. (2016) attempted to uncover the extent to which the correlation between political attitudes and contextual effects has been driven by the self-selection of people into areas of likeminded people. While they found that political orientation did not itself guide location choice, 'people are more likely to choose areas in which to live that are congruent with their pre-existing political preferences' (Gallego *et al.*, 2016, p. 530). Geographical sorting occurred for non-political reasons and in-migration began a process of weak assimilation to the majority political orientation of the area, though only in strongly Conservative areas. This, they speculate, may be related to place characteristics, such as the stronger pressure to conform in rural, Conservative areas compared to a more tolerant attitude to heterogeneity in urban, Labour-leaning areas (Gallego *et al.*, 2016). Like many other spatial analyses, the authors do not go further than speculating about the existence and form of these place-based factors.

4.2.7 The late twentieth century: the growth of the suburbs

Much of the 'big sort' research has examined trends at the spatial scale of US states, overlooking potentially pertinent political variations that exist between larger cities and smaller towns or between inner city areas and outer suburbs. Controversial urban

scholar Joel Kotkin (Greenblatt and Marshall, 2012, p. 31) has described the mid-late twentieth century suburbanisation of middle-class white Americans with children as leaving behind an array of demographic 'niches' in city centres: 'either minorities, poor people, young people or people without children – all of whom tend to be much more liberal'. The suburbs are not statically right-wing and the inner city statically left-wing however, nor are their geographical forms or demographic makeups unchanging either. Indeed, in the US, it is well documented that, as people have migrated from the inner core outwards, the inner suburbs have come to take on some of the characteristics of the city centre, both demographically but also politically, by leaning more towards the Democrats (Greenblatt and Marshall, 2012).

While research in the UK has shown for some time that 'there is more spatial than social polarization of the electorate', the urban, suburban or rural nature of the places in which these shifts are taking place has received too little attention (Walks, 2005, p. 500). Even when early studies such as Rasmussen's (1973) have provided strong evidence that Labour's vote share could be predicted by housing density and tenure, the tendency has been 'to assume that the effects of such variables are merely reflective of social class' (Walks, 2005, p.502). One exception is Curtice and Steed's (1982) research that highlighted the development of an urban-rural divide in the post-war period, in which dense, urban areas were becoming increasingly dominated by Labour and less populated areas by the Conservatives. Their methodological reliance upon comparisons of population density did not, however, account for the timing and form of suburban development (Walks, 2005).

While some analyses include a measure of density or rurality in predictive models, rarely is there any variable that captures inner city and suburban divisions in a country in which a large proportion of the urban form is suburban. This is in spite of well-documented evidence in the US of a division between more liberal-left inner cities and more conservative suburbs (Gainsborough, 2001) and tentative suggestions in the UK that the Conservative re-election in 1992 was partly a result of John Major's popularity in suburban England (Ignatieff, 1992; Gilbert and Preston, 2003). One early exception is Cox's (1968) London-based analysis which, perhaps counterintuitively, showed that city-suburban disparities had waned between 1895 and 1950. In contrast, during Thatcher's prime ministership, poorer, inner city and metropolitan London was moving

towards Labour and outer London towards the Conservative Party (Johnston, 1986a; Johnston & Pattie, 1998; Johnston et al., 1993).

Walks (2005) provides perhaps the only significant attempt to quantitatively assess city-suburban voting patterns in the UK in a longitudinal study from 1951 to 2001. He coded constituencies into three categories – inner cities, inner suburbs and outer suburbs – based on strictly spatial criteria related to the timing of their development and settlement. From this, Walks (2005, p. 505) created two indices: 1) an index of city-suburban balance – the ratio of a party's vote share in the suburbs compared to in the inner city; 2) the index of ideological leaning - 'the ratio of Conservative to Labour shares of the vote in each zone, divided by the ratio of Conservative to Labour shares of the vote in the rest of Great Britain'. From the first index, a clear divergence was identified from 1966 onwards with Conservative support in particular growing monotonically. From the second index, he showed that the ideological leanings of each zone have remained persistent since Thatcher's government: the outer suburbs are slightly in favour of the Conservatives whereas the inner suburbs and inner cities have continued to move further away from them. Although this divergence remains, Walks (2005) showed that inner cities were more left-leaning relative to the rest of the UK than the outer suburbs were right-leaning. This was perhaps a result of Tony Blair's attempts to capture the suburban 'mythical kingdom of 'Middle England' – a land that could never quite be identified precisely on the map, but which seemed to include most places that were outside the cities but not in the countryside' (Gilbert and Preston, 2003, p. 195). Indeed, whereas in many parts of suburban USA the Republicans have become relatively dominant, in the UK suburban areas appear less politically stable. This may in part be because British suburbs have a greater diversity of form - for example, social housing estates are a common feature alongside middle-class neighbourhoods. Although Walks's (2005) findings are significant, there remains a need for more in-depth research in intra-urban voting outcomes at a much finer spatial scale, as many constituencies are large and often encompass a mix of suburban, urban and rural areas.

Explanations for the inner city-suburban voting cleavage of voting outcomes have, as aforementioned, been largely non-existent, or dominated by a rather speculative retreat to social class rather than any spatial or geographical factors. Indeed, the post-war discourse focused on the 'embourgeoisement' of the working class, as higher living standards, car ownership and home ownership rates accompanied significant

suburbanisation. The move to low-density suburban development was seen by many as 'linked to the adoption of a new set of beliefs far from those attributed to the "traditional" union- and urban-based working class' (Walks, 2005, p. 501). Ignatieff's (1992, p. 10) analysis of the 1992 General Election suggested that the Conservative Party won 'because they mastered the symbolic politics of suburban Britain' as they 'knew how to reach the hearts and minds behind the lace curtains'. Whilst the Labour Party were still appealing to the 'old working class' working in the public sector and living in council housing in declining industrial areas, it was struggling to appeal to the upwardly mobile 'new working class' home owners working in non-unionised jobs in the private sector. This appears to have been remedied in 1997, by which point voters in Labour's inner-city and post-industrial heartlands had begun to remain at home (Norris, 1997). More recently, evidence has shown that as larger urban areas are becoming more 'cosmopolitan', British suburbs have witnessed rises in poverty (Hunter, 2014). The effects of the relative decline of the suburbs on British politics remains to be seen.

Changes in the economic, occupational and class structure of British society may not wholly account for any cleavage of urban-suburban voting, as other research has shown that 'place matters' on its own merit. In the US, research by Gainsborough (2001, p. 458) showed that effects of place of residence according to city-suburb location had a statistically significant effect on individual voting behaviour even after controlling for compositional factors. However, establishing causality is one again difficult: does living in a particular place *cause* political differences, or do place-based differences reflect 'pre-existing, politically relevant differences among individuals who choose to live in cities or suburbs'? (Gainsborough, 2005, p. 455). In a study of Canadian cities, Walks (2004) concluded that whilst spatial segregation based on compositional factors (race, class and ethnicity) was an important factor, it should not overshadow the relevance of neighbourhood self-selection. Interestingly, and broadly in agreement with the 'big sort' idea, he found that many left-wing voters moved to the inner city and right-wing voters to the suburbs in their respective searches for community-based and private lifestyles that could be associated with their political affiliations. In contrast, he found limited evidence of 'neighbourhood effects' consisting of shared political information between neighbours.

4.2.8 Twenty-first century electoral geography (1): methodological innovation in spatial analysis

> While multiple linear regression is one of the prevailing statistical methods used in quantitative geography, it has limitations when applied to spatial data because it presupposes that the relationships being addressed are the same everywhere. This contradicts one of the major assumptions underpinning geographic thought, which is that spatial phenomena vary across space
>
> **(Mansley and Demšar, 2015, p. 327)**

Most of the electoral research discussed in this literature review has been inherently aspatial in character. Any spatial differences in associations between independent and dependent variables are often assumed to be symptomatic of differences in the composition of the populations in each spatial unit. Even those studies that identify contextual effects on voting outcomes are largely geographically bounded, assuming that geography matters only within the boundaries of each constituencies. However, as geographical approaches have gained more credence, the spatial methods that have been used have increased in both number and complexity. Many of these methodological innovations have emerged from the field of spatial econometrics – a sub-discipline of econometrics within which researchers have typically applied spatial regression techniques to produce models across a vast array of topics in the social sciences (Anselin, 2010).

Many of these newer spatial analytic methods have emerged from an increasing awareness of the presence of spatial heterogeneity – the non-random distribution of a variable or of relationships between variables across space. In other words, spatial heterogeneity refers to the uneven spatial distribution of a process, variable or relationship (Anselin, 2010). It may be the result of spatial dependency or spatial autocorrelation – two concepts often used interchangeably to describe 'the propensity for nearby locations to influence each other and to possess similar attributes' (Goodchild, 1992, p. 33). Today, the concept of spatial autocorrelation is reasonably well established to refer to positive or negative relationships within variables across space. A loose definition of the concept is provided by Anselin and Bera (1998, p. 241): the coincidence of value similarity with locational similarity. In short, positive spatial autocorrelation refers to the spatial clustering of similar values (high or low) for a

variable and negative spatial autocorrelation refers to a situation where areas are more often surrounded by areas with dissimilar values of a particular variable. If we know the value of any variable in place A, then we can use that information to estimate the value of the variable in place B. This idea comes from Tobler's (1970) 'first law of geography': 'everything is related to everything else, but near things are more related than distant things'. This renowned dictum, with the increasing help of more sophisticated GIS programs and techniques, has stimulated a host of spatial analysis techniques that have sought to define and examine 'nearness' and 'relatedness' in many different contexts (Miller, 2004). Until recently, however, the ability to incorporate spatial dimensions into voting models has been rather limited, 'relying primarily on dummy variables to capture differences in behaviour across geographically disparate units' (Darmofal, 2007).

Many approaches have begun with a direct or indirect reference to 'Galton's problem': the idea that two potential explanations for spatial dependency must be differentiated. The first is that spatial dependency results from 'the diffusion of behavior between neighboring units' (Darmofal, 2007, p. 3). The implication is that voting outcomes result from social interaction across interdependent geographical units. For example, political opinions may be shared in discussions between people that live in neighbouring constituencies, to the extent that people may begin voting in similar ways across these boundaries. Few political scholars have situated this perspective within the traditional framework of electoral behaviour as they have overlooked that it is essentially advocating the importance of contextual explanations for voting outcomes existing *across* the boundaries of spatial units. In contrast, the second approach justifies compositional reasoning: similar behaviours are shared across neighbouring geographical units 'due simply to the units' independent adoptions of the behaviour' (Darmofal, 2007, p. 3). Similar voting behaviour across proximate areas in this instance would not reflect any spatial processes but rather a 'geographic clustering of the sources of the behavior' (ibid.) – typically shared attributes such as income, social class, educational levels and so on. This idea of attributional dependence relegates geography to an output of any model. Neither of these two approaches merits being discounted: ignoring spatial dependence in the form of diffusion when producing models of voting behaviour can lead to inconsistent and biased parameter estimates; ignoring the possibilities of spatial clustering can produce 'inefficient parameter estimates, standard error estimates that are biased downwards, and Type I errors' (Darmofal, 2007, p. 5).

Aggregate-level studies in political geography have sought to identify the presence of both *global* and *local* spatial autocorrelation. Identifying the former typically involves the calculation of the Moran's *I* statistic, which measures the extent of clustering in the whole dataset. The local Moran's *I* statistic can be calculated for each spatial unit to show the extent of local-level spatial autocorrelation and the different clusters within the whole national space. Some studies have used only these exploratory forms of spatial analysis rather than attempting any model building. One such US-based study is Klos's (2008) analysis of the spatial autocorrelation between changes in voting behaviour and demographic variables in two counties between 1988 and 2004. Bivariate spatial autocorrelation methods allowed Klos to test the changing strength of the spatial association between voting behaviour change – the original variable – and demographic change – the spatial lag variable, and then in reverse. From this, areas could be identified that had significant changes in voting behaviour with neighbours that had significant demographic changes, and vice versa.

Very few aggregate studies of British voting outcomes have taken into account spatial effects and spatial heterogeneity. Cutts and Webber (2010) sought to plug this gap by examining the presence of global and local spatial autocorrelation at the 2005 General Election alongside the predictive capabilities of spatial regression models. They found that global spatial autocorrelation in voting patterns was positive and significant for all parties – strongest for the Conservatives and weakest for the Liberal Democrats, whose vote outcomes had greater heteroscedasticity, indicating a more localised support base. Congruent with this, the LISA (Local Indicators of Spatial Association) maps highlighted the spatial clustering of Liberal Democrat party spending in the South West, Labour spending in highly urbanised areas and Conservative spending in rural areas. By incorporating spatial weights and party spending into a model, the predictive accuracy improved and they no longer over-estimated the importance of aspatial variables. In Chapter 8, Cutts and Webber's (2010) approach across a significantly longer time frame to analyse the changing presence of local clustering in support for Labour and the Conservatives in multiple elections.

Other studies have reached similar conclusions when analysing improvements in model predictive power that come about from incorporating spatial effects. In a study of the 2004 presidential popular vote, Lacombe and Shaughnessy (2007) found that the presence of unaccounted for spatial autocorrelation in an OLS model caused downward bias in the standard errors at the same time as an overestimation of significance of some

independent variables. In contrast, a spatial error model (SEM) 'drastically improved the predictive power' of the OLS, corrected some downward bias in the model's standard errors and changed the significance of key predictors (Lacombe and Shaughnessy, 2007, p.496). Jensen et al. (2013) conducted a spatial econometric analysis of the 2010 UK General Election with a spatial Durbin model (SDM), confirming that there was significant spatial autocorrelation in the dependent variable – Conservative Party vote share. The presence of an incumbent MP in a constituency had a significant positive effect on the party's vote shares in neighbouring constituencies, supporting the idea that gaining a foothold in a challenging constituency can spur an increase in a party's support in the wider area. The research by Jensen et al. (2013, p.662) therefore reaffirmed their belief that 'a constituency's characteristics alone do not account for voting patterns but rather, that there is a complex system of spatial interaction at work'. It is therefore essential that if spatial exploratory analysis reveals spatial autocorrelation or dependence to be present in any model, efforts are made in order to account for this, in order to attain a more accurate understanding of the compositional and contextual effects on voting outcomes in constituencies. The simple conclusion from spatial analytical research is that 'controlling for spatial dependence is a vital component of any empirical analysis of voting outcomes' (Jensen et al., 2013, p. 664). This thesis moves further by not only controlling for spatial autocorrelation, but also examining the extent to which spatial processes were important in explaining 2015 and 2017 vote shares above and beyond the demographic and socioeconomic makeup of constituencies.

In more recent statistical geographical research, there has been a broad shift from analysing global spatial associations to local associations between variables (O'Loughlin, 2003). For Anselin (2010), the most important development in this treatment of spatial heterogeneity is geographically weighted regression (GWR) - an extension of a regression model that allows the model parameters to vary over space (see Fotheringham, Brunsdon and Charlton, 2002). In doing so, it accounts for variations in relationships across space that conventional ordinary least squares techniques cannot capture (Kavanagh et al., 2006). In the only study to apply GWR to British elections, Mansley and Demšar (2015) examine spatial patterns in ward-level predictors of voter turnouts across electoral wards in the 2012 London mayoral election. Accounting for the fact that all of their variables varied spatially, their local models built using GWR were able to explain 91% of the variation in turnout – up from 64% using political and socioeconomic variables alone. Similarly, in research examining voter turnout at the

2002 Irish General Election, Kavanagh et al. (2006) found that a GWR model had a significantly better 'goodness of fit' compared to an OLS model.

4.2.9 Twenty-first century electoral geography (2): combining space with place

In spite of the methodological innovations in spatial analysis, there are still rather vociferous calls for electoral geography to move beyond the spatial mapping of social outcomes by embracing the idea that 'place matters'. Even Mansley and Demšar (2015, p.33) – proponents of using GWR - acknowledge that 'it is not possible to fully analyse the contextual effects of place using statistical analysis alone' because spatial statistical methods 'cannot tell us why a particular process operates differently in different locations'. Only by supplementing advanced statistical analyses of extensive trends with intensive local case studies can we arrive closer at any understanding of the reasons for geographically structured voting behaviour and outcomes. This lends support to earlier calls from Reynolds (1990), Agnew (Agnew, 1987, 1990) and Johnston (1986a) for electoral geography to simply become more geographical and to incorporate social theory that would encourage a shift in focus 'from the psychology of individual voters and their census attributes to the history of places and parties' (Agnew, 1987, p. 18). Similarly, for Flint, Harrower & Edsall (2000), the emphasis should shift away from *space* and towards a structural rather than contextual or compositional understanding of *place*. Rather than just focusing on the attributes of spaces, political geographers should consider 'the setting of political actors' in places within which they interact and engage with key institutions (Flint, Harrower and Edsall, 2000, p. 4). This place-based approach is based largely on Agnew's (1987) *Space and Politics*, which, by the start of the twenty-first century, had to some extent led to 'a greater emphasis upon intensive rather than extensive studies, a conscious attempt to integrate social theory, and an awareness of places as historically constituted entities' (Pringle, 2003, p. 608).

In the most recent synthesising publication on the revitalisation of electoral geography, Warf and Leib (2012) assess first the extent to which electoral geography has declined as a field and second whether calls for an end to the dominance of methodology, empiricism and compositional approaches have been answered. To the first question the answer is yes: aside from a brief spike between 1995 and 2002, there has been a real

paucity of articles in electoral geography. To the second, the answer is complex: while research topics have widened beyond vote studies into electoral systems, (re-)districting, issues of race, ethnicity, gender and sexuality and power relations, the vast majority of have not responded to calls for a post-structuralist approach and have largely remained in the spatial analytic tradition. Indeed, there are very few studies that have combined advanced quantitative and qualitative methods. In an illuminating article, Low (2003, p. 22) levels many such criticisms against electoral geography with a particular focus on the way in which it has reduced voting behaviour to something hardly distinguishable from any other rational action, when in fact it is far messier and more diverse. While Low's emphasis is not concerning *place* as such, he does call for broader approaches that examine the symbolic and social act of voting, particularly how it relates to identity construction and geographical/historical contexts (2003, p.3). This is not a call to abandon quantitative methods but for them to be complemented with qualitative approaches. One such 'modest reply' to these demands is a study of electoral politics in Tacoma, Washington, in which a discourse analysis of broad debates surrounding the gay vote is combined with an ecological analysis linking socio-demographics with voting behaviour (Brown, Knopp and Morrill, 2005, p. 268). Yet still today, despite calls to incorporate theoretical and place-based approaches into quantitative research, such research is an exception. This thesis is an attempt to plug the gap by complementing a quantitative and spatial approach with a qualitative focus upon more difficult-to-predict regions in order to better understand the changing electoral geography of Labour and Conservative support.

4.3 An overview of the literature review

This literature review has firstly provided an overview of the dominance of the class cleavage in structuring mid-twentieth century British party politics. Following this, I have presented substantial evidence of the subsequent decline in the relationship between social class and voting and examined the extent to which this is the result of changing voter behaviour or a changing social structure. Indeed, the UK's population has become much more ethnically diverse with far greater numbers of young people attending university, declining traditional working-class occupations and increasingly flexible and insecure working conditions. The uneven pace of these changes across the

country is supposedly creating a divide between places that are increasingly 'cosmopolitan' – urban, ethnically diverse, young and highly educated - and those that are 'left behind' – typically places far removed from large cities and with an older, white, working-class demographic profile. However, as I have shown, the extent to which Britain's electoral geography is restructuring around any 'cosmopolitan-left behind' cleavage ultimately depends on the chosen definitions that one takes. I have summarised the circular logic behind the conventional 'left behind' definition first presented by Ford and Goodwin (2014) and have highlighted how it ignores the high levels of economic deprivation in many diverse urban areas and the growth in precarious forms of employment. In the following sections, this research addresses these shortcomings by applying different conceptualisations of 'left-behindedness' in order to better understand the sociodemographic and geographic characteristics and changes that are structuring the electoral geography of England and Wales.

However, to only focus on the compositional characteristics of constituencies would ignore the contextual, spatial and place-based effects on voting that have been discussed in this literature review. In spite of repeated calls for a more detailed consideration of geography in political and electoral research, contextual characteristics have a tendency to be 'controlled away' and the vast majority of statistical models are aspatial. Perhaps most alarmingly, this literature review reveals the complete absence of research using techniques in statistical analysis in order to account for spatial heterogeneity or dependence in British elections. At the same time, while there has been some more recent attention – especially in the US – on innovative spatial analytic methods, there remains a lack of research that combines this with qualitative, place-based approaches that could illuminate some of the unique historical and cultural effects on voting in certain places. This perhaps reflects a persistence of disciplinary boundaries representing 'silos of distinct conceptual frameworks for research' (Linke and O'Loughlin, 2015, p. 191). Indeed, local electoral geography research need not and should not become entangled in some kind of battle between compositional and contextual approaches, for ultimately, '[n]either of these polar positions is empirically tenable, for every social location must occupy a physical (time-space) context – a locale in Giddens' (1984) terminology – and every context will contain various social locations' (Johnston, 1987, p. 11). While I have highlighted the need for more contextual, place-based research, it is important to recognise that the social and the spatial are inexorably entwined. Rather than retreating to compositional or contextual camps, research that

combines the two approaches and understandings of electoral geography would best reflect the sociospatial processes that impact upon voting outcomes.

After first outlining the data construction processes and some methodological considerations, the analytical chapters that follow will address the inadequacies in British electoral geographical research in turn. In Chapter 6, the association between multiple definitons of 'left behind' constituencies and Labour and Conservative support are tested at every General Election between 1979 and 2017. In Chapter 7, this is extended to consider 'left-behindedness' as a process of decline. In the final analysis chapter, spatial analytical methods illuminate the presence of clusters of support and help highlight the areas of the country where Labour and the Conservatives have under- and over-performed model expectations. This is extended into two place-based, intensive studies of the unique local, cultural, historical and political factors that have made Merseyside and south Lincolnshire so exceptional in the context of British electoral geography.

Chapter 5. Data and methods

5.1 Introduction

This thesis has largely employed quantitative methods to the analysis of linked census and election data from 1979 to 2017 across constituencies in England and Wales. While the data were publicly available, discrepancies between census questions and coding of answers combined with boundary changes between election years created significant challenges. This chapter outlines the methods that have been used in order to deal with these difficulties, from careful variable harmonisation and recoding to spatial overlaying and interpolation. After outlining the variable creation and selection process, the statistical models used in each chapter of the research are summarised alongside the diagnostic techniques that have ensured valid results are obtained. The methods used in each chapter have been selected because of their suitability for addressing the research questions set out in Chapter 1 and their applicability to the data types. Ethical approval for the qualitative chapter of this research (Chapter 9) was obtained from the University of Southampton Ethics and Research Governance Online (ERGO).

5.2 Data Sources

The data that have been obtained for this research come from a range of sources: the 1981, 1991, 2001 and 2011 censuses (Office of Population Censuses and Surveys, 1997, 2000, Office for National Statistics, 2003, 2013) alongside other datasets containing merged constituency-level demographic information and General Election vote shares (Electoral Calculus, no date; McAllister and Rose, 1988; Norris, 2001, 2005, 2010; Crewe and Fox, 2011; Fieldhouse *et al.*, 2017). The focus is confined to England and Wales as Scotland and Northern Ireland represent unique cases with different electoral cleavages around national identity. In Northern Ireland, this cleavage system is long-established and aligned with religious affiliation; in Scotland, this represents a more recent phenomenon that has also become aligned with support for independence.

Table 5.1 Pre-existing census and electoral datasets used for this research

Pre-existing census and electoral datasets			
Dataset Name	**Publisher / Author**	**Demographic Data**	**Electoral Data**
BES 2017 Constituency Results with Census and Candidate Data	Fieldhouse et al. (2017)	2011 census	2017, 2015 and 2010 General Election
May 6th 2010 British General Election Constituency Results Release 5.0	Norris (2010)	2011 census	2017, 2015 and 2010 General Election
The British Parliamentary Constituency Database 1992-2005 Release 1.3	Norris (2005)	1991 and 2001 census	1992*, 1997, 2001, 2005 General Election
The British Parliamentary Constituency Database 1992-2001 Release 1.2	Norris (2001)	1991 and 2001 census	1992*, 1997, 2001 General Election
(Actual) Election Result	Electoral Calculus (ND)	n/a	1992 General Election
United Kingdom Ecological Data, 1981-1987	McAllister and Rose (1988)	1981 census	1979*, 1983 and 1987 General Elections
British Parliamentary Constituencies, 1979-1983	Crewe and Fox (2011)	1981 census	1979* and 1983 General Elections

* 2005 election results in the BES dataset are notional to 2010 constituency boundaries. 1992 election results in the dataset by P. Norris are notional to the constituency boundaries that were first implemented in 1997. Both sets of 1979 election results are notional to the boundaries implemented in 1983.

Some additional datasets – not relating to election results - have been used at various points in the analysis that follows. These are all referenced accordingly when there is discussion of the data that is used from each. The only constituencies that have been omitted from the datasets above and thereby any subsequent analyses are the Speaker's seat at each election and any cases where Labour or the Conservatives did not stand. In 1992, outside of any boundary review, the constituency of Milton Keynes was divided into two new constituencies: Milton Keynes North East and Milton Keynes South West. Census data aggregated to the 1983 parliamentary constituency level includes these two newer constituencies, even though they were not in use at the 1983 or 1987 General Election. To overcome this issue, the data for the two constituencies has been amalgamated back into one - Milton Keynes – based on the distribution of the population. This has no methodological weaknesses as the two constituencies were created solely from the pre-existing Milton Keynes constituency. Therefore, the entire population of the two constituencies will fall into the Milton Keynes constituency. In addition, for the 1979 General Election, due to lack of available data, all variables including vote shares are notional to the 1983 constituency boundaries.

5.3 Creating datasets for each election year

As the UK census is carried out every ten years and General Elections normally fall every four or five years, most aggregate-level election analysis has relied upon matching election data with data from the closest census. This research follows this method when the census and General Election are less than three years apart. For 1987 and 1997 - years in which the election falls more than two years from the closest census - linear interpolation of sociodemographic data has created estimates for the election year alongside existing notional electoral results. To account for boundary changes, the spatial unit of the start and end point of the interpolation is always matched to the constituency boundaries used in the election. In 2005, due to the lack of 2011 census data notional to 2005 election boundaries, areal interpolation has been used. For the election years since the 2011 census, only extrapolation is possible raising far greater concerns about errors in the estimations (Henry, Jacob and Elizabeth, 1980). Therefore, 2011 census data have been used in the analysis of the 2015 and 2017 General Elections. An explanation of the interpolation methods used to create datasets for each election year follows.

5.3.1 1987 and 1997: Linear interpolation with arithmetic progression

In order to interpolate for inter-censal years, data must be obtained from the census immediately before and immediately following the election year. A method of linear interpolation is used that relies on arithmetic progression and assumes a constant *amount* of population change rather than a constant *rate* of change across inter-censal years (see Crosetti and Schmitt, 1956). Using the 1997 General Election as an example, the simple calculation for the annual net change for a particular variable can be summed up as follows (Raymondo, 1992, p. 103):

$$\Delta_p = \frac{P_{01} - P_{91}}{n}$$

Where: Δ_p refers to the annual net change in the population

P_{01} and P_{91} refers to the population at the 2001 and the 1991 census

n refers to the number of years in the inter-censal period

Once the annual net change has been calculated for a particular variable, this is multiplied by the number of years between the year of the previous census and the year of estimation. The resulting value is added to the 1991 value to create an estimate for 1997. This is outlined in the formula below:

$$P_{97} = P_{91} + [\Delta_p * (T_{97} - T_{91})]$$

Where notation is as above and T_{97} and T_{91} refer to the value of the year itself.

While geometric interpolation might be more suitable than arithmetic interpolation in periods of rapid change (Swanson and Tayman, 2010), a ten-year period between the censuses is sufficiently short to eliminate the risk of significant differences emerging (Raymondo, 1992). What's more, absolute precision is neither the aim of the interpolation nor would it be necessary: 'the greater accuracy of interpolation than of extrapolation suggests that fairly accurate estimates for years between censuses may be obtained by less exact methods; here rapid mathematical methods can often serve' (Henry, Jacob and Elizabeth, 1980, p. 729).

5.3.2 Accounting for boundary changes

In the time period in which this research is conducted (1979-2017), there have been three periodic boundary reviews from which changes for England and Wales have been implemented in the following years: 1983, 1997 and 2010. Accounting for these changes is a problem that seemingly affects a very small proportion of academic research, as most tends to utilise census data at more conventional geographical scales. Even research using electoral boundaries has often ignored the issues, preferring to use data from the closest census to the election or simply avoiding aggregate-level analysis over time periods containing boundary changes. For elections where interpolation is necessary (1987, 1997, 2005), the boundaries of both sets of constituency-level census datasets used for the calculations must match the parliamentary constituency boundaries used in that particular election. To interpolate data for 1997 for example, both P_{91} and P_{01} need to be calculated at the constituency boundaries used in 1997. While 2001 census data already exist at that boundary, the 1991 data are notional data provided by Crewe and Fox (2011). In 1987, data used to calculate P_{81} for each variable – notional to the boundaries used in 1987 – is provided by McAllister and Rose (1988).

Table 5.2 Census datasets required for each election year

Election	Datasets required
2017	2011 census data
2015	2011 census data
2010	2011 census data
2005	2011 census data notional to 2005 boundaries 2001 census data
2001	2001 census data
1997	2001 census data 1991 census data notional to 1997 boundaries
1992	1991 census data
1987	1991 census data 1981 census data notional to 1983 boundaries
1983	1981 census data notional to 1983 boundaries
1979	1981 census data notional to 1983 boundaries

5.3.3 Areal interpolation: creating a notional dataset (2005)

As a result of boundary changes in 2010, in order to interpolate data for the 2005 election, the P_{11} data must be notional to the boundaries used in 2005 that first came into being in 1997. This census data is not publicly available. Rather than rely on inaccurate data, I have employed a method of areal interpolation to create a new dataset of 2011 census data notional to 1997 boundaries and thereafter create reasonably accurate estimates for P_{05}.

Areal interpolation or areal weighting is a form of 'spatial basis change' in which data is transferred across two spatial units that do not have coinciding boundaries (Goodchild, Anselin and Deichmann, 1993). In this case, the source for the areal interpolation is P_{11} census data at output areas and the target is to estimate P_{05} at the scale of 2005 parliamentary constituencies. The method, outlined briefly hereafter, is based largely on that outlined by Yale University (2007) and has been performed using ArcGIS. First, the output area and parliamentary constituency shapefiles are downloaded and merged with their population count data. Second, the area for each output area is calculated in ArcGIS. Third, the proportion of each output area (by area not population) that falls into each 2005 parliamentary constituency is calculated. For example, where one output area falls neatly into the broader boundaries of a particular parliamentary constituency,

they are aligned in the dataset and are given a proportional variable with the value '1'. The output area census data is then downloaded, the variables are harmonised so that they match those used to calculate P_{01} values and then they are applied proportionally to the corresponding 2005 constituency. For example, imagine that 20% of the total area of output area X falls into constituency Y and 80% into constituency Z. If there were 100 people unemployed in output area X, the estimations of the unemployed population for constituency Y and Z would be 20 and 80 respectively.

This method of areal interpolation assumes a homogeneous distribution in both the population and the variable of interest across the output areas. The level of accuracy is therefore directly correlated to the extent to which the variables are homogeneously distributed (Murakami and Tsutsumi, 2011). Logically, assuming no other information is known about the area, the margin of error for any assumption of even population distribution increases proportionally to the size of the spatial unit. It is for this reason that output areas were chosen: they are the lowest geographical area for which census data is provided. What's more, they have been constructed to be as socially homogeneous as possible, avoiding urban/rural mixes and large differences in household and dwelling type. Assuming a uniform population distribution at the output area level is far less risky therefore than using larger spatial units whose populations are far less homogenous and far less evenly distributed throughout space. Once the 2011 dataset had been created notional to 2005 constituency boundaries, the same linear interpolation method used in 1987 and 1997 was subsequently used. The two datasets - 2011 census data notional to 2005 boundaries and the 2005 constituency-level demographic estimations - will be made publicly available, as hitherto, no such data exist.

5.4 Variable creation, harmonisation and selection

After taking into consideration the theoretical background on electoral cleavages, the availability of data and the ability to harmonise and interpolate certain variables across the time period, the key explanatory variables to be considered for inclusion in the analysis in chapters 6 - 8 are outlined in Table 5.3. Due to the violation of model assumptions, in some statistical models, some of these variables have been omitted. This is outlined in the data section of the relevant analysis chapter alongside any

additional variables that have been used. The key variables below are, following meticulous harmonisation across censuses, almost identical across each time period, with the exception of health and gross migration, both of which are discussed hereafter. The explanatory variables have been classified into three categories relating to the definitions of 'left-behindedness' outlined in Chapter 1: conventional, economic deprivation and precarious employment. Two additional variables are included under the category, 'Other variables'. All OLS statistical models will include a political variable – the constituency-level vote share of the third largest political party by national vote share. This is the constituency-level vote share of the Liberal Democrats, except in 2015 where it is the constituency-level UKIP vote share.

Table 5.3 Variables associated with each 'left behind' definition

Conventional 'left behind' definition	Economic deprivation 'left behind' definition
Employed in manufacturing	Poor health
Routine/semi-routine occupations	Social renters
Educational qualifications	Unemployment rate
Age 16 to 29	Household deprivation
Age 65 plus	**Precarious employment 'left behind' definition**
Ethnic diversity	'Precariat' occupations
Gross migration	Secure employment (residual)
Urban-ness	**Other variables**
Distance: 'cosmopolitan' local authority	Third party vote share
Distance: university	Managerial and higher professional occupations
Employed in 'cosmopolitan' industries	

5.4.1 Conventional 'left behind' variables

Employed in manufacturing: From 2001 onwards, this is the proportion of the economically active population employed in manufacturing. For elections that use the 1981 and 1991 census, this is the proportion of the employed population age 16 and over that are employed in manufacturing.

Routine/semi-routine occupations: Any discussion of the association between social class and voting must operationalise some notion of class position into measurable constructs. As this is constituency-level research, it is dependent upon and confined by census data to create any measure of social class across different parliamentary constituencies. For this reason and because any attempts to define an 'essentially

contested concept' such as class are subjective, open to interpretation and have already been discussed in the literature review, this research will not become any more engrossed in disputes about which conceptualisation is most accurate (Calvert, 1982, p. 214). What's more, the NS-SEC measure used since 2001 is based broadly on the Goldthorpe schema, on the grounds that it is 'widely used and accepted and is conceptually clear' (Rose, Pevalin and O'Reilly, 2005, p. 15).

For all General Elections since 2001, the NS-SEC categories of 'routine/semi-routine occupations' are used. The NS-SEC was only introduced for the 2001 census. Therefore, when using census data from 1981 and 1991, the Registrar General's Social Class (RGSC) measure of 'semi-skilled/unskilled occupations' is used – the percentage of the head of households whose occupations are coded as IV or V in the RGSC. It is important to exercise some caution when comparing between the pre- and post-1997 results in relation to this category, as although the classifications are similar, they do not neatly correspond. Due to the discontinuation of the RGSC as a measure after the 1991 census, it has not been possible to interpolate to create an estimate for this variable at the 1997 election. As it is the closest election, data from 2001 is used in this instance.

Degree-level qualifications: The measure of education taken from the 2001 and 2011 census is the proportion of the population with a level four qualification or higher – typically a qualification that is acquired post compulsory education, such as a university degree, diploma or a higher apprenticeship. In the 1991 census, the population with 'level four' qualifications are calculated by totalling those with any non-school level qualifications: a higher degree, a degree or a diploma. From the 1981 census, this is the percentage of the population in employment with degrees or professional vocational qualifications. One potential weakness of the chosen variable is that by looking at the educational levels of the whole population, more recent and current trends in young people's access to post-16 educational qualifications may fail to be properly captured. As historical constituency-level data do not exist for university entry rates or GCSE scores (data exists on the former back to 2006 and the latter to 2010), any long-term analysis of these trends is not possible.

Age categories: aged 16 to 29, aged 65 plus: Two age categories are included in the models that follow: the proportion of the population age 16 to 29 and the proportion aged 65 and over. The former category is used to capture young adults, many of whom are likely to have left their family home and are likely to be living in highly urbanised

environments. The latter is used as a measure of the proportion of the population that are of or close to retirement age.

Ethnic diversity: According to Schaeffer (2014, p. 53), using a diversity index is particularly well suited to measuring a quasi-monoethnic composition, such as that in the UK. To measure ethnic diversity at constituency-level, the Herfindahl concentration index is used (Hirschman, 1964):

$$HI = 10000 - \sum_{i=1}^{n} s_i^2$$

Where S_i = share of ethnic group *I*, out of a total of *n* ethnic groups.

The Herfindahl index – typically a measure of market concentration - is used here to calculate the probability that two randomly selected residents of the same parliamentary constituency are of a different ethnicity (Sturgis *et al.*, 2014). The higher the score, therefore, the more ethnically heterogeneous the constituency population. Due to data constraints and the need to harmonise for interpolation, the precision of the ethnic group classification is limited. Table 5.4 outlines the way in which ethnic categories have been collapsed and harmonised across different census years.

Table 5.4 The creation of a fourfold ethnicity classification

1981 country of birth classification	1991 ethnic group classification	2001 ethnic group classification	2011 ethnic group classification	Collapsed categories
UK	White	White	White British	White
Irish Republic			White Irish	
Old Commonwealth			White Traveller	
Mediterranean			White Other	
Other E.C.	Indian/Pakistani/Bangladeshi	Indian/Pakistani/Bangladeshi	Indian	Asian
Other Europe			Pakistani	
Indian/Pakistani/Bangladeshi	Chinese	Chinese	Bangladeshi	
Far East			Chinese	
East Africa	Black African	Black	Black African	Black
Africa Remainder	Black Caribbean		Black Caribbean	
Caribbean	Black Other		Black Other	
Rest of World	Other Asian	Total population minus population in the categories above	Arab	Other
			Other Asian	
	Other		Any Other	
			Mixed Caribbean	
			Mixed African	
			Mixed Asian	
			Mixed Other	

For the 2001 census, ethnicity data were missing for 99 of the 569 constituencies in England and Wales. This was somewhat compensated for by manually inputting rather limited data found in a summary paper of 2001 census data at constituency level (Young *et al.*, 2004). In 1981, the UK census did not ask any question about ethnicity and there has been no accepted way to derive ethnicity (Eversley, 1992, p. 138). Therefore, a proxy measure is used based on the Country of Birth (CoB) data from the census. This measure essentially captures 'Country of Birth diversity' in each constituency. The author urges caution hereafter in making assumptions about ethnicity based on country of birth. Nonetheless, it remains logical to assume more broadly that in areas where there is a greater diversity of 'birth countries', there is likely to be greater ethnic diversity. The measure used in analysis of the 1987 General Election is also the country of birth measure, as it was possible to interpolate this between 1981 and 1991.

The Countries of Birth measure used in 1981 is an aggregation of more refined regional categories from the census, as outlined in Table 5.5.

Table 5.5 The Country of Birth measure used in 1981

1981 initial Country of Birth categories	1981 aggregated Country of Birth categories
UK	Europe/Canada/Australia and New Zealand
Irish Republic	
Old Commonwealth	
Mediterranean	
Other E.C.	
Other Europe	
East Africa	African and Caribbean
Africa Remainder	
Caribbean	
India	Asia
Bangladesh	
Far East	
Pakistan	
Rest of World	Other

It is worth noting that because the 1981 census data does not detail those born in many individual Asian and North African countries, some of the population that were born in Asian countries outside of India, Bangladesh, the 'Far East' or Pakistan have been categorised in the 'Other' category alongside those people born in North African countries. I also recognise the inappropriateness and archaism of census-derived terms such as 'Old Commonwealth' and only use them for methodological clarity.

Gross migration (geographical mobility): In order to create a measure of geographical mobility or its opposite – a kind of 'stickiness' that may be more common to certain kinds of 'left behind' areas, I have used migration data from the 2001 and 2011 census. At the 2001 census, this captures the proportion of the total population in the constituency that have, in the previous year up to the day of the census, migrated: a) into the constituency from within the UK b) into the constituency from outside of the UK c) out of the constituency but remained within the UK. Data acquired from the 2011 census was only available at the scale of output area, and using a lookup table available from the geoportal.statistics.gov.uk website, I have aggregated this data to the parliamentary constituency level. However, as this data is spatial, even when aggregated, it cannot refer to in- and out- migration at the constituency level, and instead therefore refers to the proportion of the population of a constituency that have migrated in or out of their output area. At the 1991 census, the only option was to use 'the proportion of

residents with a different address one year previously'. For the 1997 General Election, I have used 2001 data because of the relative weakness of the 1991 census variable. Indeed, unlike in 2001 and 2011, the 1991 measure does not capture out-migration from the area. From the 1981 census and for the interpolated 1987 variable, the same measure is used as in 1991.

'Urban-ness': In order to obtain harmonised data, a proxy measure of 'urban-ness' has been selected here for 2011: the percentage of a constituency's employed population that is not employed in agriculture. In 2001, 'agriculture' comprised those employed in 'Agriculture, Hunting or Forestry' and in 1991 two categories were merged: 'Managers in farming, horticulture, forestry and fishing' and 'Other occupations in agriculture, forestry and fishing'. From the 1981 census, the percentage of employed residents employed in agriculture was able to be used. In some instance, this variable may be referred to as 'urbanity'.

Distance from nearest 'cosmopolitan' local authority: In order to include a variable in any models that would account for a sense of geographical isolation from 'cosmopolitan' areas of the country, the distance from the centroid of the spatial unit of each parliamentary constituency to the centroid of the nearest 'cosmopolitan' local authority has been created using ArcGIS. A simple index of 'cosmopolitan-ness' for each local authority in 2011 was calculated from four standardised variables: percent of the population aged 18 to 29, percent of population with a level four qualification, percent of the population living in an urban environment, and the ethnic diversity of the local authority. The ethnic diversity variable was created using the same Herfindahl index that has been used to measure the diversity of constituencies throughout this research. For 2001 and 1991, the same variables were used, except, due to lack of available data, the percent of the population living in an urban environment was substituted for a proxy measure of urbanity - the percentage of the population not employed in agriculture, hunting or forestry. For 1981, the Herfindahl index of ethnic diversity was calculated using country of birth, as there was no census data on ethnic makeup. Also, due to the age categories used in the census, the percent of the populated aged 16 to 29 was calculated instead of the percent aged 18 to 29. Local authorities that were classified as 'cosmopolitan' were those with scores at or above the 80th percentile in that particular year.

Distance from nearest university: This variable is a measure of the distance in decimal degrees from the centroid of each constituency to the closest university, based on designation of universities in that particular year. This measure is a proxy for the level of cultural isolation or lack of cultural capital in a constituency, based on an understanding that areas close to universities possess a kind of 'vitality and youthful atmosphere' thanks to cafes, museums, public lectures, bars, restaurants, art galleries, student volunteering and increased ethnic diversity (Taylor, 2011).

'Cosmopolitan' industries: The measure of 'cosmopolitan' industries in an area is based on that employed by Jennings and Stoker (2017) but has been altered to ensure that the 2001 and 2011 variables are almost identical. The industries that have been grouped together in each census to create a percentage employed in 'cosmopolitan' industries are outlined below. Note that the final two categories in Table 5.6 in both censuses have only been included because at the output area level in 2011 (in order to perform areal interpolation to the 2005 constituency level), they were inseparable from the previous two industries (Human health and social work activities; Arts, entertainment and recreation/Other service activities).

Table 5.6 'Cosmopolitan industries': 2001 and 2011 harmonisation

Industrial classifications: the harmonisation of 'cosmopolitan' industries	
2001 census	**2011 census**
Financial intermediation	Financial and insurance activities
Real estate, renting and business activities	Real estate activities Professional, scientific and technical activities Administrative and support service activities
Public administration and defence; compulsory social security	Public administration and defence; compulsory social security
Education	Education
Health and social work	Human health and social work activities
Other community, social and personal services activities	Arts, entertainment and recreation Other service activities
Activities of private households as employers and undifferentiated production activities of private households	Activities of households as employers; undifferentiated goods and services producing activities of households for own use
Extraterritorial organisations and bodies	Activities of extraterritorial organisations and bodies

The 1991 census relied upon the 1981 SIC (Standard Industrial Classification) UK for industrial measures, which had very little detailed classification of service-sector employment. Almost all of the industries identified as 'cosmopolitan' in the 2001 census are, according to the ONS (2002), captured by just two less granular industrial

categories in 1991: 'banking and finance etc.' and 'Other services'. Therefore, these employment categories have been used in the measure. Similarly, in 1981, the variable combined the proportion of the employed population who were employed in 'finance' and 'public administration and other services'.

5.4.2 Economic deprivation 'left behind' variables

Poor health: As poor health in general might be considered a characteristic of 'left behind' constituencies or a proxy for poverty (Benzeval *et al.*, 2014), it was deemed important to include a self-reported measure of health in the models. This was only possible for data from the 2001 and 2011 census. In 2011 the percentage of residents who described their health as 'bad' or 'very bad' were summed. In 2001, and subsequently for the 2005 election, the percentage of residents in poor health in a constituency is equal to the percentage that responded with 'not good' on the census. For years requiring 1991 census data, the measure is the proportion of residents aged sixteen and over with a 'limiting long-term illness'. Similarly, for data using the 1981 census, the variable was the percentages of residents aged sixteen and over that were permanently sick.

Social renters: Where occupation is considered a direct impact of social class on voting outcomes, tenure is therefore often thought to be an indirect effect (Surridge *et al.*, 1999). The measure used here for every election is the proportion of households that live in social (council/local authority/housing association) housing.

Unemployment rate: Harmonising the measure of unemployment across census years proved difficult as before 2011 the 'economically active' population was calculated including only those aged 16-64 whilst in 2011 this was extended to include anyone between the age 16-74. Therefore, there are slight differences in the measure across the censuses. For 2001 and 2011, this is the proportion of economically active people aged between sixteen and seventy-four that were unemployed. For the 1981 and 1991 census, this measure is the proportion of economically active people aged sixteen and over that were unemployed.

Household deprivation: This variable is only used here in exploratory analysis for elections from 2001 onwards because of multicollinearity and a lack of data prior to

2001. The measure of household deprivation used here is the proportion of households deprived on three or more of four dimensions: employment, education, health and housing (Office for National Statistics, 2017c).

5.4.3 Precarious employment 'left behind' variables

'Precariat' occupations: Relying on data at the level of parliamentary constituencies, there is little other option than attempting to identify 'precarious occupations' rather than any work-based identity or contract. However, a recent dataset shows a clear association between zero-hour contracts (precarious employment) and different occupational groups: between October and December 2017, 69.9% of those employed on zero-hour contracts fell into four occupational categories: 'Caring, leisure and other service occupations', 'Sales and customer service occupations', 'Process, plant and machine operatives', 'Elementary occupations' (Office for National Statistics, 2018c). Therefore, from the 2011 census, the proportion of the population in each constituency that are employed in these occupations has been used to create a measure of precariat occupations. For 2001 and the interpolation of data for 2005, due to slight differences in the occupational classifications in the census, the four corresponding groups from the SOC (Standard Occupation Classification) 2000 classification are: 'Personal Service Occupations', 'Sales and Customer Service Occupations', 'Process; Plant and Machine Operatives', 'Elementary Occupations'. At the 1991 census, the closest match using the SOC90 is as follows: 'Personal and Protective Service Occupations'; 'Sales Occupations'; 'Plant and Machine Operatives'; 'Other Occupations'. In 1981, because these occupational classifications were unavailable and a more complex measure incorporating part-time labour did not appear to be capturing precariousness, the proportion employed in semi-skilled or unskilled jobs has been used.

Secure employment: The secure employment variable has been created to reflect the different forms of job insecurity that come from precarious job contracts and low-skilled forms of work. Initially, an 'insecure employment' variable has been created by combining the standardised proportion of the population in precarious employment (see 'precariat' occupations) with the standardised proportion in routine/semi-routine employment (2001 onwards) or semi-skilled/unskilled employment (pre-2001). This has subsequently been inverted into a 'secure employment' variable.

In many election years, secure employment was strongly positively correlated with degree-level qualifications, confirming that constituencies with highly qualified populations are unsurprisingly more likely those with fewer precariously employed residents. In order to retain these two conceptually important variables without creating invalidated coefficients as a result of collinearity, a method of sequential regression has been used. This involved first executing a constituency-level regression model with degree-level qualifications as the only explanatory variable and secure employment as the dependent variable. The residual from this regression model represents the part of the secure employment variable that is not correlated with degree-level qualifications. The regular measure of degree-level qualifications has then been included in the election regression models, whereas secure employment has been replaced by the aforementioned residual. Accordingly, the degree-level qualification coefficients in the following models can be interpreted normally whereas the secure employment residual coefficients can be interpreted as the independent contribution of secure employment once its shared explanatory contribution with degree-level qualifications has been accounted for (Graham, 2003; Dormann *et al.*, 2013). To summarise, the secure employment variable is created as follows:

If x_1 is the percentage with a degree and x_2 is the index of secure employment, one first estimates:

$$x_2 = a_0 + a_1 x_1 + e_1$$

In this initial simple linear regression, a_0 refers to the constant and e_1 the error term. Once this regression is completed, the residual is used in the static models as follows:

$$Y = b_0 + b_1 x_1 + b_2 e_1 + b_3 x_3 + \cdots + e_y$$

Where Y refers to Labour or Conservative vote share, b_0 is the constant, $b_n x_n$ the regression parameters, $b_2 e_1$ the regression parameter taking the residual from the previous model and e_y the error term.

5.4.4 Other variables

Managerial and higher professional occupations: A managerial/higher professional occupations variable has been included in the exploratory analysis only, due to

multicollinearity. From the 2001 and 2011 censuses, the NS-SEC analytic classes 1.1 and 1.2 - essentially Higher Managerial, Lower Managerial and Higher Professional – were combined. From the 1991 census, the SOC90 classification was used, combining the categories 1a, 1b and 2a-2d. From the 1981 census, because the SOC80 classification was unavailable, the SEG categories 1-4 were used, comprising of Employers and Managers in both small and large establishments alongside professional workers – both those self-employed and employees. These categories were chosen, rather than using the RGSC categories I (Professional occupations) and II (Managerial and technical occupations) because in 1991, they had a higher correlation with the variable chosen in 1991 that used the SOC90.

Home owners: The measure used here for every election is the proportion of households that live in housing that is owner-occupied.

Private renters: This measure – used only in Chapter 7 – refers to the proportion of households that live in privately rented housing.

Third party vote share: The constituency-level vote share of the third largest party by national vote share has been included in the OLS models. It was considered important to control for the effect that uneven levels of support for the Liberal Democrats and UKIP (2015) may have had on the relationship between constituency characteristics and Conservative and Labour support. If it was not included, there would be significantly over-estimated predicted Labour or Conservative vote shares in constituencies where the third party was particularly strong. Inevitably, this is still likely to be the case in 2015 in constituencies where the Liberal Democrats had high levels of support and in all other years in constituencies where UKIP (or other smaller parties) had high levels of support.

5.5 'Static' models used in Chapter 6

The aim of the analysis in Chapter 6 is to assess the extent to which the relationship between different variables associated with competing definitions of 'left-behindedness' and Labour and Conservative vote shares have changed over time, considering each election from 1979 to 2017. As the dependent variables that I am utilising are continuous – percentage vote shares for Labour and the Conservatives – OLS

multivariate regression has been used as the baseline method. To offer further support for any findings and to account for the fact that the dependent variables are bound between 0 and 100, Seemingly Unrelated Regressions (SUR) and Generalized Linear Models (GLM) have also been executed at each election. While it would account for dependence from one election to another, time series analyses have been avoided due to difficulties that arise from the relatively short time period, changing constituency boundaries and the inconsistent time periods between General Elections (Pickup, 2015). Instead, to gain a further sense of which elections present atypical cases, the data are also pooled and a time fixed effect model is executed to predict Labour and Conservative vote shares.

The focus in this methodological section is on the OLS models that form the main bulk of the analysis in Chapter 6. Separate models will be performed for each election year, first with the dependent variable as Labour vote share, and second with the dependent variable as Conservative vote share. The aim of the research is not to achieve the most statistically powerful model, but rather, at the broadest level, to compare the causal relationships between variables that constitute different definitions of 'left-behindedness' and vote shares for the two main parties at each General Election. Therefore, I will execute the 'static' models that follow at each election separately using almost identical harmonised explanatory variables. Interpreting the regression coefficients will allow an understanding of the extent to which particular variables have statistically significant changing associations with Conservative or Labour vote shares across elections. The regression equation for the static model at time period *t* and time period *t+1* (where the time period refers to the year of a General Election) is as follows:

$$y_t = b_{0t} + b_1 x_{1t} + b_2 x_{2t} + \cdots + e_t \quad (1)$$

$$y_{t+1} = b_{0t+1} + b_1 x_{1t+1} + b_2 x_{2t+1} + \cdots + e_t \quad (2)$$

In the above equations, y refers to the predicted value of y – Labour or Conservative vote share, b_0 refers to the intercept, $b_n x_n$ refers to the regression parameters, and e the error term. It is worth reiterating, for the avoidance of doubt, that 1979 General Election model uses data notional to the 1983 boundaries, due to lack of data at the constituency boundaries actually used for the 1979 election.

5.6 'Change' models used in Chapter 7

The focus of the models in Chapter 7 is on change – not strictly how the association between the explanatory and outcome variables have changed over time, but rather how the change in *y* over time is a function of a change in *x*. In this case, this measures how the change in Labour or Conservative vote share is a function of the changes in particular demographic, economic and geographical variables over the same time period. Chapter 7 considers whether an area becoming increasingly or decreasingly 'left behind' – on different definitions of the concept – is associated with a positive or negative change in Labour and Conservative vote shares. The analysis is conducted across different time periods, though the baseline analysis is of change between 1979 and 2017, rather than shorter intervening periods.

5.6.1 Calculating the change variables

The statistical analysis in Chapter 7 relies on accurate data for the change in both sociodemographic characteristics and vote shares for constituencies in England and Wales. The independent variables generally come from the same sources outlined in Section 5.2 of this chapter. Where additional variables are used, they are outlined in Chapter 7. Change variables are constructed for one longer time period – 1979-2017 and three shorter time periods – 1979-1992, 1992-2005 and 2005-2017. Taking the analysis between 1979 and 2017 as an example, change in both independent and dependent variables is calculated quite simply as:

$$\Delta_x = X_{17} - X_{79}$$

Where: Δ_x refers to the absolute change in the value of the variable between 2017 and 1979, X_{17} refers to the variable's value in 2017 and X_{79} refers to the variable's value in 1979.

Note that as previously, the independent variables used in 2017 and 1979 come from the 2011 and 1981 censuses respectively. Absolute (usually percentage point) rather than relative change has been used for both independent and dependent variables for several reasons. Firstly, when the statistical models in Chapter 7 were tested with relative change variables, they resulted in lower r-squared values, indicating a decrease in overall

explanatory power. Secondly, it is more intuitive than using the uncommon relative change with the outcome variable of Labour and Conservative vote shares. The reader is simply more accustomed to understanding vote share change in terms of percentage point increase from election to election than a relative increase. Thirdly, when relative change variables were calculated, those with lower base rates in 1979 were inflated giving a somewhat distorted impression of change over time. For example, consider two hypothetical constituencies: in constituency A the percentage of the population with degree-level qualifications increased from 1% to 3%; in constituency B the same value rose from 20% to 40%. The absolute change in constituency A and B is 2 percentage points and 20 percentage points and the relative change 200% and 100% respectively. Using a measure of relative change, the change in constituency A would be considered double the change in constituency B, when it seems illogical that this change could be considered more substantial than the change in constituency B.

5.6.2 Specifying the models using notional election results

In Chapter 7, separate linear regression models are created and executed for the following time periods: a) 1979-2017 at the 2017 constituency boundaries; b) 2005-2017 at the 2017 constituency boundaries; c) 1992-2005 at the 2005 boundaries; d) and 1979-1992 at the 1992 boundaries. For models b, c and d, the datasets outlined in Section 5.2 of this chapter provide the notional election results to allow the change in Conservative and Labour vote shares to be calculated between the elections at the start and end of the respective time periods. The change models b, c and d are specified as follows, taking 2005-2017 as the example.

Let the party vote share of the vote in the 2017 and 2005 General Elections in constituency i be $Y_{2017,i}$ and $Y_{2005,i}$ respectively. The change is therefore $Y_{2017,i} - Y_{2005,i}$ and the full model is:

$$Y_{2017,i} - Y_{2005,i} = \alpha_0 + \alpha_1\left(Z_{1,2017,i} - Z_{1,2005,i}\right) + \alpha_2\left(Z_{2,2017,i} - Z_{2,2005,i}\right) + \cdots + \varepsilon_i \quad (3)$$

where $Z_{1,2017,i}$, $Z_{2,2017,i}$, … are the values of characteristics Z_1, Z_2, … in constituency i in 2017; where $Z_{1,2005,i}$, $Z_{2,2005,i}$, … are the values of characteristics Z_1, Z_2, … in

constituency *i* in 2005; α_0 , α_1 , … are coefficients to be estimated, and ε_i is a random error term. In model (3) above, constituencies are defined using the 2017 boundaries. Taking the same specification as model (3), an ideal 1979-2017 could be specified as follows:

$$Y_{2017,i} - Y_{1979,i} = \alpha_0 + \alpha_1(Z_{1,2017,i} - Z_{1,1979,i}) + \alpha_2(Z_{2,2017,i} - Z_{2,1979,i}) + \cdots + \varepsilon_i \qquad (4)$$

Calculating the variables on the right hand side of model (4) is possible since the 2017 data have already been used in the 2017 General Election models (e.g. $Z_{1,2017,i}$) and a method of areal weighting can be used to generate the 1979 variables at the electoral boundaries used in 2017 ($Z_{1,1981,i}$). Data from the 1981 census has been downloaded at the enumeration district level and overlaid onto the constituency boundaries used in 2017 to calculate values at that spatial scale. This relies on the assumption of an equal distribution of the population across each enumeration district, but as this scale is the finest available in 1981, this represents the most accurate method.

However, the changing constituency boundaries result in a more critical problem with model (4): it is impossible to actually compute $Y_{2017,i} - Y_{1979,i}$ for a consistent set of boundaries. There is not a publicly available dataset that includes 1979 General Election results notional to the constituency boundaries used in 2017. One possible solution - overlaying 1979 constituencies over the constituencies used in 2017 - would rely on assumptions of an equal distribution of party voters across entire constituencies and would therefore be far too imprecise. As mentioned, however, sufficiently accurate data have been calculated from 1981 census data on certain characteristics (X_1, X_2, …) for the 2017 constituency boundaries. In addition, the relationships in 1979 between these characteristics and the Labour and Conservative vote shares at the 1983 boundaries (used for all analysis of the 1979 election) is known because they have been estimated in the 1979 'static' regression model described in Section 5.5 of this chapter and analysed in Chapter 6:

$$Y_{1979,i} = \beta_{0,1979} + \beta_{1,1979}X_{1,1979,i} + \beta_{2,1979}X_{2,1979,i} + \cdots + \varepsilon_i \qquad (5)$$

where $X_{1,1979,i}$, $X_{2,1979,i}$, … are the values of X_1, X_2, ... in constituency i in 1979 using the 1979 boundaries; $\beta_{0,1979}$, $\beta_{1,1979}$, … are the coefficients estimated for 1979, and $\varepsilon_i$is a random error term.

The idea, therefore, is to assume that the relationship between $X_{1,1979,i}$, $X_{2,1979,i}$, … and the Labour and Conservative vote shares in 1979 is unaffected by the precise set of constituency boundaries. In other words, the relationship between sociodemographic characteristics and vote shares in 1979 and vote shares is assumed to be unchanged, even with the constituency boundaries used in 2017 superimposed upon them. This allows model (5) to be used to estimate the Labour share of the vote in 1979 by replacing $X_{1,1979,i}$, $X_{2,1979,i}$, … with $Z_{1,1979,i}$, $Z_{2,1979,i}$, … for the 2017 parliamentary constituency boundaries. The following equation is used:

$$\hat{Y}_{1979,i} = \beta_{0,1979} + \beta_{1,1979} Z_{1,1979,i} + \beta_{2,1979} Z_{2,1979,i} + \cdots + \varepsilon_i \qquad (6)$$

The result - $\hat{Y}_{1979,i}$ - is a prediction of the Labour and Conservative vote shares for the 1979 General Election for each of the 2017 constituency boundaries. From this, a modification of model (4) can be made in which the estimated vote share ($\hat{Y}_{1979,i}$) is substituted for the actual, though of course, non-existent vote share ($Y_{1979,i}$). This leaves the following:

$$Y_{2017,i} - \hat{Y}_{1979,i} = \alpha_0 + \alpha_1 (Z_{1,2017,i} - Z_{1,1979,i}) + \alpha_2 (Z_{2,2017,i} - Z_{2,1979,i}) + \cdots + \varepsilon_i \qquad (7)$$

Given that the findings from model (7) will rest upon the predictions made for $\hat{Y}_{1979,i}$ in model (6), it is imperative that the accuracy of the predictions is tested. To do so, I execute a version of model (5) - predicting vote shares in 1979 (at the 1983 boundaries) - as I can compare the predictions with the actual results (at the 1983 boundaries). In this case, I have tested two models and will select the model to use for model (5) that is most accurate and also has a more limited pattern to the spatial distribution of residuals. The first is, due to data availability, a version of the 1979 model (outlined in Section 5.5 of this chapter) with a reduced number of variables. The second is, due to my observation that the errors in the 1979 model were spatially clustered in both coal mining communities and Wales, a model incorporating a mining and Wales dummy variable. The coal mining dummy variable has been constructed manually based on the author's prior knowledge and research of the historical industries associated with each constituency. Each model is executed twice – once to predict Labour vote shares in 1979 and once to predict Conservative vote shares in 1979. The simpler model is hereafter referred to as model (A) and the model incorporating the mining and Wales term is referred to as model (B).

Comparing model (A) and model (B), it is clear that the latter model is more appropriate to create the estimated vote shares ($\hat{Y}_{1979,i}$). As can be seen in Table K.1 and Table K.2 in Appendix K, the latter models have higher r-squared values implying their greater explanatory power. In addition, Figures K.3 and K.4 in Appendix K show that, particularly where the Conservative vote shares are concerned, the residuals in mining areas such as South Yorkshire and South Wales were slightly less extreme in model (B). It is therefore evident that by including the mining and Wales terms, there was a small improvement to the model's accuracy in predicting these areas that initially had been poorly estimated.

To further assess the accuracy of the two models, the estimated Conservative and Labour vote shares were compared with the actual vote shares for all of the constituencies for which there had been no boundary changes between 1983 (as these boundaries are used for the 1979 model) and 2017 - a total of 66 constituencies. Table 5.7 shows that model (B) is marginally more accurate than model (A) as the positive correlation between the estimated and actual vote shares is slightly stronger. Secondly, as displayed in Table 5.7, the root-square-error – measuring the standard deviation of the residuals from the models – is lower for the second models, indicating a better model fit.

Table 5.7 Testing the accuracy of the predicted values used in Model (A) and (B) by comparing to the actual vote share for constituencies for which there have been no boundary changes

Model	Party	Correlation (predicted to actual vote shares)	RMSE
A	Labour	0.909	7.013
	Conservative	0.885	6.316
B	Labour	0.913	6.725
	Conservative	0.892	5.840

On the basis of these findings, it is clear that model (B) will be used to generate the estimate, $\hat{Y}_{1979,i}$ in cases where the constituency boundaries changed. For constituencies in which the boundaries remained identical between 1983 (to which the 1979 results are notional) and 2017, the actual vote shares - $Y_{1979,i}$ – will be used instead. For these constituencies, the model takes on the form of model (4) whereas for the other constituencies – the vast majority - it takes on the form of model (7).

5.7 Spatial models used in Chapter 8

In the analysis in Chapter 8, I identify the presence of spatial autocorrelation in both the vote shares and the residual values from the OLS models estimated in Chapter 6. In particular, the spatial clustering of high residual values in Merseyside and south Lincolnshire indicate that these areas are poorly estimated by the models. Initially, further OLS models with additional variables are estimated for the 2015 and 2017 General Elections. These models follow the same form as the 'static' models outlined in Section 5.5 of this chapter. When it is shown that the spatial clustering remains and that only marginal improvements have been made to the Merseyside and Lincolnshire predicted vote shares, it is decided that spatial linear regression models should be created.

In spatial linear regression models, spatial autocorrelation is explicitly accounted for. Two models are typically chosen: spatial error models or spatial lag models. In the case where there is strong reasoning and evidence to suggest that the errors in the OLS regression model are spatially autocorrelated, a spatial error model is estimated. In short, this model accounts for the fact that the errors in a constituency are likely to vary systematically in size with the errors in neighbouring or nearby constituencies. The model is specified as follows:

$$y = X\beta + u, u = \rho Wu + \varepsilon \quad (8)$$

where *y* refers to the dependent variable, in this case vote share, X refers to the independent variables and the constant, β the estimated parameters and u is the error term. The error term's covariance structure is then specified, in which ρ denotes the spatial lag parameter, W the weight's matrix (using a queen contiguity specification) and ε the independently distributed error term. Wu thereby denotes the spatially lagged error term. In the spatial error model, spatial autocorrelation in the dependent variable is captured by the error term rather than any explanatory variables (Cutts and Webber, 2010).

Spatial lag models are estimated in cases where there is spatial autocorrelation present, such that the value of the dependent variable is influenced by the dependent variable in nearby or neighbouring areas. A spatial lag model is typically specified as follows:

$$y = X\beta + \rho Wy + \varepsilon \quad (9)$$

where Wy refers to the spatially lagged dependent variable using a queen contiguity weight, X refers to the independent variables and the constant, β the estimated parameters, ε the error term and ρ the spatial lag parameter. Both spatial error models and spatial lag models have been executed to predict Labour and Conservative vote shares in 2015 and 2017 because of the clear evidence of spatially autocorrelated error terms and spatially autocorrelated dependent variables from the OLS models.

5.8 Model diagnostics

Given that this research relies mostly upon census data that is aggregated information of approximately 94% of the entire population (Office for National Statistics, 2012) rather than a smaller sample, and that there is no inference to a 'target population', there is little concern about the representativeness of the sample or sampling error. It is nonetheless important that attention is given to the four key assumptions that justify the use of OLS models in research: normality, linearity, homoscedasticity and collinearity. Each of the models used in Chapter 6 and 7 are tested for all of these assumptions. In Chapter 8, the OLS models are largely adaptations of those employed in Chapter 6 and the diagnostics of the spatial error/lag model are focused on the spatial distribution of the residuals. QQ-plots are generated to check that the residuals in the models are normally distributed. To ascertain whether there are violations of heteroscedasticity or linearity in any of the models, plots have been made of the studentised residuals versus the predicted values. Perhaps the most attention has been given to the presence of multicollinearity in the regression models. In each OLS model, a correlation matrix is created alongside Variance Inflation Factor (VIF) scores. Assessing which variables should be removed from the model because of collinearity is especially complicated because multicollinearity is not consistent across the models (i.e. some variables are strongly correlated in one election but not another). At the same time, in Chapter 6 it is important to retain an identical set of explanatory variables so that accurate comparisons can be made of the changing associations with Labour and Conservative vote shares across different elections.

Further information about the variables chosen or excluded for each model can be found Chapters 6-8. In general, only key points of note regarding model diagnostics are referred to in the analysis chapters themselves. The QQ-plots, residual-fitted value

plots, correlation matrices, VIF scores and further analysis of large residuals and their undue influence for the models can be found in the appendices.

5.9 Software used

The computer software used throughout the data management and creation process has been predominantly the open-source R software and ArcGIS – the former for the re-coding of data and any harmonisation and linear interpolation; the latter for the creation of geographical distance variables and to perform the areal interpolation to create notional datasets. The entire modelling process has been conducted using R, including the spatial lag and spatial error models in Chapter 8. The open-source GeoDa software has been used for the exploratory spatial analysis that includes LISA plots Moran's I calculations for the 2015 and 2017 General Elections.

Chapter 6. Analysis 1: Labour/Conservative support and varieties of 'left-behindedness'

6.1 Introduction

Chapter 6 explores the effects of sociodemographic and geographical characteristics of constituencies upon Labour and Conservative vote shares at each election between 1979 and 2017. It seeks to understand the extent to which different conceptualisations of 'left-behindedness' have become more positively or negatively with support for the two main parties in constituencies across these elections. This is based on the notion that there are many ways in which an area can be 'left behind', with the three definitions outlined in Section 1.2 of Chapter 1: conventional, economic deprivation and precarious employment. Table 6.1 below reaffirms the variables used in each definition and whether a higher or lower value contributes to 'left-behindedness' according to each definition.

Table 6.1 The variables used in the three different 'left behind' definitions and whether a high or low value contributes to being 'left behind'

Conventional 'left behind' definition	
Variable	**'Left behind' = high or low value?**
Employed in manufacturing	high
Routine/semi-routine occupations	high
Degree-level qualifications	low
Age 16 to 29	low
Age 65 plus	high
Ethnic diversity	low
Gross migration	low
'Urban-ness'	low
Distance: 'cosmopolitan' local authority	high
Distance: university	high
'Cosmopolitan' industries	low
Economic deprivation 'left behind' definition	
Variable	**'Left behind' = high or low value?**
Poor health	high
Social renters	high
Unemployment rate	high
Household deprivation	high
Precarious employment 'left behind' definition	
Variable	**'Left behind' = high or low value?**
'Precariat' occupations	high
Secure employment (residual)	low

The chapter begins with an exploratory examination of the bivariate, constituency-level relationships between variables associated with different definitions of 'left-behindedness' and Labour and Conservative vote shares. Following this, the results of multiple linear regression models are analysed in the framework of these three definitions. The models executed in the chapter are outlined in Section 5.5 of Chapter 5. The results from additional GLM and SUR models executed at each election between 1979 and 2017 are presented in Appendix D and Appendix E. The use of these additional models is to offer further support to the findings from the OLS models in order to answer research question 1 and a manifestation of research question 3 (see Chapter 1.2):

To what extent have 'left behind' places become more positively associated with Conservative support and negatively associated with Labour support between 1979 and 2017?

How do the relationships between 'left behind' places and Labour/Conservative support depend on a particular 'left behind' definition?

6.2 The relationship between Labour and Conservative vote shares

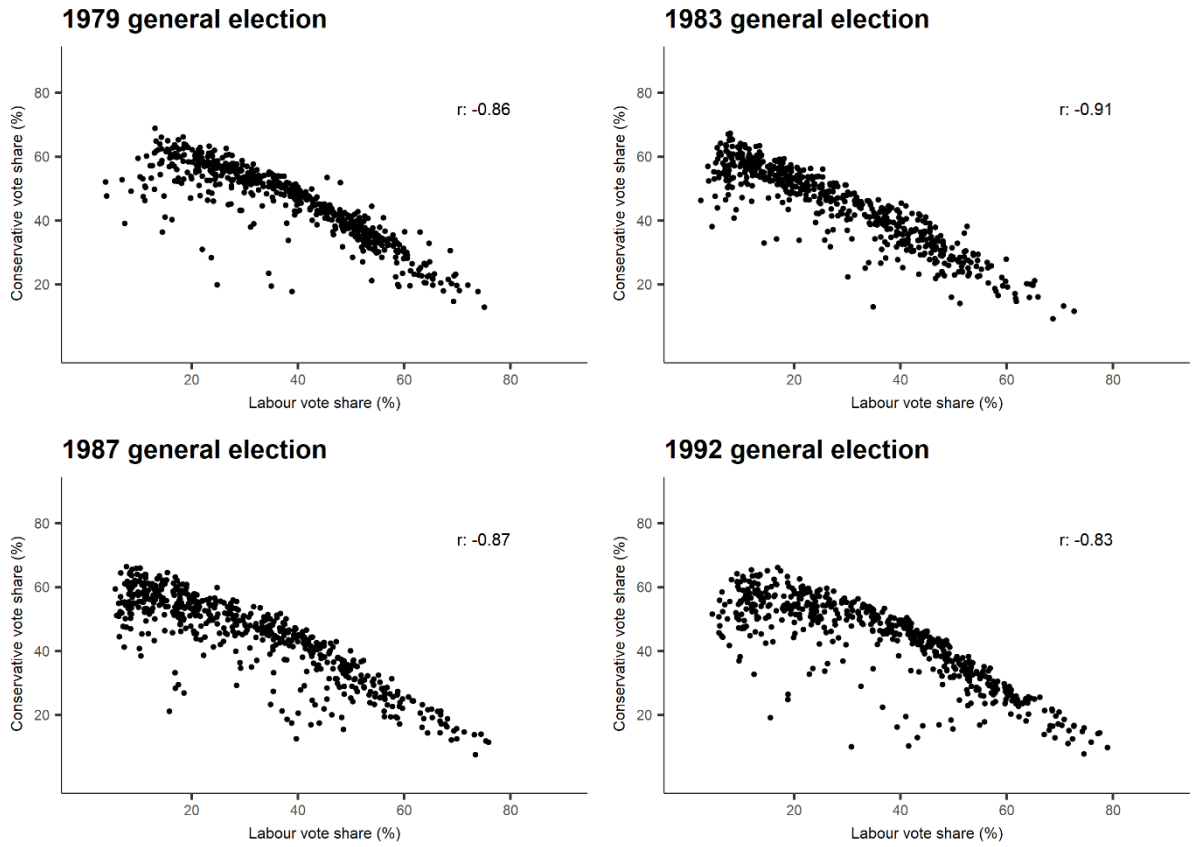

Figure 6.1 The correlation between Labour and Conservative vote shares across each General Election (1979-1992) by constituency

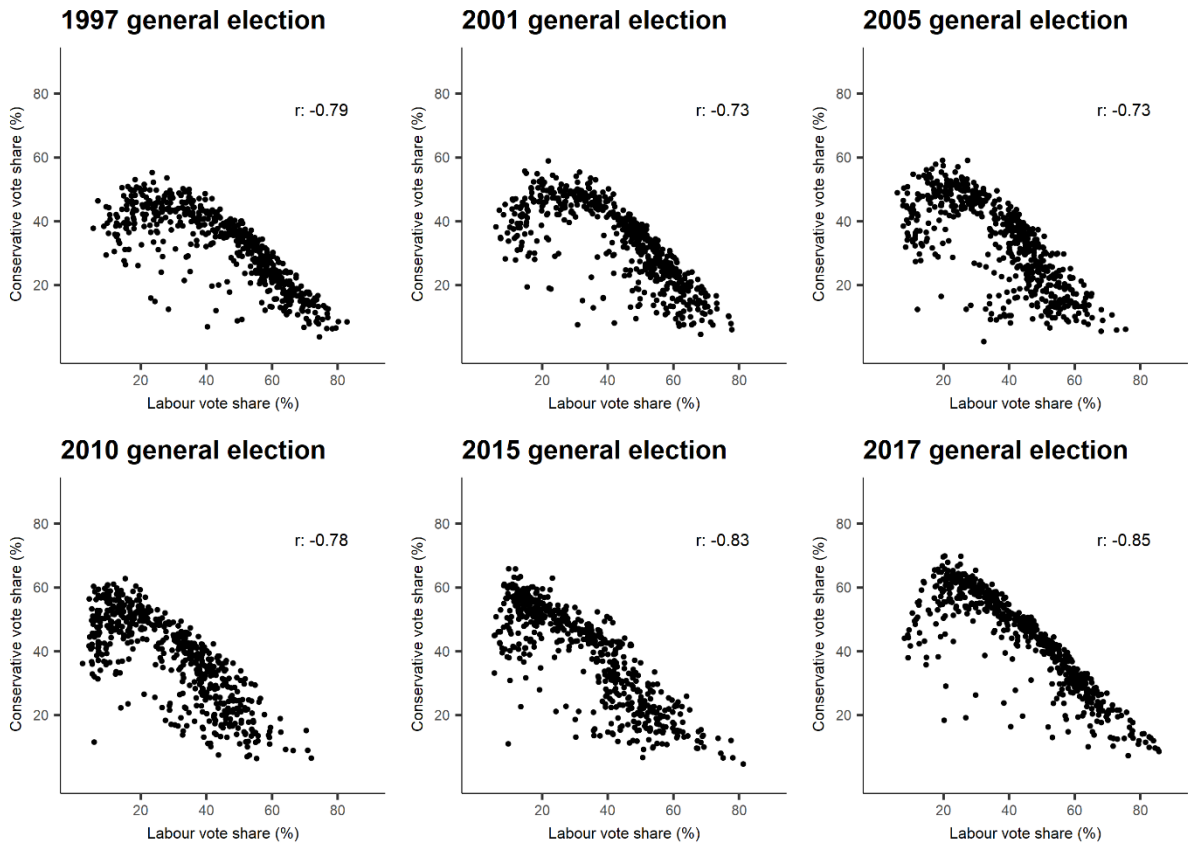

Figure 6.2 The correlation between Labour and Conservative vote shares across each General Election (1997-2017) by constituency

The scatterplots in Figure 6.1 and Figure 6.2 indicate that, as expected, there is a strong negative correlation between the Labour and Conservative vote shares at each election in England and Wales. In general, in constituencies where the Conservatives have done well, Labour have done poorly, at least in terms of vote shares. However, it is interesting to note the changes in the correlation coefficients over time. Of particular note is the decreasing correlation at each election between 1983 and 2001/2005. This may reflect both the increasing convergence of the two parties towards centre-ground politics at the same time as a broadening of their electoral appeal far beyond core constituencies. By 2017, the correlation coefficient had increased once more to a 25-year high of -0.85, indicating that in many of the constituencies where Labour achieved a high vote share, the Conservatives are likely to have done particularly poorly once again, and vice versa. This may reflect a geographical and sociodemographic electoral realignment with the more differentiated positions of the two parties.

6.3 The changing relationships between place characteristics and vote shares

In order to acquire an understanding of some of the changing relationships between some key explanatory variables and Labour and Conservative vote shares, below are presented a series of line graphs. They show the correlation coefficient between each indicated explanatory variable and Labour and Conservative vote shares at constituency level at each election from 1979 to 2017.

6.3.1 'Left behind' constituencies: conventional definition

The Labour Party has been described as a fractured coalition consisting of predominantly young, 'middle-class liberals' living in urban, cosmopolitan, ethnically-diverse areas of the country and 'working-class social conservatives' living in post-industrial, economically stagnant, largely white, 'left behind' communities (Pearce, 2016). At the same time, Labour's support amongst the working class has been shown to be diminishing with the class cleavage over time. For Labour, we would therefore expect to see increasingly negative correlations with conventional measures of 'left-behindedness' such as manufacturing, routine/semi-routine employment and older people and increasingly positive associations with measures such as ethnic diversity and 'cosmopolitan' industries. Where a high value of the variable in the 'conventional left behind' definition in **Error! Reference source not found.** contributes to being 'left behind', the expectation is of an increasingly negative correlation and vice versa. In theory, the opposite should be the case for the Conservatives, who at the same time should see an increasingly negative correlation with those employed in 'cosmopolitan' industries as areas with higher proportions of these types of employment move towards the Labour Party.

6.3.1.1 Working-class occupations

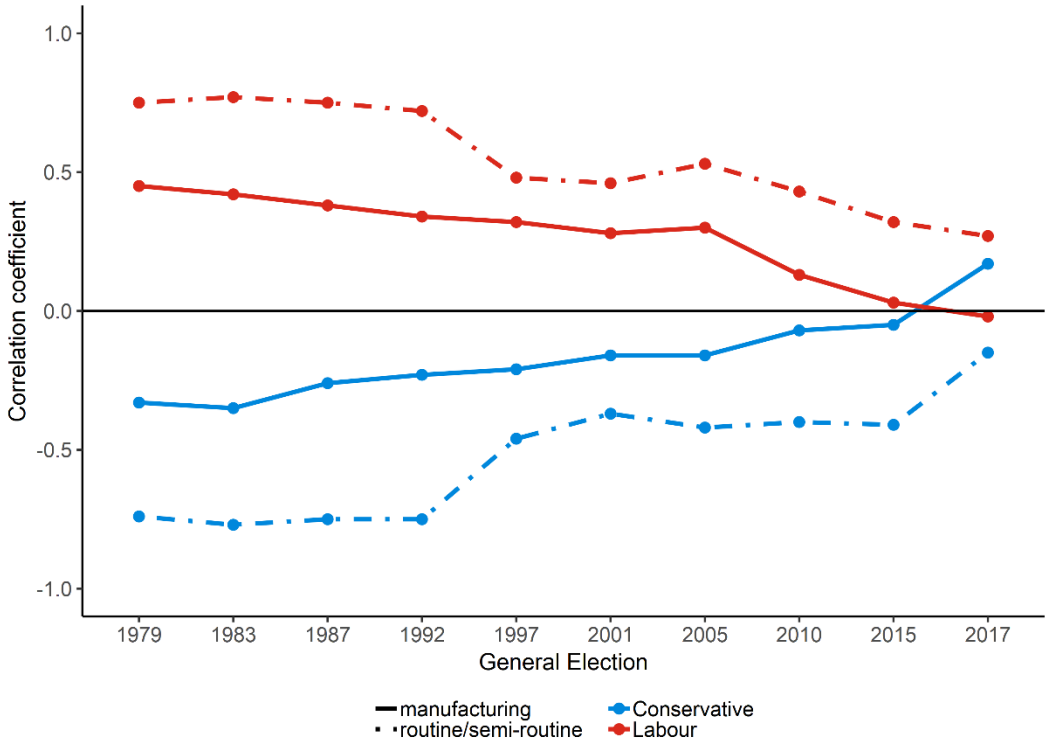

Figure 6.3 The changing correlation between traditional working-class occupations and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

Figure 6.3 shows a consistent, gradual weakening of the negative association between manufacturing and Conservative vote shares, such that, by 2017, it had been eliminated. For Labour, the reverse is true, and for the first time in 2017 the Labour vote share is, albeit very weakly, negatively correlated with the proportion employed in manufacturing. The same trend can be seen with the proportion in semi-routine/routine employment, to which the Conservative vote share became markedly less negatively associated in 1997 and 2017 and the Labour vote share less positively associated in 1997 in particular. In fact, despite significant differences in the political positioning of the Labour Party in the 1997 and 2017 General Elections, they both mark a point at which there was a small jump in relative support for the Conservatives in areas with high proportions of working-class occupations. The increasing gradient of the routine/semi-routine correlation lines for Labour and Conservative in 1997 and for both variables for the Conservatives in 2017 suggest that, of all the elections between 1979 and 2017, it was in 1997 and 2017 that there was a more significant move of traditional working-class places away from Labour to the Conservatives. Alternatively, it

may also indicate that in 1997 and 2017 other places moved away from the Conservatives but traditional working-class places did not do so.

6.3.1.2 Ageing populations

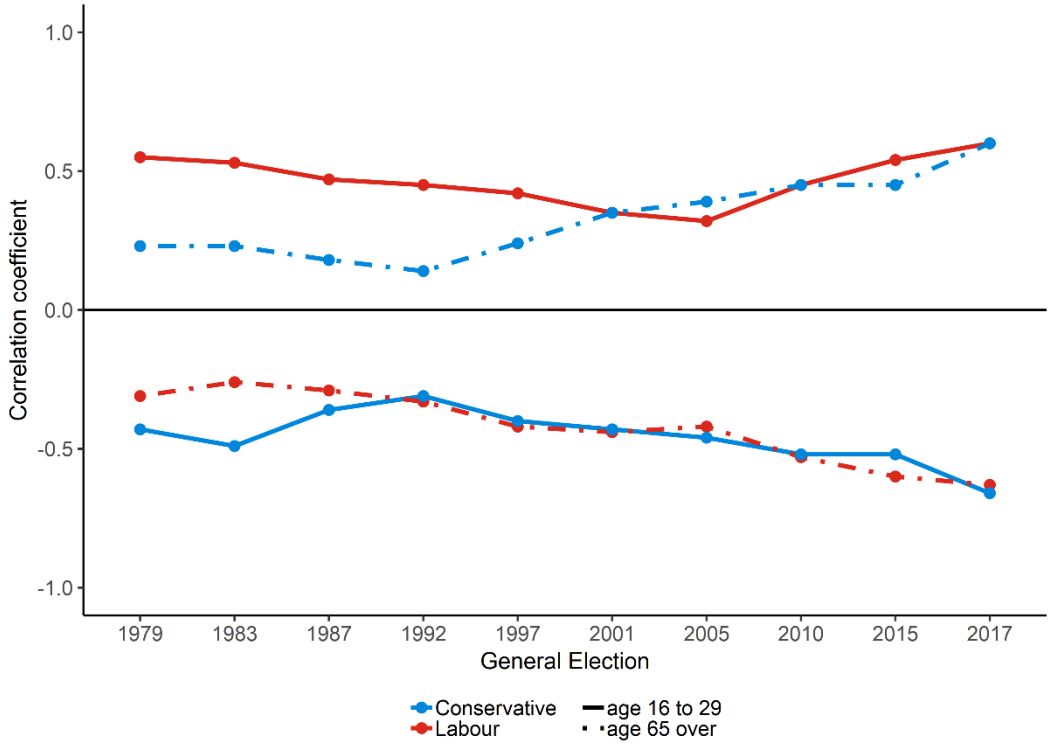

Figure 6.4 The changing correlation between younger and older age groups and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

The correlation coefficients reported in Figure 6.4 support the idea that an age cleavage has developed in British politics, but rather than 2017 representing anything exceptional, this process has been strengthening since 1997. Labour's relative support has decreased in areas with higher proportions of older people, and since 2010, increased in areas with higher proportions of young people. By 2017, Labour's vote share association with the proportion aged 16 to 29 was at its highest level (0.59) and with the proportion aged 65 plus was at its lowest level (-0.63) in this time period. An almost identical inverse trend has occurred for the Conservatives, whose equivalent correlation coefficients in 2017 were -0.65 and 0.60. There is also a long term increasing positive association between Labour vote share and the proportion of full-time students (Appendix B).

6.3.1.3 The opposite of urban, ethnically diverse and transient populations

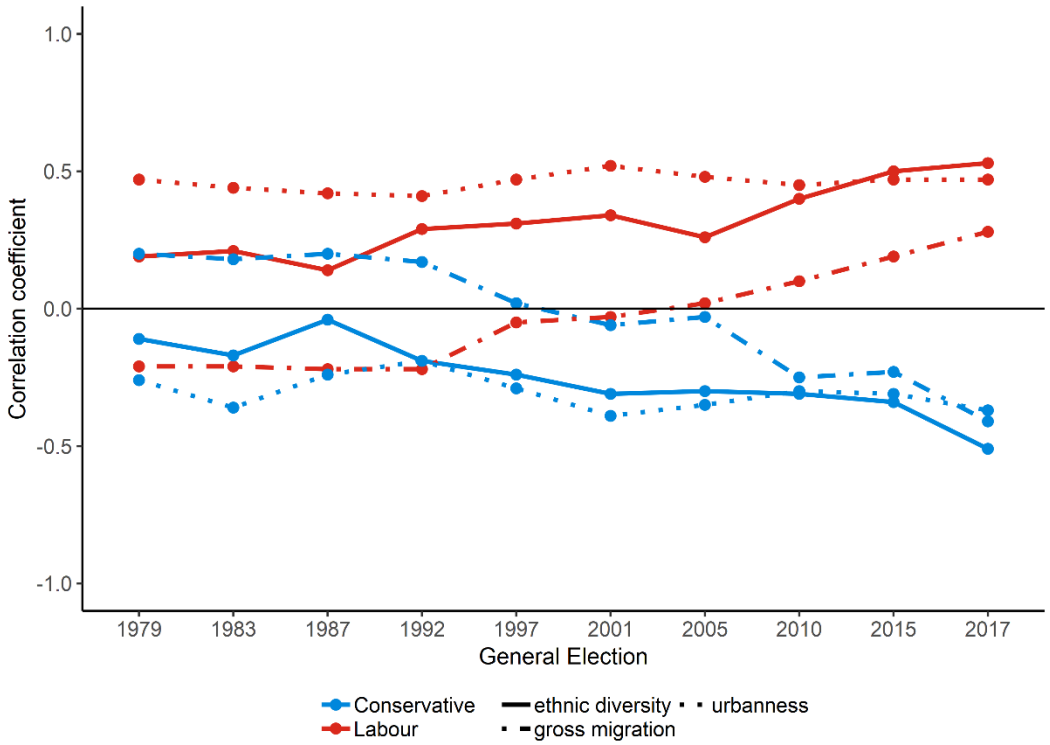

Figure 6.5 The changing correlation between urban-ness, ethnic diversity, gross migration and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

Figure 6.5 shows there is a consistently moderate positive correlation between 'urban-ness'and Labour vote share, implying that Labour's higher vote shares are as equally likely to be found in more urban areas in 2017 as in previous elections. For the Conservatives, there has been a consistent moderately negative correlation between 'urban-ness' and their vote share. Perhaps unsurprisingly given the consistent positive association between 'urban-ness' and ethnic diversity (see Appendix A), increasing ethnic diversity in an area is, in 2017, associated with an increase in the Labour vote share and a decrease in the Conservative vote share. These associations have also been increasing over time, indicating that Labour's vote share is likely – relative to the yearly mean – to be higher in 2017 than at previous elections in areas that are more ethnically diverse. However, some caution should be advised: the weak correlation coefficients between ethnicity and vote shares in the earlier elections in this time period may result from a lack of variability in the ethnic diversity index variable – an idea that statisticians refer to as 'range restriction' or 'truncated range' (Goodwin and Leech, 2006). For

example, the standard deviation in the ethnic diversity index in 1979 was only 8.14 whereas in 2017 it was 19.3.

Alongside an increasingly positive association between ethnic diversity and Labour vote shares, the same trend can be observed between levels of gross migration and Labour support. This suggests that Labour's vote share has become more positively associated with areas in which there is greater geographical mobility and more transient populations, and the Conservative vote share with areas that are 'stickier' with less transient populations.

6.3.1.4 Far from 'cosmopolitan' places and universities

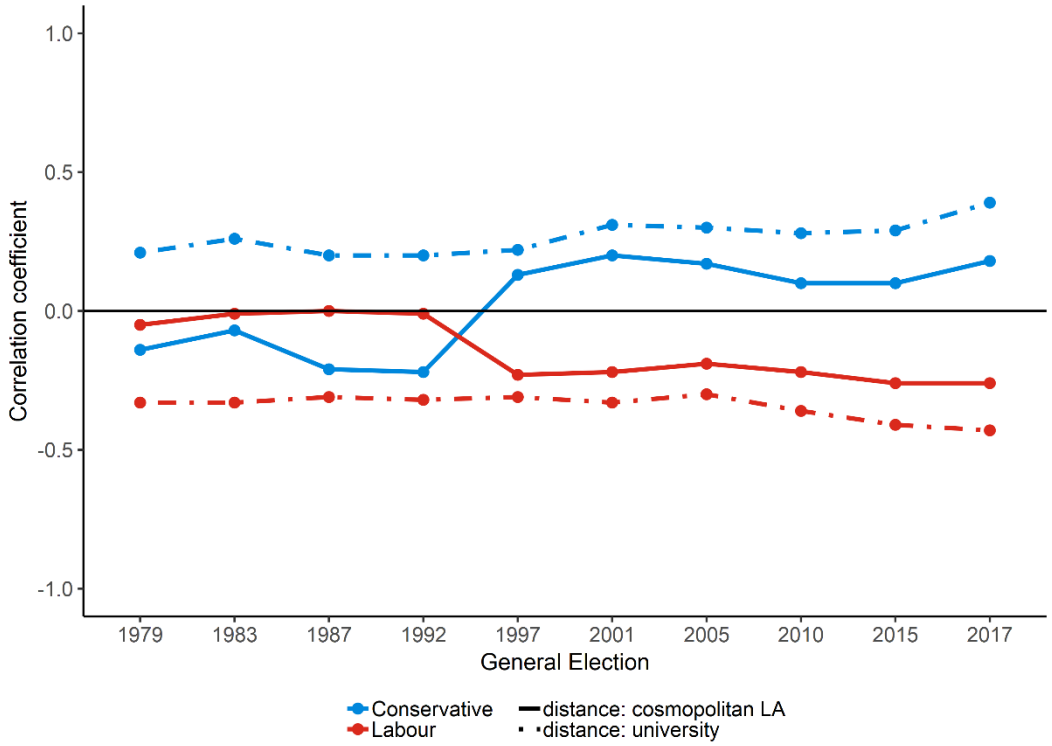

Figure 6.6 The changing correlation between distance from universities and 'cosmopolitan' local authorities and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

Figure 6.6 shows that the Labour vote share has consistently been higher in constituencies that are in close proximity to a university than constituencies further away – an unsurprising finding given many universities are located in large, urban areas (see the negative correlation between 'distance: university' and 'urban-ness' in each year

in Appendix A). However, much like the association with urban-ness, Labour's vote share is not increasingly, but rather has largely unchanging associations with urban areas with universities. At the same time, in 1997 there was a marked shift in which Labour's support became (albeit weakly) negatively - and the Conservatives' positively - associated with increasing distance from the nearest 'cosmopolitan' local authority. This matches findings that Labour's relative support increased significantly in 1997 in areas with high levels of gross migration, high proportions of university-educated residents and low proportions of routine/semi-routine employment.

6.3.1.5 Few 'cosmopolitan' jobs and degree-level qualifications

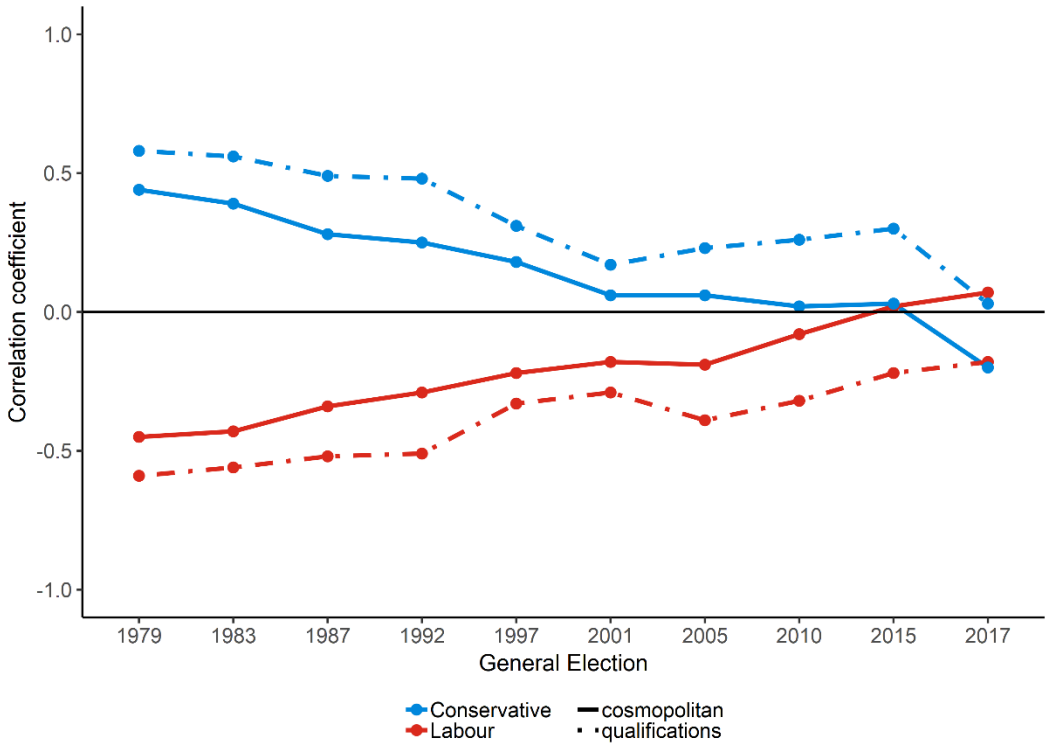

Figure 6.7 The changing correlation between 'cosmopolitan' industries and degree-level qualifications and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

It is clear from Figure 6.7 that the proportion employed in 'cosmopolitan' industries has gradually become more positively correlated with Labour's support and more negatively correlated with Conservative support over time. In fact, in 1979 the 'cosmopolitan' industries variable was moderately positively associated with the Conservative vote share and moderately negatively associated with Labour vote share. By 2017, there was

in fact a weak negative correlation of -0.20 between 'cosmopolitan' industries and the Conservative vote share. A clear trend emerges here: at the expense of the Conservatives, Labour are clearly no longer the weaker party in areas with high levels of 'cosmopolitan' employment. However, despite significant changes, the association between 'cosmopolitan' industries and both Labour and Conservative vote shares in 2017 were weak, suggesting it is unlikely to be a critical predictor of either party's electoral success yet.

Given that people with degree-level qualifications are without doubt more likely to be employed in 'cosmopolitan' forms of employment, it is unsurprising that the trends in the two variables are closely aligned. Before 1997, there was a strong or moderate positive correlation between the proportion of the constituency population with degree-level qualifications and Conservative vote shares. Since then, there has been a significant decline, most notably in 2017 where the correlation coefficient was only 0.03, indicating that there is no longer an association between educational qualifications and Conservative vote share. The association with degree-level education remains negative for Labour, although this has increased steadily from -0.59 in 1979 to -0.18 in 2017, indicating that it is now a very weak negative correlation. Whereas in 2015 there was a 0.52 difference between the Labour and Conservative coefficients for degree-level qualifications, in 2017 this had dropped to 0.21.

6.3.2 'Left behind' constituencies: economic deprivation definition

While Section 6.3.1 presented evidence of a clear long-term decline in Labour's support and increase in Conservative support in areas that are 'left behind' on a conventional definition, a rather different trend emerges when looking at indicators capturing economic deprivation. In fact, Figure 6.8 points to a clear and defined cleavage: those areas that have high proportions of deprivation, unemployment, poor health and social housing have favoured Labour strongly across all years and have particularly low vote shares for the Conservative Party. It is therefore clear that Labour's electoral support in the most disadvantaged areas has been high for some time, and while there may be some fluctuations, shows no sign of abating.

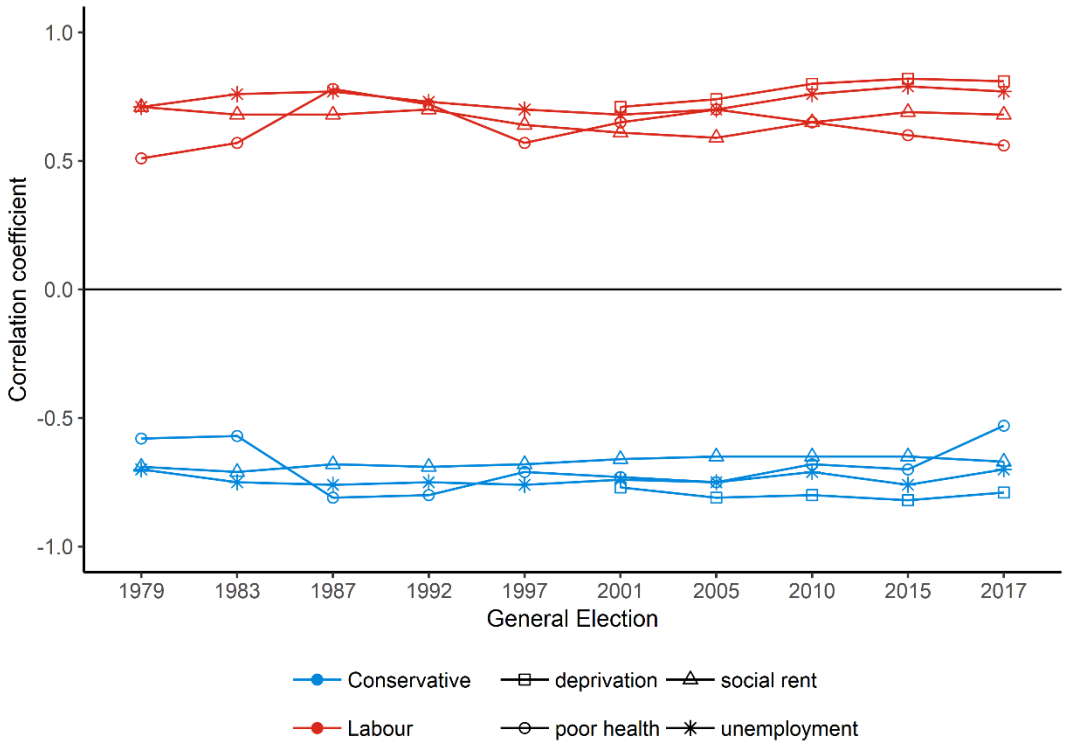

Figure 6.8 The changing correlation between socioeconomic disadvantage and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

The findings from Section 6.3.1 and Figure 6.8 appear to paint quite different pictures with respect to changing levels of support in areas of the country that are less economically prosperous. However, the two graphs are likely to be capturing trends in different kinds of areas. While Labour appear to be losing support to the Conservatives, albeit relatively slowly, in areas with high levels of those in traditional working-class employment, in areas with more serious deprivation, their support remains strong and the Conservatives remain, at least electorally-speaking, weak. As discussed in Chapter 3, constituencies with significant employment in manufacturing industries are not necessarily the most disadvantaged. Indeed, the correlation coefficients reported in Appendix A show that while there is a consistent positive correlation between manufacturing employment and these variables of disadvantage, it has generally been quite weak. In addition, when looking at correlations with the secure employment variable, poor health, unemployment and social renting have consistently stronger negative correlations than the manufacturing variable. This indicates that in areas with more manufacturing industries, employees are more likely to have a well-paid, secure job. In contrast, areas with high levels of social housing and unemployment in

particular, employment is less secure, confirming once more that these constituencies are likely to be more socioeconomically disadvantaged.

6.3.3 'Left behind' constituencies: precarious employment definition

Figure 6.9 presents the relationship between the proportion of the population in 'precariat' occupations and secure employment and Labour and Conservative vote shares. According to this precarious employment definition of 'left-behindedness', one would conclude that Labour remain strong and the Conservatives weak in 'left behind' areas. Labour has largely retained strong levels of support in areas with high proportions of those employed in precariat occupations, despite the Conservatives making some gains in such areas in 2017. In addition, the consistently moderate negative correlation between secure employment and Labour's vote share indicates that they are electorally stronger in areas with substantial levels of employment insecurity. For Conservative vote shares, there is a consistent positive association with secure employment and negative association with 'precariat' occupations.

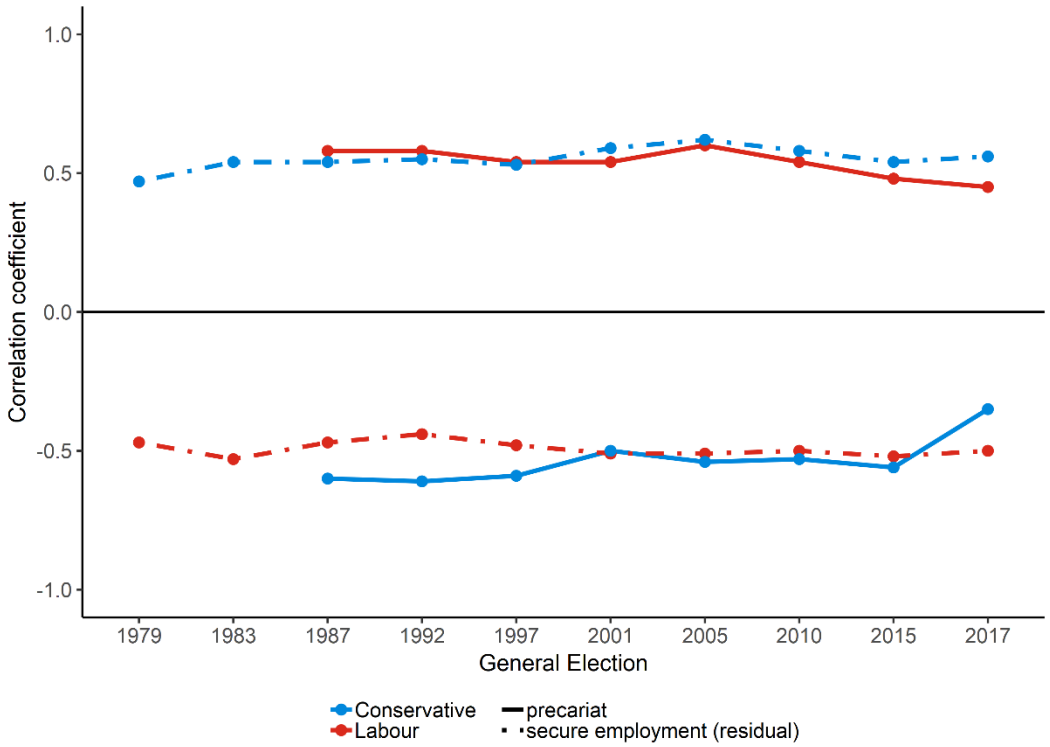

Figure 6.9 The changing correlation between 'precariat' employment and secure employment (residual) and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

6.3.4 Other variables: the conventional middle-class

In addition to identifying vote share trends across various types of 'left behind' areas, it is useful to understand some of the divisions that have emerged between different kinds of predominantly middle-class constituencies. Figure 6.10 demonstrates that there is a consistent positive correlation between managerial/professional occupations and Conservative vote share and a moderate negative correlation between such employment and Labour vote share. However, there is an indication that areas with high proportions of managerial/professional jobs may be slowly moving away from the Conservatives: in 1979 the correlation coefficient was 0.75; by 2017 this was 0.41. There was quite a substantial decrease in the correlation coefficient in 2017. For home-ownership levels, the trend is very much unchanged: there is a moderately negative and moderately positive association between home ownership and Labour and Conservative vote shares respectively.

Overall, there remains little to indicate here that Labour are soon to begin winning constituencies that have high proportions of home owners and managerial/professional

occupations. It is worth contrasting this with the trends seen in Figure 6.7. Despite the Conservatives generally holding their own amongst middle-class areas as defined by managerial/professional occupations and home ownership, there is evidence that they are losing support and Labour acquiring support in areas with highly qualified populations and 'cosmopolitan' jobs.

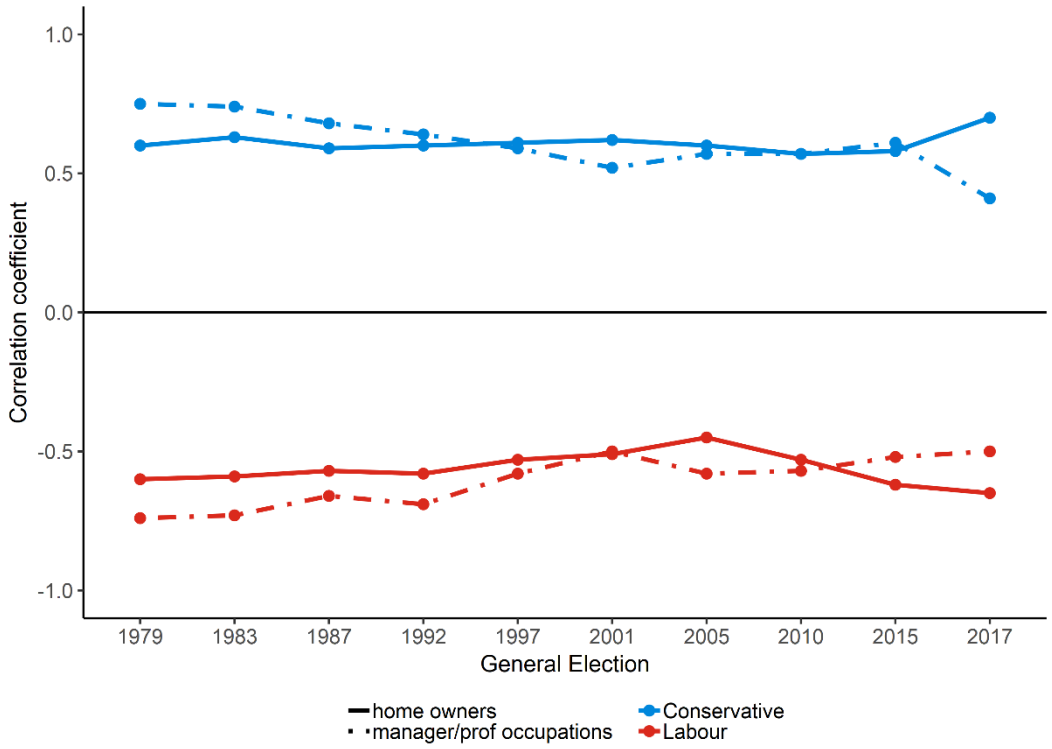

Figure 6.10 The changing correlation between home owners and managerial/professional occupations and Labour and Conservative vote shares across each General Election (1979-1992) by constituency

6.4 Multiple linear regression models

The following section analyses the results from the OLS models described in Section 5.5 of Chapter 5, in order to understand the changing relationships between different characteristics of 'left-behindedness' and Labour and Conservative vote shares, whilst accounting for the multi-factorial nature of voting outcomes. Where relevant, the findings from the SUR and GLM models are also referred to, as well as any additional OLS models that have been executed to check for the presence of interaction effects. A summary of these additional models can be found in Appendix D and E.

6.4.1 Diagnosing and removing multicollinearity

While this study uses data taken from the population rather than a sample from which to make inferences, assessing multicollinearity and removing variables accordingly remains important. If the predictors are highly correlated, it is difficult to know which of the variables is important – they may both be 'explaining' the same variance in the outcome variable (Field, Miles and Field, 2012). The aim of this chapter is not to acquire the model that has the greatest explanatory power at each election, but instead to compare the relationship between an almost identical set of explanatory variables and Labour and Conservative vote shares at each election. The need to have an identical set of explanatory variables in each model means that if a variable was highly correlated with another in any model, then it would be removed from all models. Variables have been removed when the correlation coefficient was greater than 0.80 or less than -0.80 across any of the models. Test models have then been executed to assess the variance inflation factor (VIF) of each explanatory variable. This measures the extent to which the variance of a coefficient produced in the regression is inflated as a result of multicollinearity in the model (Freund and Littell, 2000). According to Myers (1990), the point at which one should be concerned is when the VIF score for a variable exceeds 10. Several variables that cross these thresholds for correlation or VIF scores have been removed from the models hereafter: deprivation, 'precariat' occupations, routine/semi-routine occupations, 'cosmopolitan' industries, managerial/professional occupations, gross migration and homeowners. In place of the differentiation between routine/semi-routine, precariat and managerial/professional occupations, a secure employment variable has been added – the coefficient of a previous residual regression. The methodology behind this variable's creation and its interpretation has been outlined in Chapter 5.4.3.

As a result of removing these variables and creating the new secure employment variable, problems of multicollinearity have been removed from all models. As can be seen in Appendix G, the VIF scores for each variable in each model are generally considerably below 10. In fact, the only variable that scores consistently above 5 is the unemployment rate, which as can be seen in Appendix A, has a moderate to strong correlation throughout the different models with the proportion of people that are

socially renting and poor health. Finally, if the aim here was to achieve models with the most explanatory power, or with the highest R-Squared values further methods such as partial least squares regression would be considered. The need for comparisons of the regression coefficients of individual variables renders such an approach ineffectual.

6.4.2 Regression output tables

Table 6.2 is a summary of the regression output from each OLS model predicting Labour vote shares for parliamentary constituencies at each General Election between 1979 and 2017. The large R-squared values across all the models are indicative of their explanatory power.

Table 6.2 Regression output from models predicting the Labour vote share across constituencies (1979-2017)

	Labour vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
constant	-26.700***	-34.600***	-55.100***	-42.500***	-62.100***	-99.000***	-81.500***	-40.800	-80.000**	-20.800
	(9.210)	(9.540)	(11.900)	(11.400)	(15.400)	(19.600)	(24.300)	(27.400)	(33.800)	(31.900)
unemployment rate	-0.290**	0.049	0.021	-0.092	-0.417**	-0.137	-0.191	-0.039	0.788**	0.608*
	(0.121)	(0.128)	(0.141)	(0.114)	(0.182)	(0.225)	(0.271)	(0.293)	(0.354)	(0.335)
manufacturing	0.135***	0.129***	0.134***	0.089**	-0.268***	-0.433***	-0.356***	-0.099	0.048	-0.300***
	(0.035)	(0.037)	(0.047)	(0.042)	(0.061)	(0.069)	(0.082)	(0.100)	(0.120)	(0.115)
social renters	0.197***	0.182***	0.235***	0.200***	0.188***	0.104**	0.066	0.094	0.164**	-0.033
	(0.025)	(0.026)	(0.033)	(0.031)	(0.038)	(0.042)	(0.050)	(0.057)	(0.071)	(0.066)
degree-level qualifications	-0.833***	-0.699***	-0.395***	-0.224***	-0.332***	-0.344***	-0.314***	-0.046	-0.310***	0.198***
	(0.081)	(0.085)	(0.083)	(0.062)	(0.059)	(0.050)	(0.056)	(0.062)	(0.086)	(0.071)
secure employment (residual)	-2.290***	-2.380***	-1.800***	-1.680***	-2.830***	-3.610***	-3.550***	-2.770***	-1.600***	-2.430***
	(0.412)	(0.433)	(0.388)	(0.307)	(0.341)	(0.379)	(0.388)	(0.373)	(0.450)	(0.425)
aged 16 to 29	0.892***	0.697***	0.761***	0.286*	0.160	-0.017	-0.179*	0.106	-0.125	0.394***
	(0.190)	(0.200)	(0.221)	(0.156)	(0.121)	(0.097)	(0.098)	(0.083)	(0.097)	(0.092)
aged 65 plus	-0.253***	-0.311***	-0.291***	-1.430***	-1.590***	-1.230***	-1.350***	-1.010***	-1.250***	-1.080***
	(0.080)	(0.084)	(0.112)	(0.103)	(0.122)	(0.121)	(0.140)	(0.140)	(0.166)	(0.158)
ethnic diversity	0.021	0.091**	0.025	0.052**	0.047*	-0.021	-0.076***	0.024	0.059*	0.085***
	(0.041)	(0.043)	(0.043)	(0.025)	(0.024)	(0.024)	(0.027)	(0.027)	(0.033)	(0.031)
poor health	4.530***	5.410***	4.780***	3.310***	2.530***	2.580***	2.890***	4.490***	4.960***	4.870***
	(0.397)	(0.421)	(0.312)	(0.153)	(0.150)	(0.200)	(0.217)	(0.321)	(0.384)	(0.364)
distance: 'cosmopolitan' LA	3.280***	4.180***	1.620***	1.630***	-1.560**	-1.470**	-0.749	0.036	-1.310	0.437
	(0.790)	(0.833)	(0.535)	(0.446)	(0.634)	(0.681)	(0.745)	(0.902)	(1.060)	(1.000)
distance: university	-6.380***	-8.060***	-4.630***	-4.440***	-2.340	-3.690*	-6.280***	-9.550***	-7.970***	-10.800***
	(1.480)	(1.560)	(1.540)	(1.270)	(1.770)	(1.910)	(2.130)	(2.130)	(2.940)	(2.770)
urbanity	0.559***	0.597***	0.710***	0.644***	1.140***	1.680***	1.450***	0.751***	1.210***	0.465
	(0.095)	(0.099)	(0.128)	(0.121)	(0.155)	(0.194)	(0.235)	(0.263)	(0.326)	(0.306)
third party vote share	-0.672***	-0.646***	-0.602***	-0.606***	-0.751***	-0.688***	-0.518***	-0.521***	-0.777***	-0.642***
	(0.039)	(0.042)	(0.037)	(0.027)	(0.025)	(0.024)	(0.028)	(0.029)	(0.090)	(0.039)
N	560	560	560	561	567	569	569	572	572	572
Adjusted R^2	0.882	0.875	0.893	0.931	0.925	0.901	0.852	0.852	0.818	0.852

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 6.3 summarises the regression output for each OLS model predicting the Conservative vote shares for parliamentary constituencies at each General Election between 1979 and 2017. Again, the high R-squared values show that the explanatory variables are able to explain a significant proportion of the variance in Conservative

vote shares. Both models summarised in Table 6.2 and Table 6.3 are discussed in Section 6.5.

Table 6.3 Regression output from models predicting the Conservative vote share across constituencies (1979-2017)

	Conservative vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
constant	94.400***	136.000***	98.000***	54.600***	63.500***	86.300***	53.400**	59.900**	61.300*	54.800*
	(10.100)	(9.390)	(11.800)	(11.500)	(14.100)	(19.000)	(22.500)	(27.400)	(33.700)	(30.800)
unemployment rate	0.179	-0.019	-0.145	-0.123	0.388**	0.252	0.069	0.197	-0.563	-0.763**
	(0.134)	(0.126)	(0.140)	(0.115)	(0.167)	(0.217)	(0.250)	(0.294)	(0.353)	(0.323)
manufacturing	-0.099**	-0.107***	-0.101**	-0.037	0.285***	0.394***	0.251***	0.172*	0.424***	0.545***
	(0.039)	(0.037)	(0.047)	(0.043)	(0.055)	(0.067)	(0.075)	(0.100)	(0.120)	(0.111)
social renters	-0.218***	-0.182***	-0.225***	-0.158***	-0.193***	-0.069*	-0.071	-0.070	-0.076	0.103
	(0.027)	(0.026)	(0.032)	(0.032)	(0.035)	(0.041)	(0.046)	(0.058)	(0.070)	(0.063)
degree-level qualifications	0.746***	0.732***	0.243***	0.116*	0.181***	0.148***	0.170***	0.106*	0.194**	-0.243***
	(0.089)	(0.083)	(0.083)	(0.062)	(0.054)	(0.048)	(0.051)	(0.062)	(0.086)	(0.069)
secure employment (residual)	1.730***	2.600***	1.320***	1.330***	1.670***	2.720***	2.770***	2.170***	2.090***	2.240***
	(0.453)	(0.427)	(0.386)	(0.311)	(0.311)	(0.366)	(0.358)	(0.373)	(0.449)	(0.411)
aged 16 to 29	-0.723***	-0.800***	-0.803***	-0.365**	-0.318***	-0.145	-0.018	-0.238***	-0.553***	-0.521***
	(0.209)	(0.197)	(0.220)	(0.158)	(0.111)	(0.094)	(0.091)	(0.083)	(0.097)	(0.089)
aged 65 plus	0.291***	0.233***	0.253**	1.380***	1.620***	1.360***	1.400***	1.180***	0.689***	1.210***
	(0.088)	(0.082)	(0.112)	(0.105)	(0.112)	(0.117)	(0.129)	(0.140)	(0.165)	(0.153)
ethnic diversity	-0.130***	-0.121***	-0.013	-0.058**	-0.064***	-0.005	0.029	-0.003	0.022	-0.029
	(0.045)	(0.043)	(0.042)	(0.025)	(0.022)	(0.024)	(0.025)	(0.027)	(0.033)	(0.030)
poor health	-5.040***	-5.440***	-5.120***	-3.460***	-3.060***	-3.890***	-3.940***	-5.890***	-5.320***	-5.740***
	(0.437)	(0.414)	(0.310)	(0.155)	(0.137)	(0.193)	(0.200)	(0.321)	(0.382)	(0.352)
distance: 'cosmopolitan' LA	-5.830***	-3.930***	-2.680***	-2.680***	-0.835	-0.632	-1.220*	-1.900**	-1.440	-1.750*
	(0.870)	(0.820)	(0.532)	(0.452)	(0.580)	(0.658)	(0.688)	(0.903)	(1.050)	(0.966)
distance: university	10.100***	7.860***	7.670***	8.340***	4.780***	6.300***	9.020***	8.180***	5.590*	6.240**
	(1.630)	(1.540)	(1.530)	(1.290)	(1.620)	(1.850)	(1.970)	(2.130)	(2.930)	(2.680)
urbanity	-0.267**	-0.605***	-0.125	0.260**	-0.061	-0.426**	-0.064	-0.007	-0.016	0.179
	(0.105)	(0.097)	(0.127)	(0.123)	(0.142)	(0.188)	(0.217)	(0.263)	(0.325)	(0.295)
third party vote share	-0.206***	-0.340***	-0.246***	-0.254***	-0.169***	-0.220***	-0.321***	-0.356***	0.219**	-0.220***
	(0.043)	(0.042)	(0.036)	(0.028)	(0.022)	(0.023)	(0.026)	(0.029)	(0.090)	(0.037)
N	560	560	560	561	567	569	569	572	572	572
Adjusted R^2	0.747	0.801	0.815	0.864	0.847	0.826	0.837	0.807	0.773	0.808

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

6.5 Changes in the coefficients over time

The following set of graphs present the changes in the beta coefficient values and the statistical significance of each variable across the models of each election from 1979 to 2017. This illuminates the changing effect and the direction of any effects that each variable has on the Labour and Conservative vote shares at each election. By assessing any year-to-year crossover in the bounds of the confidence intervals, it is possible to determine whether the coefficient in one election is statistically significant from another election. What's more, where a point is filled with a white colour and the error bars are grey, the p-value of that variable was equal to or greater than 0.05, which indicates statistical insignificance. In these cases, it is not possible to make the following conclusion: if the true association between a variable and the vote share was zero, it is highly improbable that we should have observed the data that we actually observed. In short, it is not sufficiently improbable that the variable's coefficient is significantly different from zero. As each model includes almost identical variables, the change in the effect of the coefficients are easily comparable and meaningful.

6.5.1 'Left behind' constituencies: conventional definition

6.5.1.1 Manufacturing industries

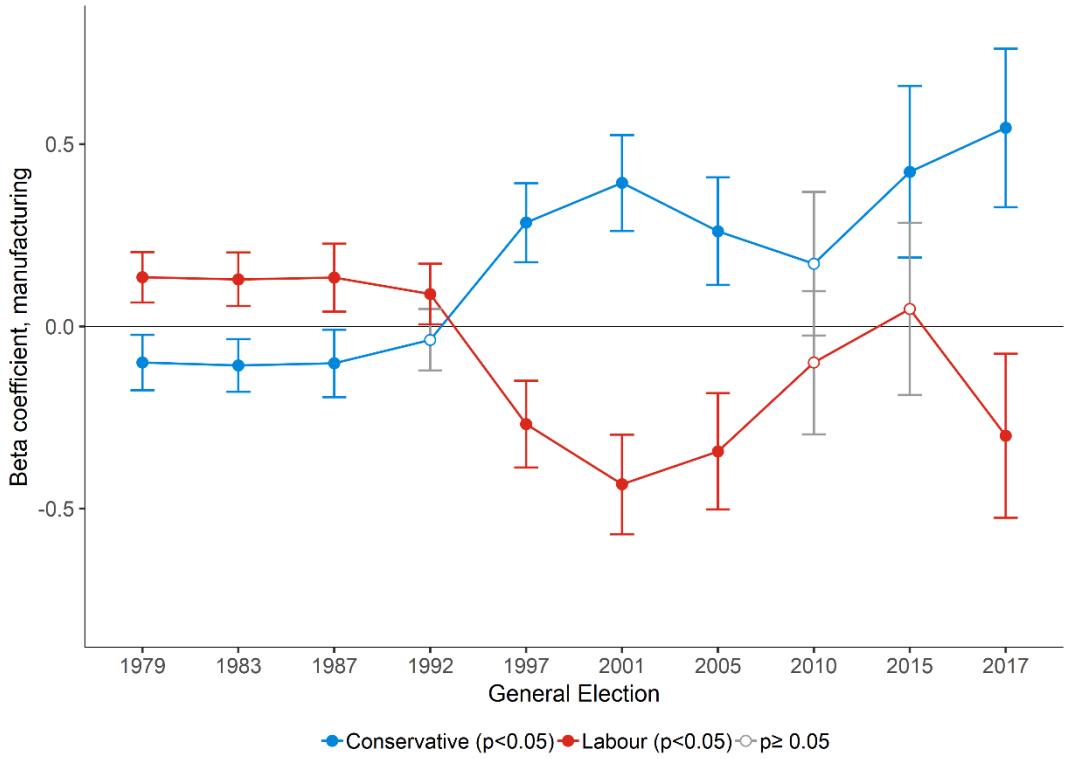

Figure 6.11 The changing value of the beta coefficients and statistical significance for the manufacturing variable across each General Election (1979-2017) by constituency

What is immediately most striking in Figure 6.11 is that, following a significant change in 1997, the proportion employed in manufacturing has, excluding 2010, had a statistically significant positive association with Conservative vote shares. In fact, in 2017, a 1 percentage point increase in the population employed in manufacturing is associated with a 0.55 point increase in the Conservative vote share. Although there was a positive bivariate correlation between manufacturing and Labour vote share until 2017 (see Figure 6.3), once other variables are accounted for, this positive effect, at least since 1997, disappears. In fact, excluding two years in which the association was statistically insignificant, there has been a negative effect of proportion employed in manufacturing on Labour vote share since 1997. The implication here is that although it seems likely that areas with many 'traditional working class' jobs in manufacturing are moving from Labour to the Conservatives, this is a trend that has been present since 1997, to which

2017 conforms unspectacularly. Once again, it could be that in 1997 areas that did not have many traditional working class jobs in manufacturing moved from the Conservatives towards Labour.

6.5.1.2 Ageing population

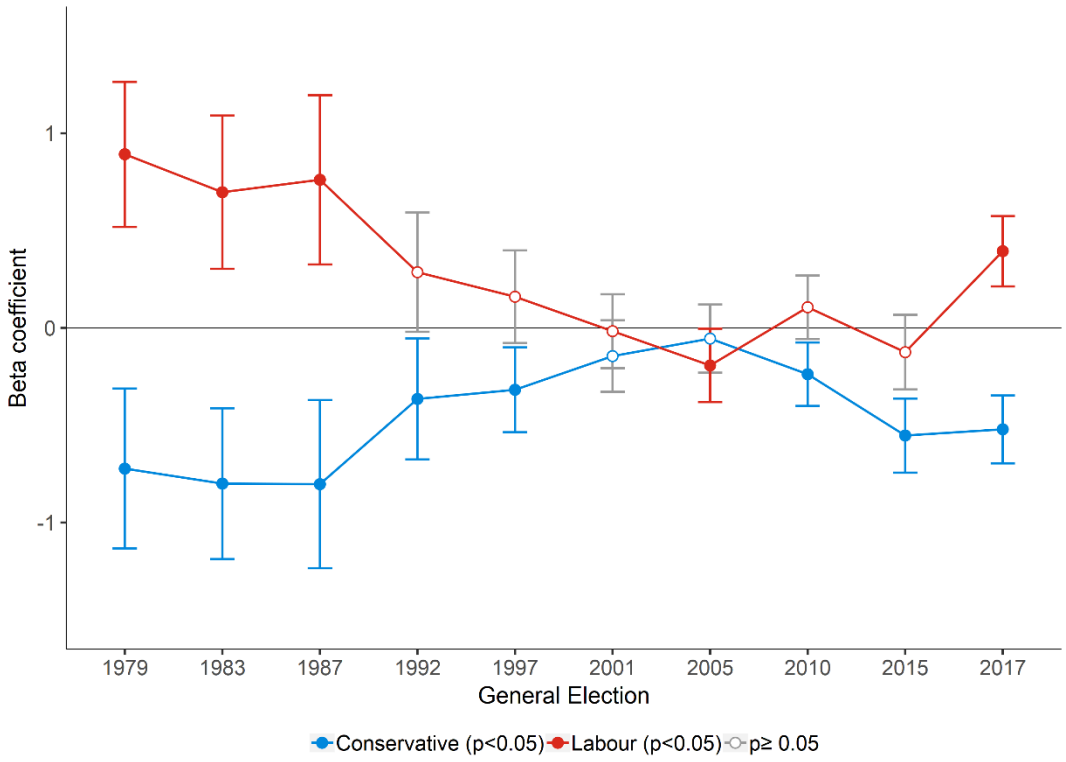

Figure 6.12 The changing value of the beta coefficients and statistical significance for the aged 16-29 variable across each General Election (1979-2017) by constituency

In Figure 6.12, there is a statistically significant negative association between the proportion aged 16-29 and the Conservative vote share in every General Election except 2001 and 2005. For Labour, the trend is less clear: before 1992, there was a statistically significant positive effect, but between 1992 and 2015 the variable became insignificant. In 2017, the proportion of young people once again had a statistically significant positive association with Labour vote shares – a 1 percentage point increase being associated with a mean 0.39 point vote share rise. Although this marks an effect that was not present at elections since 1992, it is likely, though not statistically proven, that there was a stronger positive association with Labour's vote share prior to 1992.

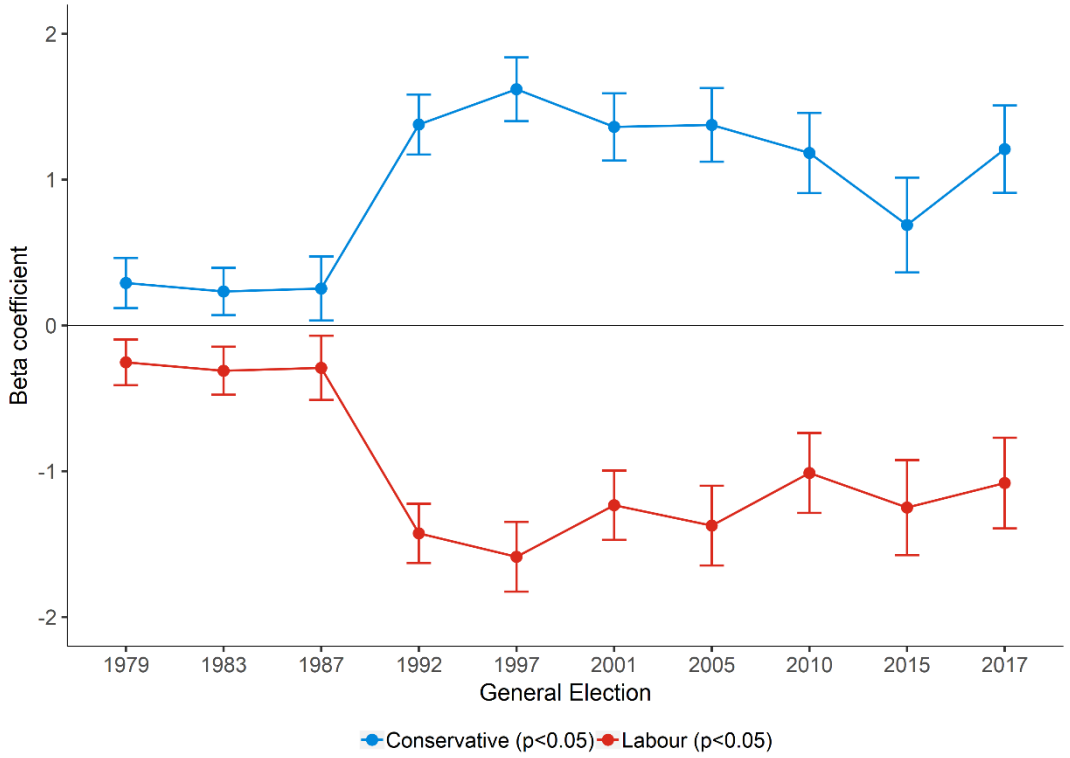

Figure 6.13 The changing value of the beta coefficients and statistical significance for the aged 65 plus variable across each General Election (1979-2017) by constituency

In Figure 6.13 the pattern between the proportion of older people and Labour and Conservative vote shares over time is much clearer. Before 1992, there was a small but significant negative effect of increasing the proportion of over 65s on Labour vote shares and a small but significant positive effect on Conservative vote shares. This effect strengthened significantly in 1992 and has since remained so: in 1997 for example, a 1 percentage point increase in the proportion aged 65 plus was associated with a 1.59 percentage point vote share decrease for Labour and a 1.62 percentage point increase for the Conservatives.

6.5.1.3 The opposite of urban and ethnically diverse

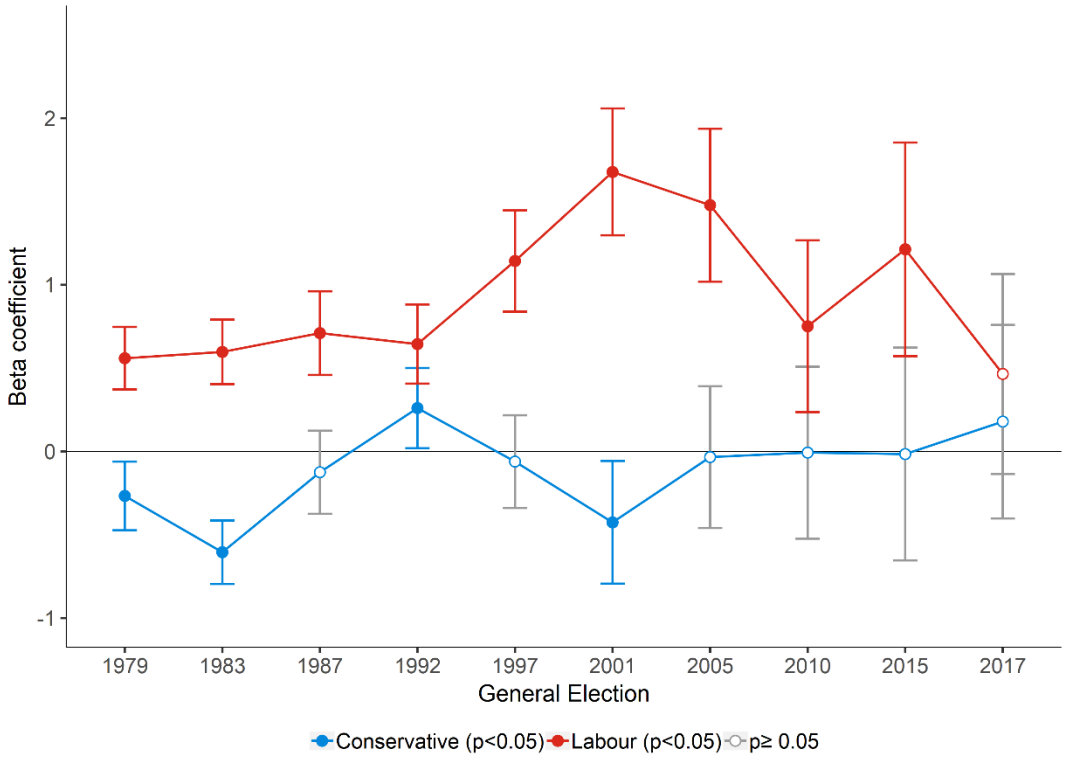

Figure 6.14 The changing value of the beta coefficients and statistical significance for the 'urban-ness' variable across each General Election (1979-2017) by constituency

From the bivariate correlation coefficients that were presented in Figure 6.5, it was evident that Labour's vote share had remained consistently positively associated with 'urban-ness' over time. When accounting for the effect of other characteristics, Figure 6.14 demonstrates that this association largely remains: a 1 percentage point increase in the population employed in non-agricultural industries ('urban-ness' proxy) was associated with a statistically significant increase in the Labour vote share at every election until 2017. In 2001, the effect was strongest, with a 1 point increase leading to a mean 1.7 point increase in Labour's vote share. This indicates that above and beyond the sociodemographic composition of the constituency, its urban/rural context has affected Labour's support significantly. The insignificance of the variable in 2017 indicates that whilst Labour's support remains as urban as ever (Figure 6.5), in 2017 it was not the urban context itself, but rather the demographic and socioeconomic composition of the urban area that had a positive impact upon their vote share. In contrast, for the Conservatives, the effect has fluctuated and since 2005 has been statistically insignificant.

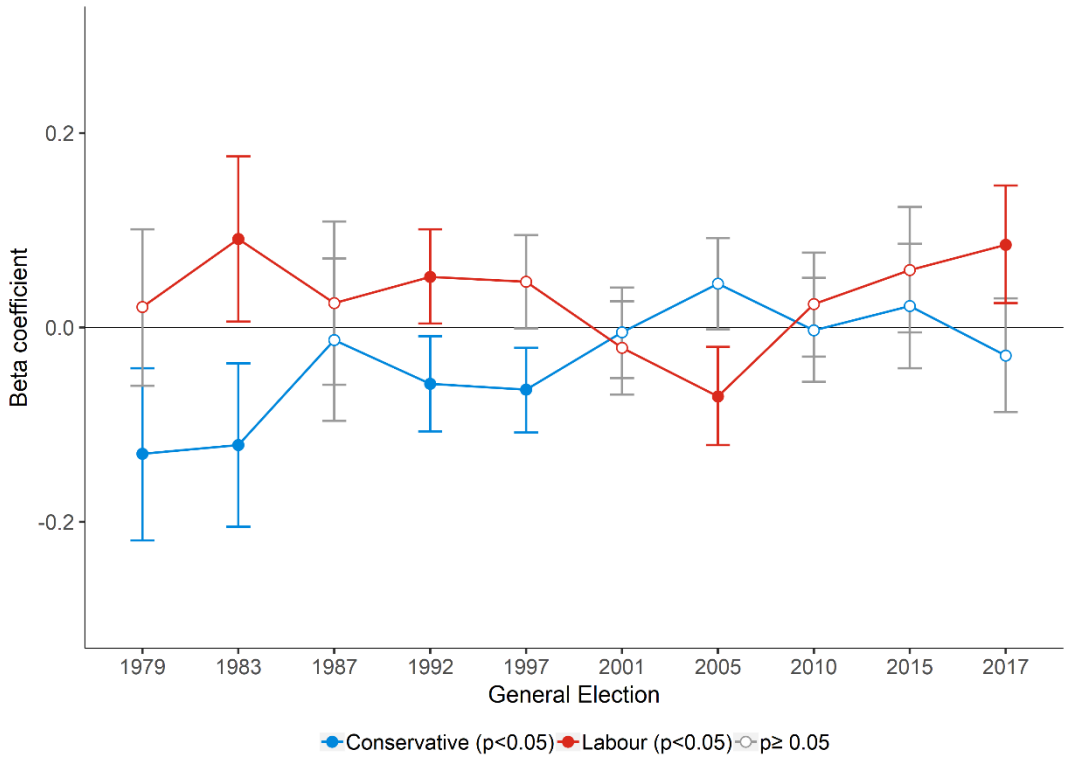

Figure 6.15 The changing value of the beta coefficients and statistical significance for the ethnic diversity variable across each General Election (1979-2017) by constituency

Given the moderate and increasing positive correlation between ethnic diversity and Labour vote shares reported in Figure 6.5, it comes as some surprise to see the limited effect of the variable in Figure 6.15. When ethnic diversity has been statistically significant, it has always had a negative impact on mean Conservative vote shares, and all but once in 2005 had a positive impact upon mean Labour vote shares, such as in 2017. Particularly in more recent elections, however, ethnic diversity has largely been an insignificant predictor.

The combination of the findings from Figure 6.5 and the lack of significance seen in these models suggests that ethnically diverse areas have low vote shares generally for the Conservatives and high shares for Labour not as a direct consequence of their ethnic makeup, but due to other factors, such as age breakdown. Indeed, ethnic diversity has been, especially in more recent elections, particularly strongly associated with the proportion of younger (positively) and older (negatively) people in an area (see Appendix A). By removing the age variables from the model and re-running them, in 2010 and 2015 a 1 percentage point increase in ethnic diversity results in a statistically significant mean 0.12 and 0.15 percentage point increase in Labour vote shares.

6.5.1.4 Far from 'cosmopolitan' places and universities

Figure 6.16 confirms that with increasing distance from the nearest university, there is a consistent negative association with Labour vote shares and a positive association with Conservative vote shares. Since 1987, the negative effect for Labour has strengthened, such that in 2017 more than at any previous election, the closer an area is to a university, the more likely it was to return a high Labour vote share. At the same time, for the Conservatives, this trend is reversed: increasing distance from the closest university has positively impacted upon their vote share at each election, except in 2015 when the variable was statistically insignificant.

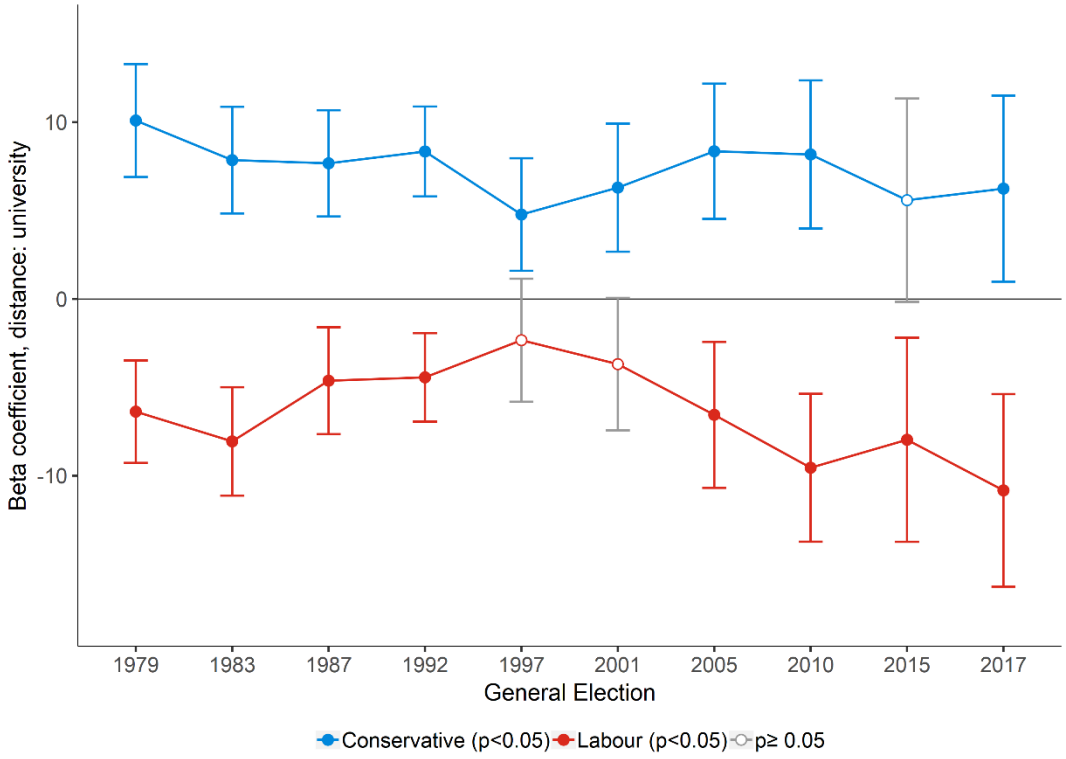

Figure 6.16 The changing value of the beta coefficients and statistical significance for the distance from the closest university variable across each General Election (1979-2017) by constituency

Regarding distance from the closest 'cosmopolitan' local authority, the clearest trend from Figure 6.17 is that the variable has become increasingly insignificant over time as a predictor of both Labour and Conservative vote shares. In fact, between 1979 and 1992 there were statistically significant relationships: increasing distance from the closest 'cosmopolitan' local authority resulted in an increasing vote share for Labour and a

decreasing vote share for the Conservatives. In 1997, there was a significant change in the coefficient for Labour and the effect of increasing distance became positive. Since then, it has become a largely statistically insignificant explanatory variable.

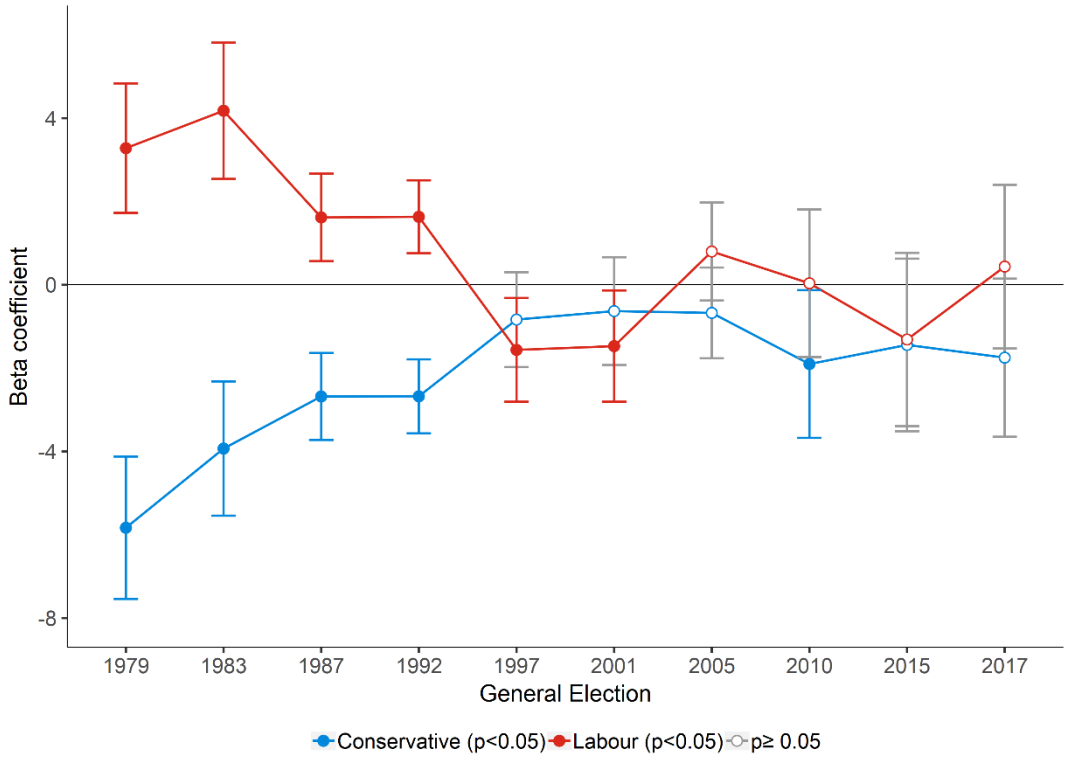

Figure 6.17 The changing value of the beta coefficients and statistical significance for the distance from the closest 'cosmopolitan' local authority variable across each General Election (1979-2017) by constituency

6.5.1.5 Few degree-level qualifications

In 1979, a 1 percentage point increase in the proportion of residents with degree-level qualifications resulted in a mean 0.83 percentage point decrease in the Labour vote share and a 0.75 percentage point increase in the Conservative vote share. After weakening considerably before 1997, there remained a weak positive Conservative association and weak negative Labour association until 2017 when, the effects reversed direction – a finding confirmed in the GLM and SUR models (Appendix D and Appendix E). In 2017, for the first time in this time series, a 1 percentage point increase in the proportion of residents with degree-level qualifications resulted in a statistically significant increase (0.20%) in Labour's vote share and a decrease in the Conservative vote share (-0.24%). Taking into account a host of other factors such as urban-ness, ethnic makeup, age and occupational characteristics, in 2017 a highly educated

constituency is likely to return a higher vote share for a Labour candidate than a less highly educated constituency.

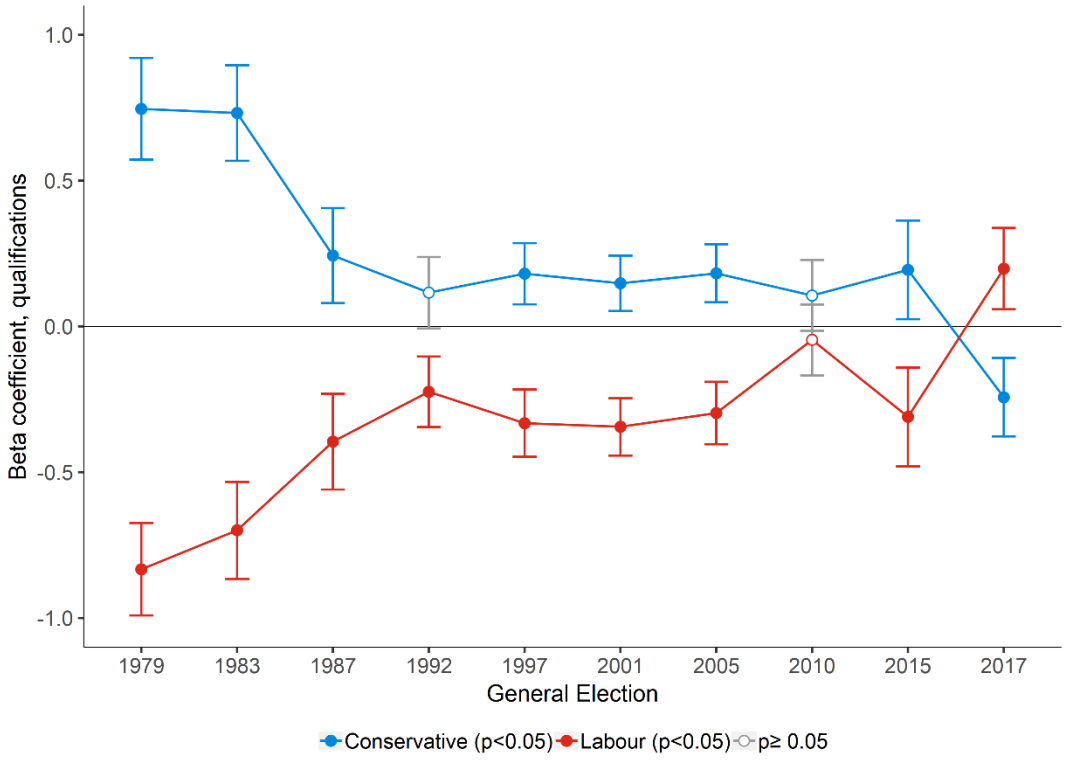

Figure 6.18 The changing value of the beta coefficients and statistical significance for the degree-level qualifications variable across each General Election (1979-2017) by constituency

Since 1992, there has been a statistically significant, positive interaction effect between degree-level qualifications and poor health on Labour vote shares (Appendix C). This implies that any effect on Labour vote shares of having a high proportion of degree holders is more positive in areas where there is also significant poverty – typically larger, urban areas. For the Conservatives, the interaction effect has been negative since 1992, implying that as the proportion in poor health increases, the proportion with a degree has an increasingly negative effect on Conservative vote shares.

6.5.2 'Left behind' constituencies: economic deprivation definition

6.5.2.1 Poor health (a proxy for poverty)

Consistent with the bivariate correlation coefficients, Figure 6.19 indicates that the poor health proxy for economic disadvantage has been consistently positively associated with Labour vote shares and negatively associated with Conservative vote shares across all elections. From the time fixed effect models (Appendix F), it is clear that even controlling for shocks, such as the 1997 landslide, poor health has a consistent positive association with Labour and negative association with Conservative vote shares across time. Given that poor health is a proxy that accurately captures socioeconomic disadvantage (see the moderate-strong positive correlation with unemployment in each year in Appendix A), it is clear that the impact of such disadvantage on Labour vote shares is not in decline.

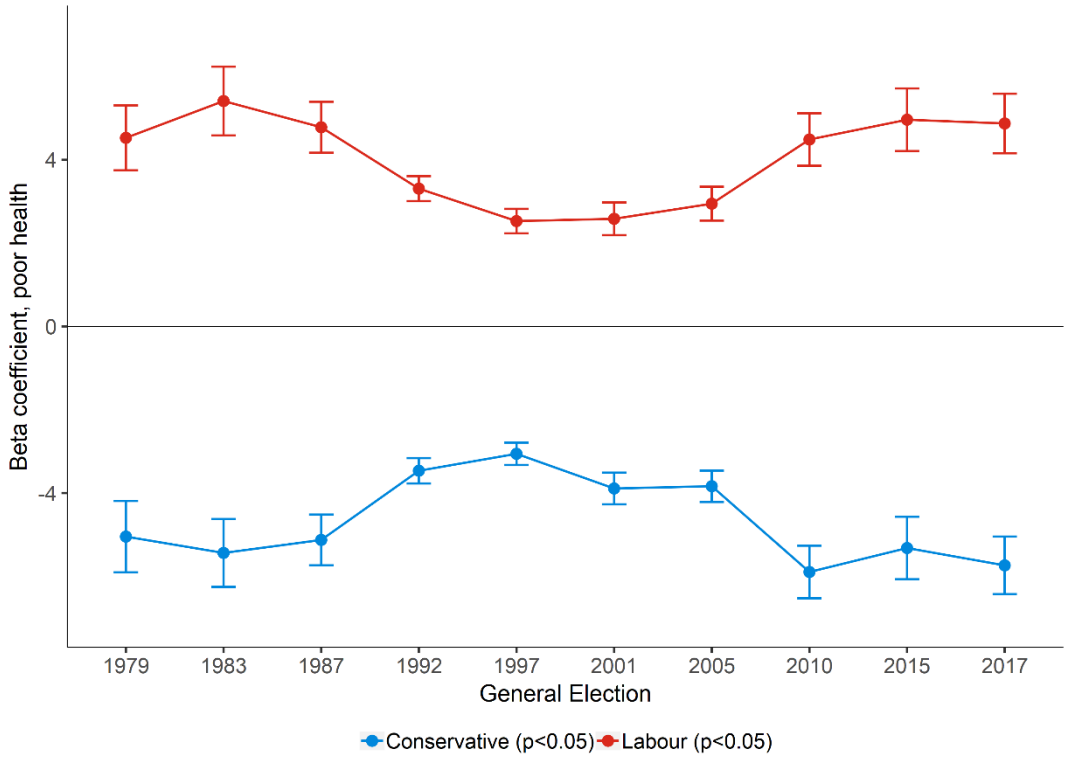

Figure 6.19 The changing value of the beta coefficients and statistical significance for the poor health variable across each General Election (1979-2017) by constituency

6.5.2.2 Unemployment

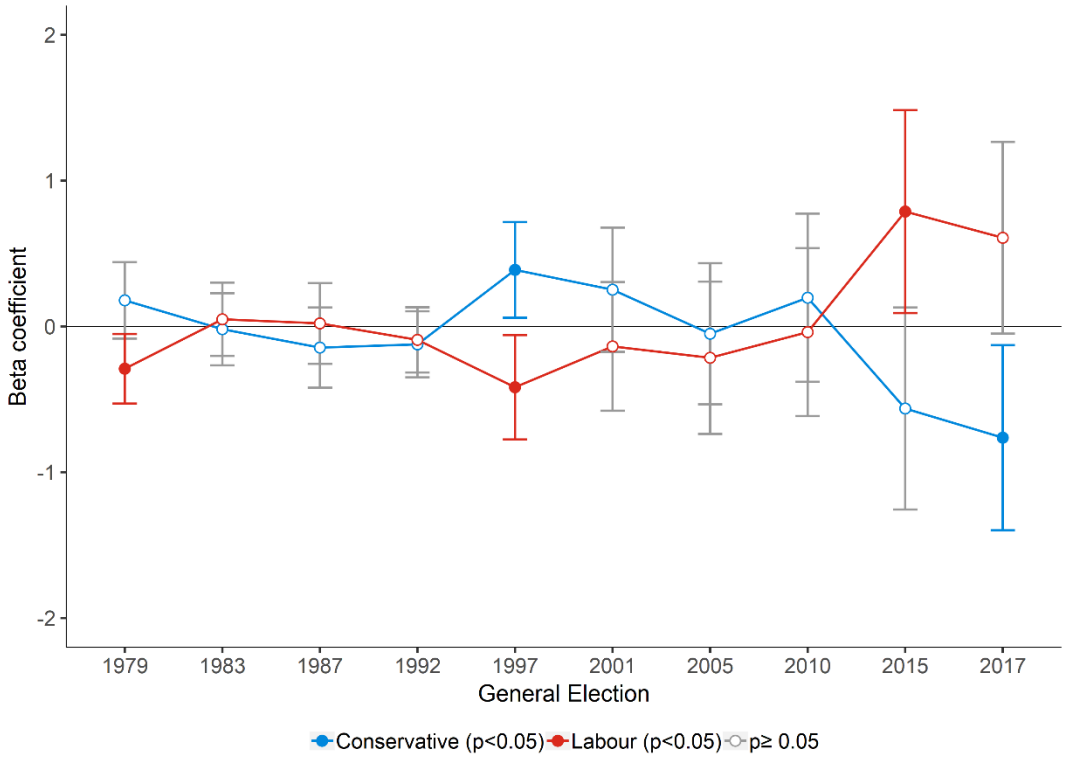

Figure 6.20 The changing value of the beta coefficients and statistical significance for the unemployment variable across each General Election (1979-2017) by constituency

Figure 6.20 indicates that unlike poor health, when holding other variables constant, the unemployment rate in a constituency has not been a consistently reliable predictor of either Labour or Conservative vote shares. This may be surprising given the especially strong association seen between unemployment and Labour's vote shares seen in Figure 6.8. However, it suggests that this positive effect of unemployment on Labour vote share is being accounted for by another variable, most likely poor health, to which it is positively correlated. To test for this confounding effect, the models have been re-run without the poor health variable included. In many cases, unemployment became a statistically significant positive predictor of Labour vote share. For example, in 1997, the beta coefficient reversed direction and became positive (1.54) and in 2017, it had a positive impact (2.99). In general, therefore, it is clear that while Labour may achieve high vote shares in areas with high levels of unemployment, any effect of unemployment is better 'explained' by the measure of poor health.

6.5.2.3 Social housing

Figure 6.21 shows that in elections prior to 2001, the proportion of social renters was positively associated with Labour's vote share and negatively associated with the Conservative vote share. Since then, social housing has not been a statistically significant predictor of Conservative electoral support at any election and has only had a positive effect for Labour in 2001 and 2015. Clearly, Labour's support is still much stronger in areas with higher proportions of socially-rented housing, but this pattern appears to be less clearly the result of social housing per se.

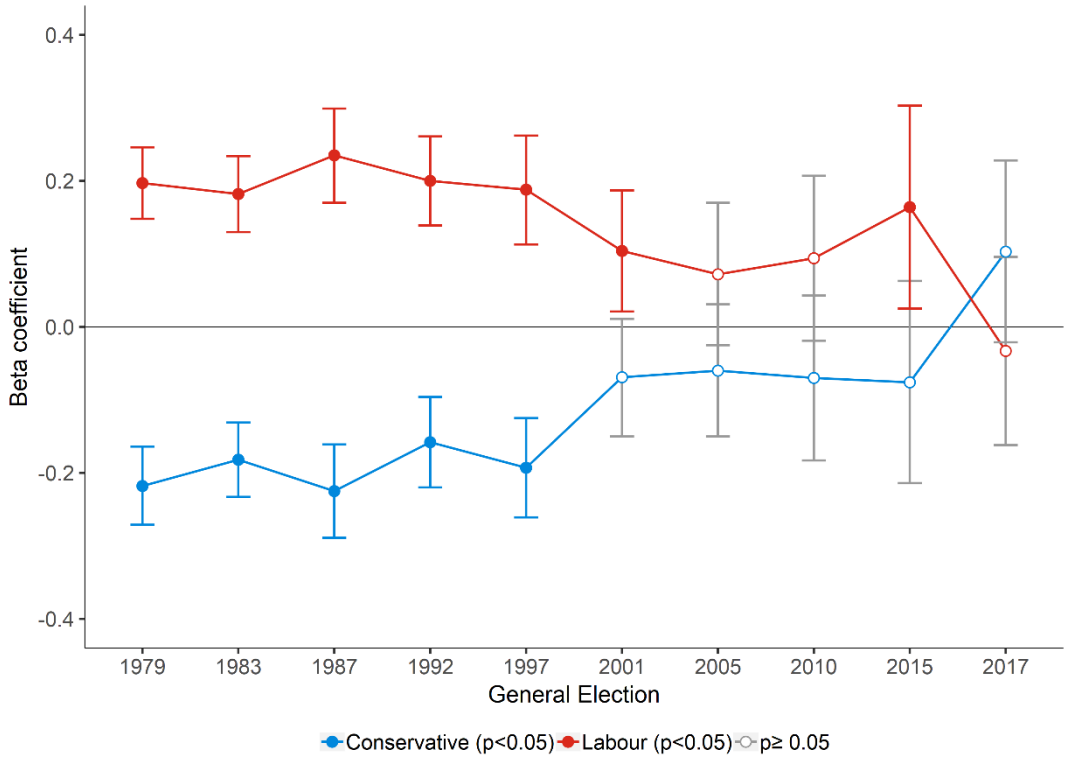

Figure 6.21 The changing value of the beta coefficients and statistical significance for the social housing variable across each General Election (1979-1992) by constituency

6.5.3 'Left behind' constituencies: precarious employment definition

6.5.3.1 A lack of secure employment

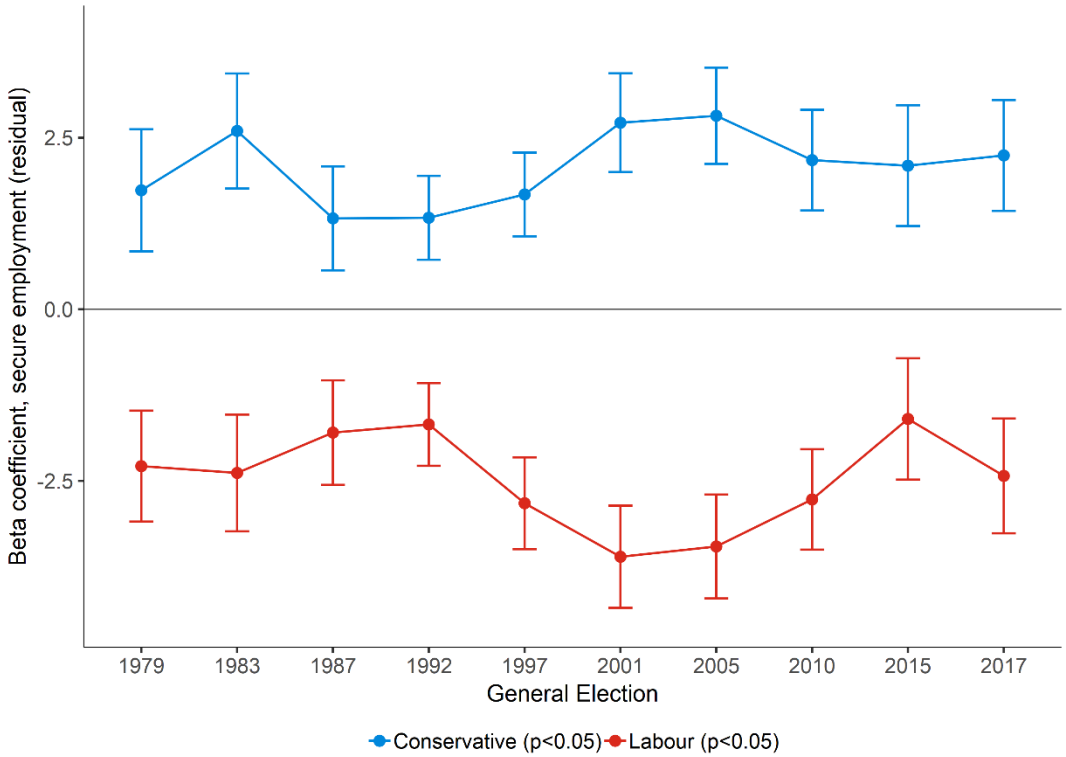

Figure 6.22 The changing value of the beta coefficients and statistical significance for the secure employment (residual) variable across each General Election (1979-2017) by constituency

Figure 6.22 shows the effect of the level of secure employment in a constituency upon the vote shares for the Conservative and Labour Party, *only once the effect of the proportion of residents with degree-level qualifications is accounted for*. The pattern over time is one of fluctuation but clarity: the level of secure employment in a constituency has a consistently positive effect on the Conservative vote share and a consistently negative effect on the Labour vote share *above and beyond the impact that it had already made through its relationship with degree-level qualifications*. In 2017 for example, a 1 percentage point increase in the level of secure employment in a constituency led to a mean decrease in the Labour vote share of 2.43 percentage points and an increase in the Conservative vote share of 2.24 percentage points. This coincides with the consistently positive bivariate correlations seen across elections between the proportion of people in precarious employment and Labour vote shares (see Figure 6.9). Labour's vote shares have been

consistently higher in areas with high levels of employment insecurity than areas characterised by less precarious jobs.

6.6 Standardised coefficients: the relative importance of each variable

Whilst most of the continuous variables that have been used to predict vote shares are measured in percentages (e.g. percent of the population with a level-four qualification), two of the geographical variables – distance from nearest 'cosmopolitan' local authority and distance from nearest university – are measured in decimal degrees and the secure employment and ethnic diversity variables are indexes. Thus, for ease in comparing the importance of each variable relative to all other variables, it is useful to remove their dependency on the unit of measurement by presenting standardised coefficients. These are presented for the 1979 and 2017 Conservative and Labour models, so as to be able to analyse the change that has occurred in the importance of each variable from the first General Election in this period to the last. The variables presented here are only those that were statistically significant at that particular election. Furthermore, it is important to remind the reader that the unit of measurement of the standardised coefficient is somewhat meaningless and should only be used in order to assess the relative impact of each explanatory variable on the Labour or Conservative vote shares.

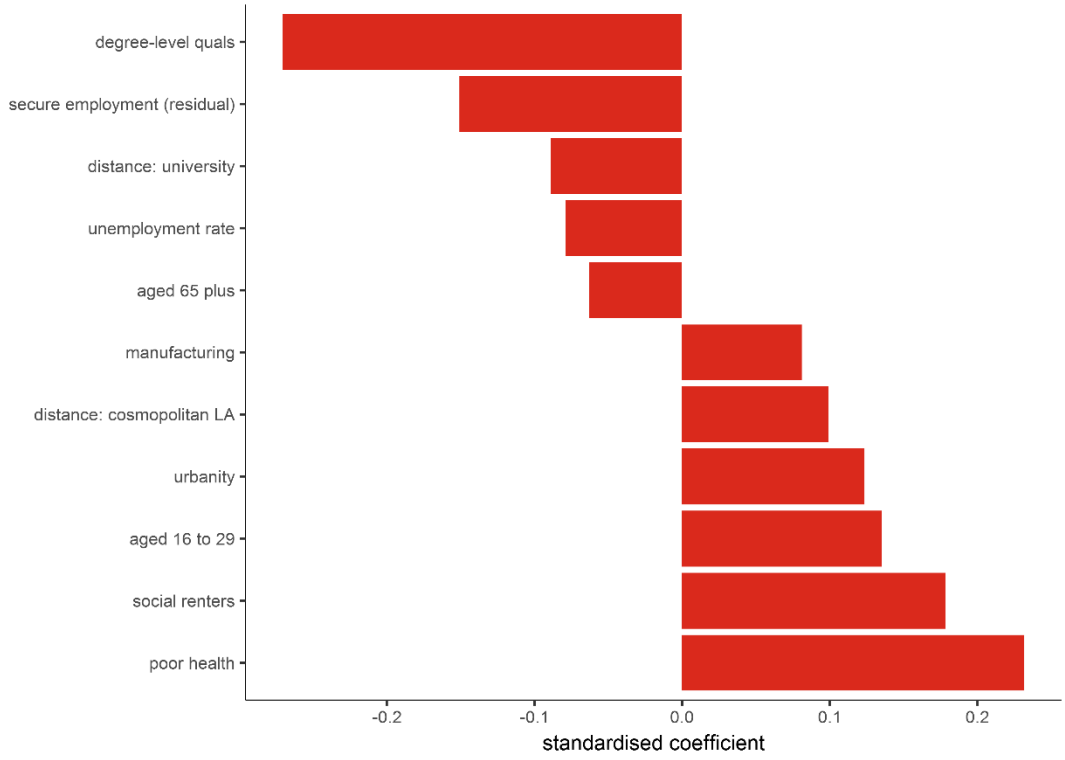

Figure 6.23 Statistically significant (p<0.05) standardised coefficients from OLS regression model of Labour vote shares in 1979

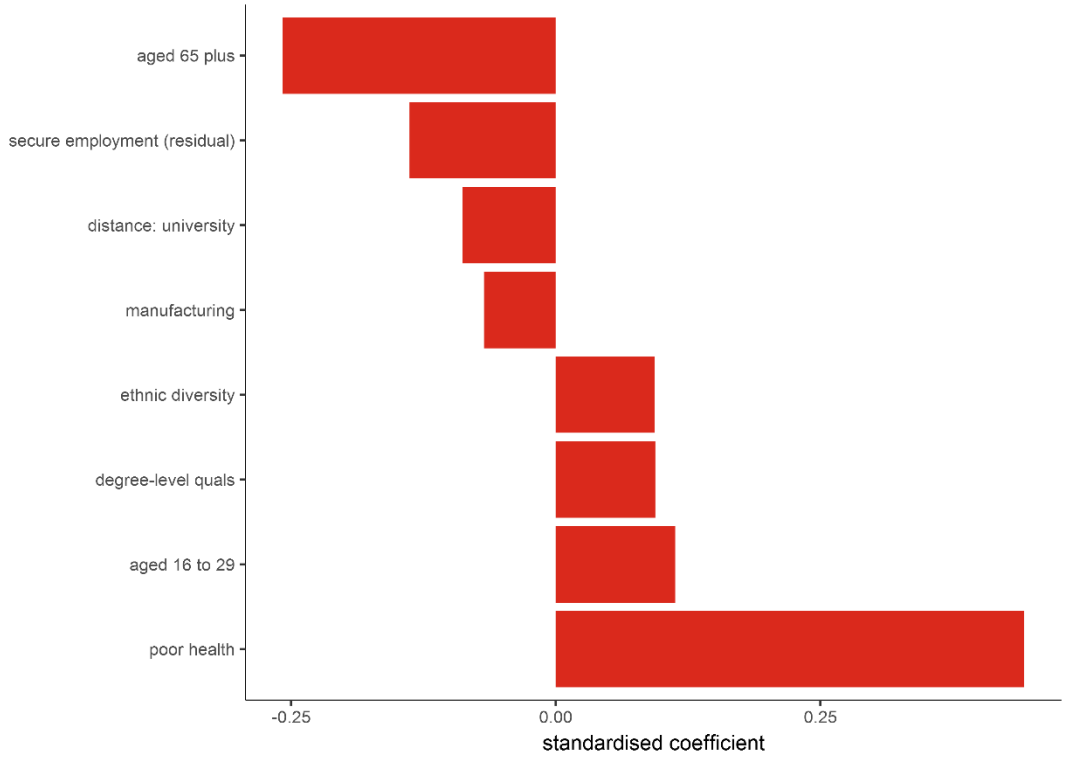

Figure 6.24 Statistically significant (p<0.05) standardised coefficients from OLS regression model of Labour vote shares in 2017

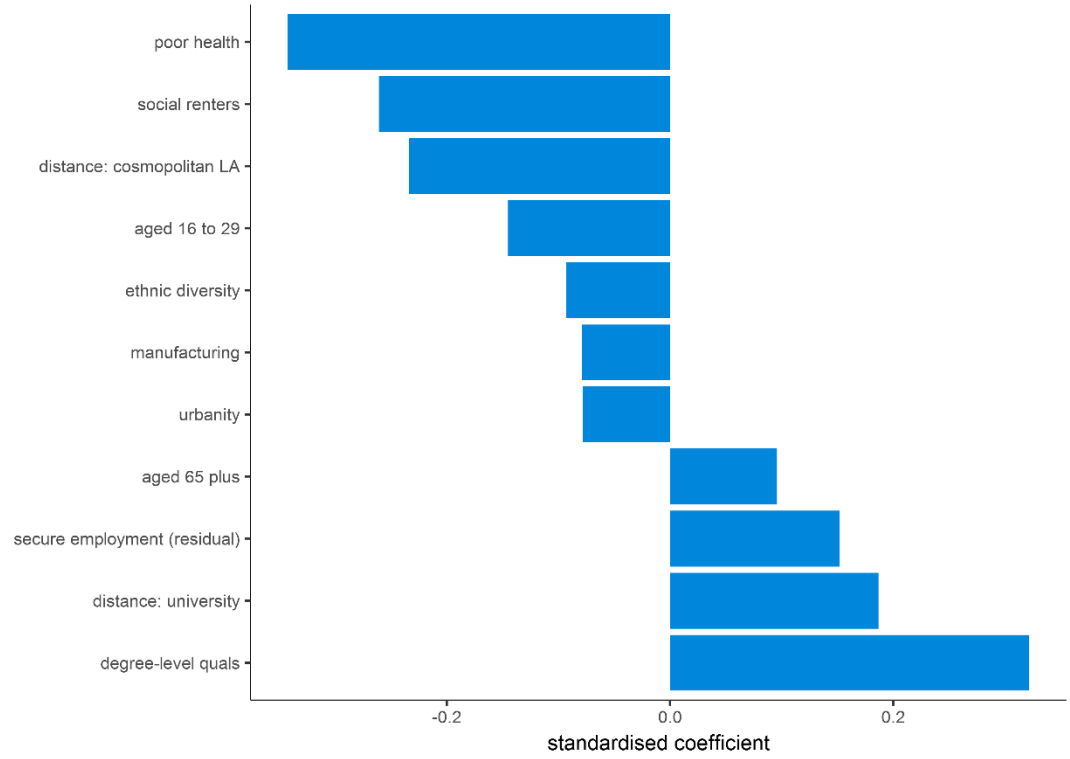

Figure 6.25 Statistically significant ($p<0.05$) standardised coefficients from OLS regression model of Conservative vote shares in 1979

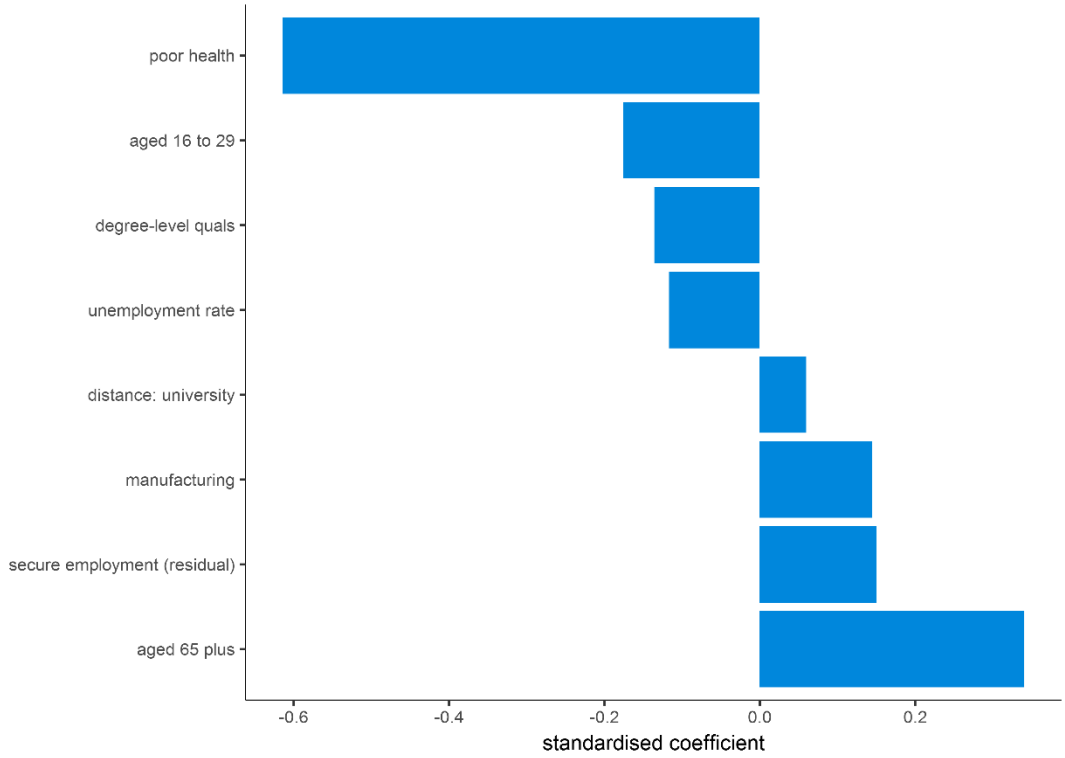

Figure 6.26 Statistically significant ($p<0.05$) standardised coefficients from OLS regression models of Conservative vote shares in 2017

From the standardised coefficients predicting Labour vote shares presented in Figure 6.23 and Figure 6.24, the clearest finding is the critical importance of the poor health variable in both 1979 and 2017. In both elections, poor health – a proxy that is used to capture poverty in an area – had the most substantial positive impact upon Labour's vote share. Its impact relative to the other variables in the models also increased from 1979 to 2017, further exemplifying how important poor health has become in explaining Labour's vote share. The opposite association can be observed in Figure 6.25 and Figure 6.26, where poor health was in 2017, by far the most important variable that had a negative impact upon the Conservative vote share. Similarly, the importance of secure employment (negative for Labour and positive for Conservative) is consistent from 1979 to 2017. As poor health and insecure labour captures the level of socioeconomic disadvantage in an area, it is clear from this that any researcher would be unwise to make any suggestion that the level of poverty or employment insecurity in a constituency can no longer be used to predict Labour or Conservative vote shares in particular.

While there is significant continuity in the relative importance of variables that account for socioeconomic disadvantage, there is an enormous change seen in other variables. In 1979, the proportion of the population with degree-level qualifications had a greater negative effect on Labour vote shares than any other variable. Yet, by 2017, the degree-level qualifications variable was no longer even a negative predictor, but instead had, after poor health and aged 18 to 29, the strongest relative positive impact on Labour vote shares. The exact reverse process can be seen in the relative importance of educational qualifications on the Conservative vote share. In short, in 1979, if an area had a low proportion of residents with degree-level educational qualifications, nothing could be a stronger indication that it would be a successful area for the Labour Party; by 2017, if an area had the same characteristic, this was more likely to result in a high Conservative vote share.

There are also significant changes in the relative importance of the proportion of residents at retirement age or older. While in 1979, relative to other variables, there was a weak positive effect on Conservative votes and a weak negative impact on Labour votes, this has strengthened over time. In fact, in 2017, as the bar charts show, the proportion of residents aged 65 plus had the strongest positive impact on Conservative vote shares and the strongest negative impact on Labour vote shares relative to the other variables in the model. Whilst this had increased in relative importance, the effect of increasing social housing has declined from being a critically important predictor of increased Labour support and decreased Conservative support to having no discernible impact.

6.7 Diagnostics: checking key assumptions

Although this research does not aim for the most powerful model at each election, it is still important to perform some diagnostic checks. As outlined in Section 5.7 of Chapter 5, it is necessary to ensure that key assumptions of OLS models are met in order to make any inferences about relationships between independent and dependent variables.

Table 6.4 identifies the number of large standardised residuals - those above 2 or below -2 - in each model. Given there are between 560 and 572 observations depending on the election year, generally between 4 and 5% of the residuals fall outside of these limits - precisely what might be expected in a normal distribution. One might also expect that only 1% of cases fall outside of the range from -2.5 to +2.5. In these models, the

percentage of residuals outside these limits ranges from 1.25% for the Labour model in 2010 to 2.68% in the Conservative models in 1987 and 1997. Whilst this is not an extraordinarily high number, this is suggestive of a significant number of outliers that may be of interest in Chapter 8 and 9.

Table 6.4 The number and proportion of large residuals (>2 or <-2) in each model

Model year	Model party	Large residuals (n)	Large residuals (%)
1979	Labour	29	5.18
	Conservative	28	5.00
1983	Labour	27	4.82
	Conservative	24	4.29
1987	Labour	27	4.82
	Conservative	24	4.29
1992	Labour	30	5.35
	Conservative	25	4.46
1997	Labour	25	4.41
	Conservative	27	4.76
2001	Labour	27	4.75
	Conservative	20	3.51
2005	Labour	23	4.04
	Conservative	23	4.04
2010	Labour	29	5.07
	Conservative	27	4.72
2015	Labour	30	5.24
	Conservative	28	4.90
2017	Labour	29	5.07
	Conservative	31	5.42

The results of visual checks of various assumptions regarding the residuals are presented in Appendix I: plots of fitted values against studentised residuals to check for heteroscedasticity and a QQ plot to analyse the extent to which the residuals are normally distributed. On the whole, the distributions of the residuals are normal, as shown by the rather random distribution of dots in the fitted-studentised residual graphs and the proximity of the residuals to the line in the QQ plots. Nonetheless, there is some irregularity, especially in the left tail of some of the QQ plots – of particular note being the 1992 Conservative Party and Labour Party QQ plots which appear to be 'skewed left' somewhat. They show some evidence of non-normality, though this is not

especially concerning given that the vast majority of the points are linearly distributed and the number of observations not especially small. In such circumstances, 'only a clear deviation from normality should necessarily spur some action to change the model' (Faraway, 2016, p. 16).

Even in the less normal cases, it is only the points at the extremes of the QQ plot that show significant deviance from the lines, indicating that the majority of the points are normally distributed. Most of these outliers are constituencies in which the models have over-predicted the Conservative or Labour vote shares. These outliers are the subject of great attention in Chapter 8 and Chapter 9 of this thesis. From identifying these constituencies in the large residual analysis in Appendix H, two points are immediately noted. First, a significant number of the more extreme outliers are Welsh constituencies in which the strong performance of nationalist party Plaid Cymru has reduced Conservative and Labour vote shares considerably. While including Plaid Cymru's vote share in the model was considered, it was deemed unnecessary because of the near-zero variance of the measure in an England/Wales model and because these outliers are not having a significant impact upon the model. That is confirmed by their Cook's discrete values – used to analyse if extreme observations are unduly influencing the model fit. All fall well below 1, which is the widely accepted value from which a particular case is thought to be over-influencing the model as a whole (Cook and Weisberg, 1982). The list of all of the constituencies with large residuals, their residual values and their Cook's distance values can be found in Appendix H.

6.8 Chapter summary: are 'left behind' areas leaving an increasingly 'cosmopolitan' Labour behind?

The detailed statistical analysis of each election between 1979 and 2017 that has been presented in this section has shown the 'left behind' thesis to be far too simplistic. Ultimately, understanding whether so-called 'left behind' places have left Labour behind is determined by the definition of 'left behind' that one uses. If we employ the conventional 'left behind' definition outlined in Chapter 1 to describe areas with low levels of cultural capital (far from the closest university), large proportions of routine and semi-routine employment, manufacturing jobs, older people and low levels of education, then there is significant evidence to support the idea that 'left behind' places

are moving away from Labour to the Conservatives. If, however, we employ a conceptualisation of 'left-behindedness' to describe those areas of the country that are actually most economically disadvantaged – often those same urban areas occupied by young, so-called 'cosmopolitan' residents - then there is no evidence at all of any shift away from Labour to the Conservatives. Furthermore, one might also define a 'left behind' area as one in which a large proportion of residents have insecure or precarious employment. The evidence presented here suggests that Labour's support remains strong in such areas, with insecure labour a key positive predictor of their vote share.

The findings here suggest a long-term trend in which conventional 'left behind' areas are gradually moving from the Labour Party towards the Conservatives. In particular, areas in which manufacturing industries are prevalent have shown a marked shift towards the Conservatives over this time period, with the level of manufacturing becoming an important positive predictor of the level of Conservative support. In addition, relative to other areas, Labour's support has decreased in areas with many older people, low proportions of young people and far removed from universities. Perhaps more telling is the dramatic shift in association with educational qualifications. While Labour still gain marginally higher levels of support than the Conservatives in areas with low levels of education, the models show that it is not education itself that is driving this pattern. In fact, once other variables are accounted for, the greater the proportion of the population with degree-level qualifications, the more likely there will be an increased vote share for Labour. Again, on this characteristic of the conventional 'left behind' definition, Labour are losing ground to the Conservatives. This might be evidence of an increasingly middle-class Labour Party with its appeal centred on ethnically diverse, urban areas that are home to large numbers of middle-class graduates who are typically employed in the service sector and renting their homes. Yet it is also true that many of these areas are also home to some of the most economically disadvantaged communities in the country. What's more, it is perhaps more suggestive of a long-term split in the political mood of the middle-class, since the Conservatives remain dominant in towns and suburbs with high proportions of older, largely white, home-owning middle-class residents who are employed in secure, managerial and professional jobs.

Whilst there is evidence of an increasingly 'cosmopolitan' Labour losing ground to the Conservatives amongst 'left behind' constituencies, this is only one part of the story. If a definition of 'left behind' is adopted that captures areas with the most pronounced

economic deprivation, there is no evidence to suggest that 'left behind' areas are moving from Labour to the Conservatives. In fact, the extent of poor health in an area – a proxy for poverty levels - remains the most important constituency-level characteristic that results in increased Labour vote shares and decreased Conservative vote shares. At the same time, there has been no change in the extent to which Labour's support is centred in areas with high levels of social housing, unemployment and poor health, even if social housing itself is no longer a positive predictor of Labour vote shares in the 2017 model. If the economic deprivation definition of 'left behind' is adopted, it seems premature to suggest that they have even begun abandoning the Labour Party for the Conservatives. That is, of course, if we recognise that those living in deprivation in ethnically diverse cities can be 'left behind' and not simply cast as 'cosmopolitans' or 'Anywheres' (Goodhart, 2017). Labour's superiority over the Conservatives was as strong in the most deprived areas of England and Wales in 2017 as it was when Margaret Thatcher came to power.

The Conservatives have also failed to make significant inroads into Labour support in constituencies with high levels of insecure labour. In fact, after accounting for its shared effect explained by the educational qualifications variable, secure employment was a positive predictor of Conservative support in every election between 1979 and 2017, with the opposite the case for Labour. This confirms that when employing a definition of 'left behind' that encompasses areas with significant precarious employment, there is no evidence of a shift from Labour to the Conservatives over time. Rather, it lends support to Jennings and Stoker's (2017) findings that Labour's support 'shored up' in areas with high proportions of 'precariats' and increased slightly in more 'cosmopolitan' areas between 2005 and 2017. Nonetheless, caution should be urged in assuming that the anger and anxiety of the increasing numbers of 'precariats' described by Standing (2011) will automatically generate a new class cleavage or mass support for Labour. While places they inhabit may be, as Standing (2015) suggests, firmly on Labour's side, further analysis of the data shows that they have – with exceptions – had disproportionately decreasing levels of turnout between 1979 and 2015. This reflects longstanding evidence of a negative association between turnout and economic insecurity (Wolfinger and Rosenstone, 1980; Dempsey and Johnston, 2018; Heath, 2018).

In order to establish a core bloc of voters in the 'precariat' 'mass class' (Standing, 2015), Labour might focus on strategies to increase turnout. For the Conservatives, they may benefit from an ageing population, but 'traditional working-class' areas of the country are shrinking. Courting a demographic group that is likely to become increasingly superseded by the combination of graduates and insecure 'precariats' living in urban areas with low levels of home ownership might not represent the most sensible strategy to achieving long-term electoral success. This, of course, is dependent on the relative size and spatial distribution of these different demographic groups – a particular problem for Labour whose support could become too heavily localised in urban areas that are increasingly home to many parts of their core demographic groups: young, ethnically diverse, university-educated residents as well as the most economically disadvantaged.

To conclude, it is clear that there is a long-term process in which conventional 'left behind' constituencies have become less positively associated with Labour support and more positively associated with support for the Conservatives. There is evidence to suggest that this process accelerated most significantly in 1997 and somewhat in 2017. It may be the case that conventionally 'left behind' areas have moved from Labour to the Conservatives and/or constituencies that do not fit the conventional 'left behind' definition have moved in the opposite direction. Yet if 'left behind' is reconceptualised to refer to the most economically disadvantaged areas, it is clear that Labour's support remains as strong as ever in these kinds of 'left behind' areas. What's more, this chapter shows that Labour's support remains particularly strong in areas defined by employment insecurity – the final definition of 'left-behindedness'. On these grounds, this research demonstrates the need for a multidimensional understanding of 'left-behindedness' that can bring about a more nuanced understanding of the geographical manifestations of changing electoral cleavages.

Chapter 7. Analysis 2: 'Left behind' as a process

7.1 Introduction

In this section of the research, the lens shifts away from an exploration of the effects of sociodemographic characteristics of constituencies upon elections at particular points in time. Instead, the aim is to uncover the relationships between the changing nature of constituencies and the changing support for the two main political parties. The key idea of conducting statistical analyses and producing models to understand changing relationships over time is that it allows for an understanding of any 'left behind' concept as a process rather than as something static. When creating conceptualisations of 'left-behindedness' at each election, as in the previous chapter, the extent to which a constituency might be considered 'left behind' is always relative to other constituencies at that particular point in time. While this is a useful place to begin, it tells us nothing about the relationship between a particular place today and its own history. In short, it is important to understand that a place might be considered 'left behind' relative to how it used to be rather than simply relative to other places. Any account of 'left-behindedness' should thereby capture the relative economic decline or improvement in an area and any associated sociodemographic changes.

Some parliamentary constituencies may appear, in 2017, to be rather average in terms of their economic prosperity, yet this conceals quite significant decline over time. For example, Gravesham in Kent is a constituency incorporating most of Gravesend and the associated countryside to the south. In 2017, the area had average levels of home ownership (Gravesham: 64.6%; mean: 64.3%), social housing (Gravesham: 17.3%; mean: 17.4%), an average proportion of residents living with three or four forms of deprivation (Gravesham: 5.8%; mean: 5.7%) and only a slightly higher than average proportion of residents in semi-routine or routine employment (Gravesham: 29.0%; mean: 25.5%). However, this rather average profile in 2017 conceals the fact that on many measures the constituency has experienced a period of relative decline: between 1979 and 2017, the increase in home ownership was considerably lower than the mean (Gravesham: 1.8%; mean: 5.5%), the unemployment rate has declined less significantly (Gravesham: -1.7%; mean: -3.2%) and the increase in low-skilled work has been higher

than the mean (Gravesham: 12.3%; mean: 7.4%). Gravesham might not *be* 'left behind' but instead is *being* 'left behind'.

Residents living in some areas that might not have the highest levels of deprivation or low-skilled, precarious employment may feel as though their local area has fallen behind, and in some cases such as Gravesham, this may be an accurate assessment. Measuring this change should encompass a wide time-frame that can uncover any entrenched rather than short-lived processes of decline, a point emphasised by Watson (2018, p. 20): 'The "left behind" are not so much those that sense they have fallen behind most recently as those that have fallen furthest over a more sustained period of time'. By using spatial overlaying to generate data for the 1979 General Election year at the constituency boundaries used in 2017, this chapter encompasses a long-term assessment of the relationship between decline and vote share changes between 1979 and 2017. At the same time, using data generated for Chapter 6, shorter-term fluctuations between 1979-1992, 1992-2005 and 2005-2017 are explored. This informs the primary question of this chapter (research question 2 from Chapter 1.2):

How has electoral support changed for Labour and the Conservatives in places that have become increasingly 'left behind'?

Much like Chapter 6, this question will be explored using different conceptualisations of a 'left behind' process, in order to ask (a manifestation of research question 3 from Chapter 1.2):

How do the relationships between increasingly 'left behind' places and changes in Labour/Conservative support depend on a particular 'left behind' definition?

7.2 Methodological considerations

This chapter begins by analysing the relationships between changes in the extent to which areas are 'left behind' and changes in Labour and Conservative vote shares, according to the three conceptualisations of 'left-behindedness' outlined in Chapter 5. It then expands upon these definitions to consider other changes that might constitute 'decline' or 'improvement' in areas. A broad analysis of changing support in areas of socioeconomic decline is followed by a comparison of changing levels of support in areas that recovered from deindustrialisation and those that have continued to decline.

Finally, multiple linear regression models are analysed to clarify which change variables predict change in Labour and Conservative vote shares for different time periods.

7.2.1 Variable selection

The variable selection for the exploratory analysis and the statistical models that follow is largely based on data availability over the whole time period. A very similar set of variables to those used in Chapter 6 is employed, with some small amendments. Firstly, the change in distance from closest university and 'cosmopolitan' local authority was not considered worthy of examination, as the values are unlikely to change sufficiently for most areas. Secondly, included in the conventional 'left behind' definition is decline in the total population size, on the basis that areas that are improving are likely to also be growing in population. Thirdly, the 'precarious employment' conceptualisation of 'left-behindedness' has been extended to a broader 'precarious situation' measure that includes private renters and housing affordability – the definition of which is discussed in Section 7.2.2. This variable has been included because housing affordability – barely an issue in the 1980s – has become a key issue in many parts of the country over time. The change variables outlined in Tables 7.1-7.3 constitute the percentage point change in the value between the closest census years or the election year when data have been interpolated, as outlined in Section 5.6.1 in Chapter 5. For the ethnic diversity variable, the change is the change in the Herfindahl index value.

Table 7.1 Change variables used in the conventional 'left behind' definition and whether an above mean or below mean change contributes becoming 'left behind'

Conventional 'left behind' definition	
Change variable	**'Left behind' = above mean or below mean change?**
Employed in manufacturing	above
Routine/semi-routine occupations	above
Degree-level qualifications	below
Age 16 to 29	below
Age 65 plus	above
Total population	below
Ethnic diversity	below
Gross migration	below
Urban-ness	below
Employed in 'cosmopolitan' industries	below

Table 7.2 Change variables used in the economic deprivation 'left behind' definition and whether an above mean or below mean change contributes becoming 'left behind'

Economic deprivation 'left behind' definition	
Change variable	**'Left behind' = above mean or below mean change?**
Poor health	above
Social renters	above
Unemployment rate	above
Household deprivation	above

Table 7.3 Change variables used in the precarious situation 'left behind' definition and whether an above mean or below mean change contributes becoming 'left behind'

Precarious situation 'left behind' definition	
Change variable	**'Left behind' = above mean or below mean change?**
'Precariat' occupations	above
Housing unaffordability	above
Private renters	above

There are two new change variables in Tables 7.1-7.3 that are used in this chapter: total population and house affordability:

Percent change in the total population: the change in the population size divided by the population in the base year multiplied by 100. As there are additional estimates of constituency populations for years since the 2011 census up to 2016, data from 2016 has been used as the 2017 value in the relevant change calculations (1979-2017, 2005-2017). These estimates come from the Office for National Statistics (2017a).

Change in housing unaffordability: house unaffordability is calculated as a ratio - the median house price divided by median annual earnings in the constituency. The change is subsequently the change in this ratio between two points in time. An increase in the value of the index means a decrease in affordability. Due to data availability, this change value has only been created for the time period between the 2010 and 2014. Subsequently, the measure has only been used with change between the 2005 and 2017 elections. Due to a small number of constituencies – all in London - with extremely large increases the ratio value, a logarithmic scale is used in this analysis. The median house price refers to the median sale price of all dwellings by parliamentary constituency, with the data coming from the Office for National Statistics (2015a). Data for median earnings across all employees for each parliamentary constituency is also courtesy of the Office for National Statistics (2018a). Due to lack of data availability, data for 2017 comes from 2014 data.

Although most of the variables have been harmonised across census years so that the percentage point change captures the precise difference between two identical variables, this was not always possible. The measures used for the base year and end year values to calculate the change statistic are for some variables slightly different. Any differences across census years are highlighted for each variable in Chapter 5.4. For example, for the ethnic diversity variable, in the 1979-1992 analysis, country of birth has been used in the calculation, whereas in the 1992-2005 and 2005-2017 analyses, ethnic group has been used. For the 1979-2017 model, harmonisation was not possible as the detailed country of birth classification in the 1981 census is not available in the 2011 census. Caution should therefore be urged as the resulting change variable is constructed based on the country of birth index used in 1979 and the ethnic group index used in 2017. Similarly, due to data incompatibility, there is no 1992-2005 change in semi-routine/routine occupations variable and for 1979-2017, caution should be urged due to the different measure used in the base year and end year.

Change in poor health: Calculating change in the proportion of the population in poor health was made particularly complicated by changes to the questions used in censuses. As such, the measures used in the change models differ from those outlined in Chapter 5. For the periods 1992-2005 and 2005-2017, the measure of poor health is the proportion of the population with a limiting long-term illness. In the 2005-2017 analysis, the 2017 measure (using the 2011 census) is the proportion of the population

who answered 'Yes' to having a limiting long-term illness, health problem or disability. The 2005 measure in the same analysis comes from the 2001 census, where the question had three rather than two possible answers, with 'Yes, limited a lot', 'Yes, limited a little' and 'No'. A broad comparison is achieved here between 2001 and 2011 by combining the two 'yes' response categories in 2001 into one 'yes' category. In the 1979-1992 and 1979-2017 analyses, the change in percentage of residents aged 16 and over that were permanently sick has been used for both base year and end year values.

Finally, there are some variables that do not necessarily fit into the conventional, economic deprivation or precarious situation definitions of 'left behind' places but are included in the analysis because they offer additional insights. The descriptions of the extra variables used in the chapter – managerial/professional occupation, home owners and private renters – can be found in Chapter 5.4.4.

7.2.2 Additional variables used in the 2005-2017 analysis

The availability of additional data since the 2011 census has allowed for extra variables to be included in the exploratory analysis of the 2005-2017 period. These variables are not included in the 2005-2017 model to ensure that all models use the same explanatory variables so that clear comparisons can be made of variable coefficients across time periods. In addition to the aforementioned house price affordability variable, these are as follows:

Change in business counts (total): change in the absolute number of enterprises that were live in the constituency at a reference date in March of a particular year (Office for National Statistics, 2018d). These data are only available for the 2010-2017 time period.

Change in weekly income: change in the median weekly income of all residents in the constituency. This is based on where people live not where they work, as there could be a discrepancy between the two (Office for National Statistics, 2018a). These data are only available for the 2010-2017 time period.

Change in house prices: change in the median house price of house sales (all dwelling types) in a constituency (Office for National Statistics, 2015a). These data are available for the 2005-2014 time period.

Change in university entry rates: the change in the proportion of 18 year olds accepted to higher education through The Universities and Colleges Admissions Service (UCAS) from each parliamentary constituency (UCAS, 2016). These data are only available for the 2006-2016 time period.

7.3 Changes in 'left-behindedness' and vote share change

This section aims to understand the extent to which support for Labour and the Conservatives has changed over time in places that have become increasingly 'left behind' according to different definitions. To do so, bivariate scatterplots are presented with the relationships between changing sociodemographic variables and changing vote shares explored mostly between 1979 and 2017, but also between shorter time periods where discrepancies are found.

7.3.1 Change in conventional 'left behind' variables

The expectation with regard to the more conventional 'left behind' characteristics is that areas that have become increasingly 'left behind' on this definition have generally seen declining Labour support and increasing Conservative support over time. This idea is tested in this section that explores the bivariate associations between changes in conventional 'left behind' characteristics and Labour and Conservative vote shares.

7.3.1.1 Increasing working-class occupations

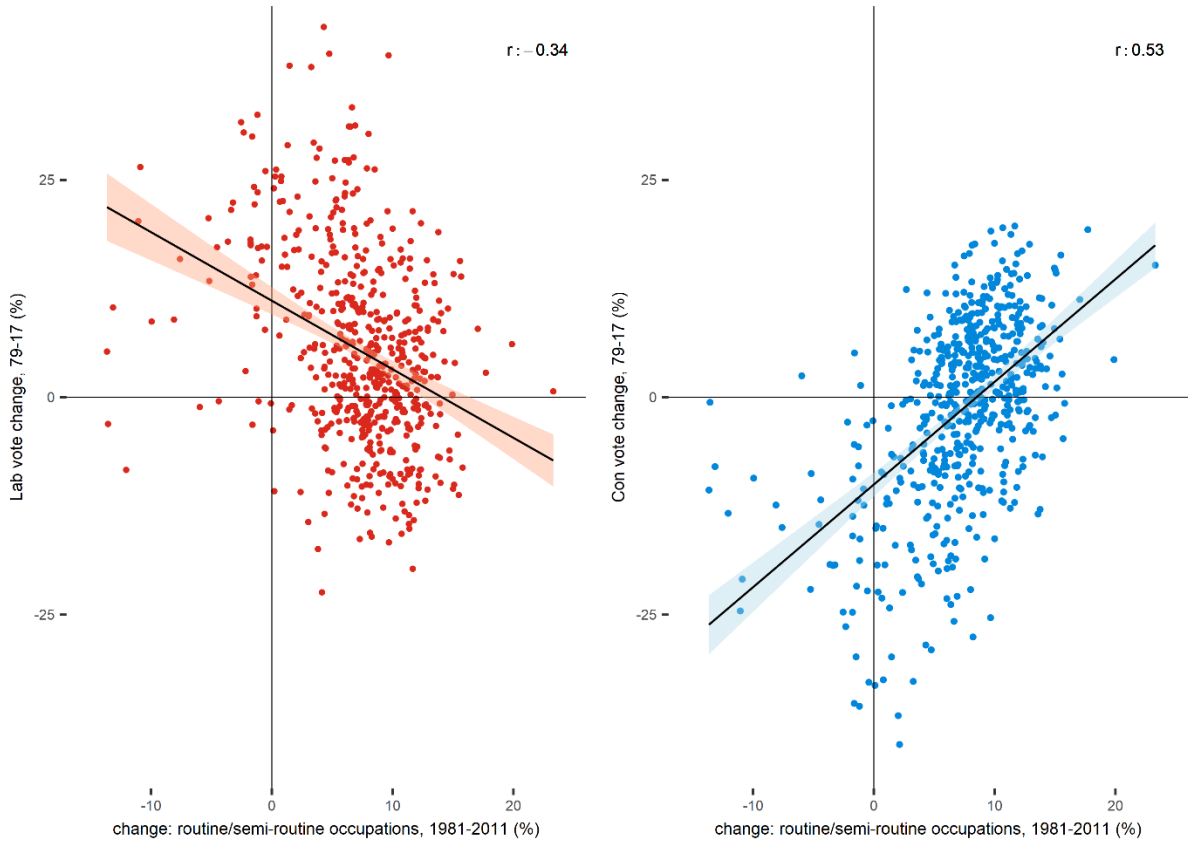

Figure 7.1 Scatterplots showing the relationship between the change in routine/semi-routine occupations and Labour and Conservative vote shares, 1979-2017

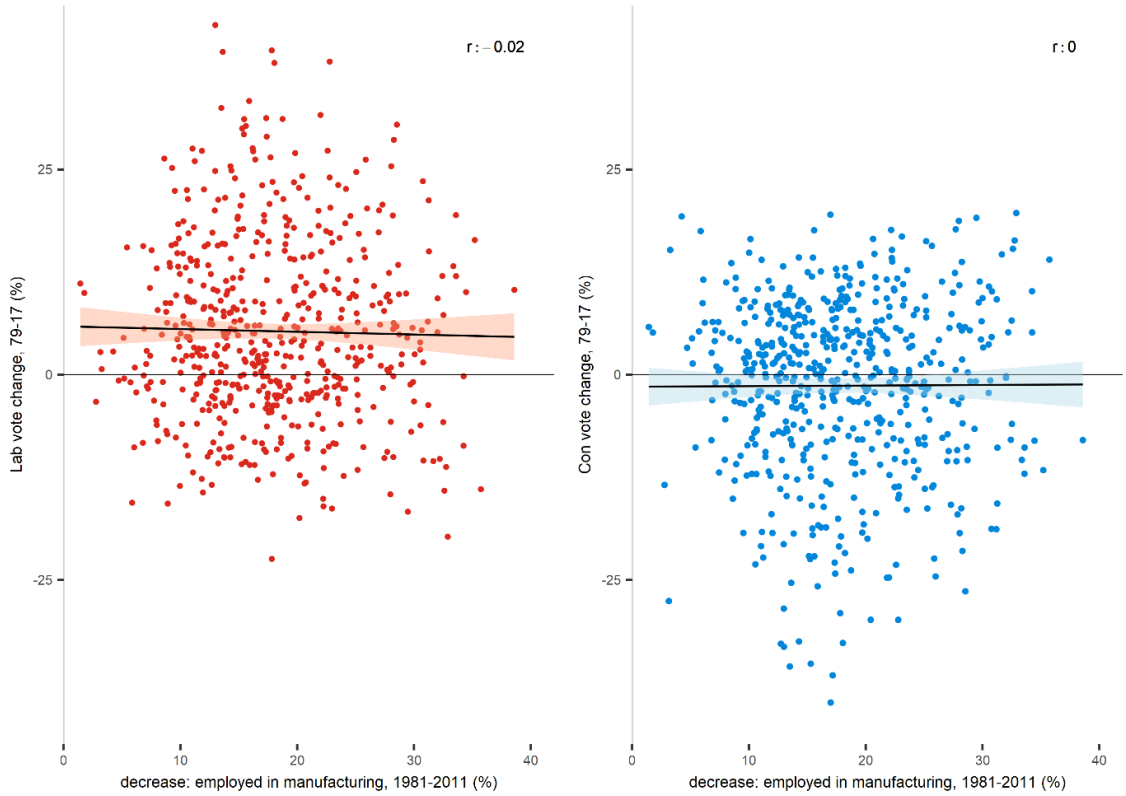

Figure 7.2 Scatterplots showing the relationship between the change in routine/semi-routine occupations and Labour and Conservative vote shares, 1979-2017

Conventionally 'left behind' areas, relative to other areas, include those that have seen an above mean change in semi-routine or routine employment and manufacturing employment. It is important to note, however, that manufacturing has declined quite significantly across all areas between 1979 and 2017, so in this case above mean is simply those where the decline has been less severe. Perhaps unsurprisingly given the deindustrialisation of the second half of the twentieth century, the areas in which the most substantial decrease in manufacturing employment has occurred are those that generally had the highest levels employed in manufacturing in 1979. The correlation between the proportion employed in manufacturing in 1979 and the change in manufacturing between 1979 and 2017 is -0.91. In addition, there is a negative correlation of -0.35 between the change in manufacturing and the proportion employed in manufacturing in 2017. This implies that, the areas where manufacturing has declined more significantly are more frequently those that in 1979 had, and in 2017 still have, higher than average levels of manufacturing. It might not be a surprise then that, as can

be seen in Figure 7.2, the relationships between manufacturing change and Labour and Conservative vote share changes between 1979 and 2017 are effectively non-existent.

However, as shown in Figure 7.1, there is a clear positive relationship between the change in routine/semi-routine occupations and the change in Conservative vote share – the correlation coefficient being a moderately strong 0.53. The correlation coefficient of -0.34 shows that there is a negative association between the change in these lower-skilled jobs and Labour vote shares between 1979 and 2017. The implication of this is that, relative to the overall trend of their increasing vote share, Labour's vote share change was less positive in areas where there were large increases in low-skilled employment – areas with high proportions of 'traditional working-class' occupations. In the same areas, such as Stoke-on-Trent North, Stoke-on-Trent South and Boston and Skegness, the Conservatives tended to see an above mean vote share increase. At the other extreme, the majority of areas where there has been the largest percentage decrease in routine/semi-routine employment are inner-city areas, such as Bethnal Green and Bow, Hackney South and Shoreditch and Sheffield Central. The vast majority of such areas have recorded substantial vote share increases for Labour and decreases for the Conservatives between 1979 and 2017. This runs counter to the class-based voting system that was so dominant in the mid-twentieth century.

7.3.1.2 Ageing populations

The relationships between the changing age composition of areas and changing support for the two main parties is clear-cut, particularly for the Conservatives. As shown in Figure 7.3, the relationship between the changing proportion of people aged 16 to 29 years and changing Conservative vote shares between 1979 and 2017 is moderately negative – a correlation coefficient of -0.49. On the contrary, the association with the changing proportion of older people is moderately positive – a correlation coefficient of 0.59. In areas where the population has aged most considerably, the Conservatives vote change has been much more positive than the mean change. This coincides with findings in Chapter 6 that by 2017, the extent to which the population in an area was over 65 had become a clear predictor of both Conservative and Labour vote shares.

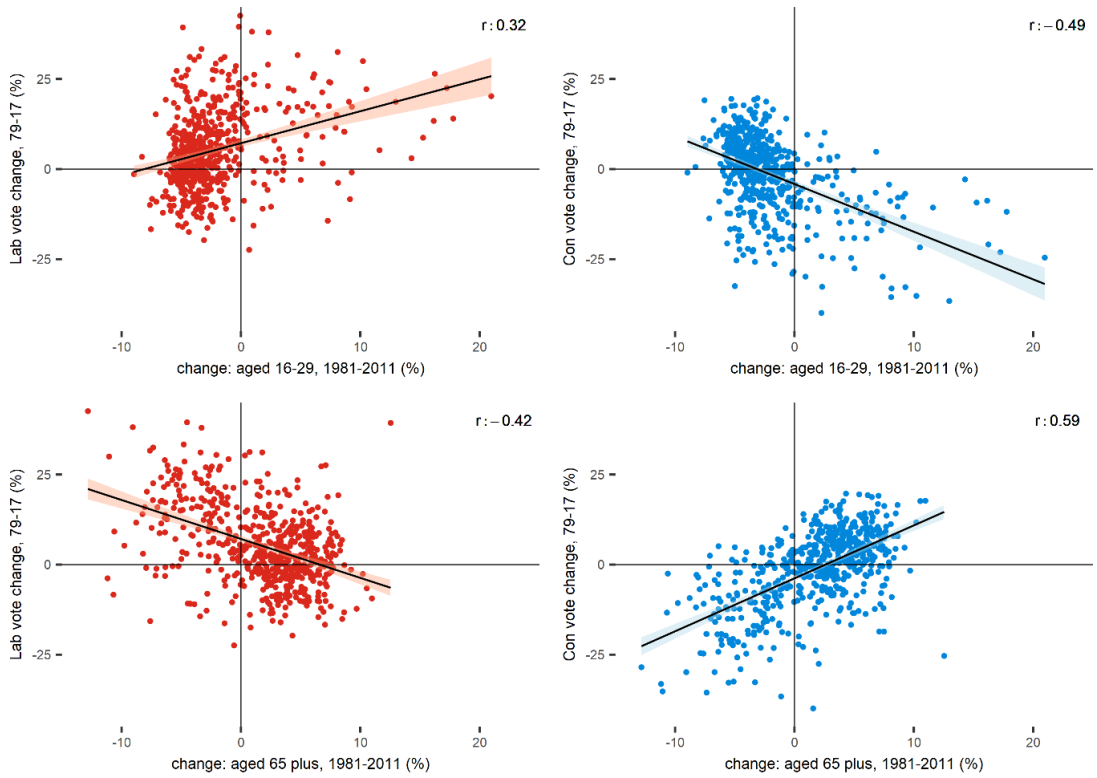

Figure 7.3 Scatterplot matrix comparing the relationships between the change in age groups and students and Labour and Conservative vote shares between 1979 and 2017

For change in Labour's vote shares, the reverse is true: there is a weak to moderate positive correlation (0.32) with the change in young people and a moderate negative correlation (-0.42) with the proportion of older people. Where results in Chapter 6 indicated that Labour's support has more recently been concentrated in areas with high proportions of young people, Figure 7.3 shows that Labour's support has, relative to the mean change, been increasing in areas that are becoming younger. These patterns are not consistent across the entire time period, however. The scatterplots in Figure 7.4 indicate that the association between the change in proportion of older people and Labour's changing vote shares only became substantially negative in the period between 2005 and 2017. Prior to this, the association was effectively non-existent. For the Conservatives, the weak positive relationship in 1992-2005, became stronger in the period between 2005 and 2017. The relative success of the Conservatives in rapidly ageing areas is therefore likely to be a more recent phenomenon than many of the other changes discussed in this section.

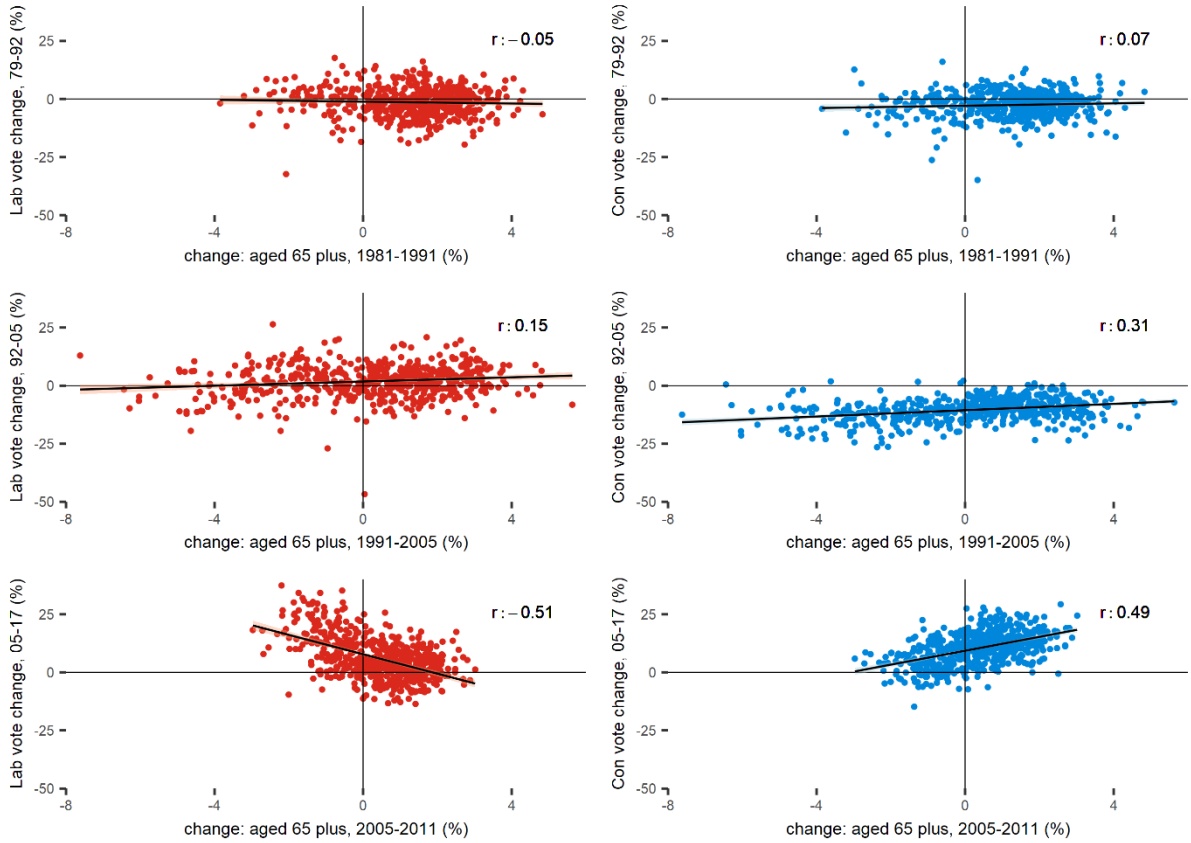

Figure 7.4 Scatterplot matrix comparing the relationships between the change in proportion aged 65 plus and Labour and Conservative vote shares at time periods between 1979 and 2017

7.3.1.3 Lower increases in urban-ness, ethnic diversity and gross migration

'Cosmopolitan' areas of Britain are frequently presented as those that are increasingly ethnically-diverse with increasingly transient populations living in urban environments. The graphs in Figure 7.5 show the relationship between change in gross migration, change in ethnic diversity and change in 'urban-ness' with the change in Labour and Conservative vote shares between 1979 and 2017. The association between changing ethnic diversity and migration and the two party's vote shares is similar: for Labour, there is a weak to moderate positive association and for the Conservatives a moderate negative association. Relative to the changing vote shares in other areas, Labour support has been increasing and Conservative support decreasing in areas with the greatest increases in gross migration and ethnic diversity. Given this, it may perhaps be surprising to see that there is a very weak negative correlation (-0.15) and a weak positive correlation (0.32) between change in 'urban-ness' and Labour and Conservative vote shares respectively. On further examination, it is evident that the areas that had the

greatest increase in 'urban-ness' are invariably the most rural areas of the country. Indeed, the correlation between the change in 'urban-ness' (1979-2017) and the proportion employed in agriculture in 1979 is 0.99 and in 2017 is 0.98. This is a result of using the proxy 'change in the percentage not employed in agriculture' to capture the change in 'urban-ness'. As the vast majority of constituencies had (and still have) tiny proportions employed in agriculture in 1979, those where the proportions 'not employed in agriculture' increased the most are inevitably those with the high proportions employed in agriculture at the start of the time period. Constituencies that were already very urban could not become 'more urban'. It is therefore advisable to treat the interpretation of this variable with significant caution.

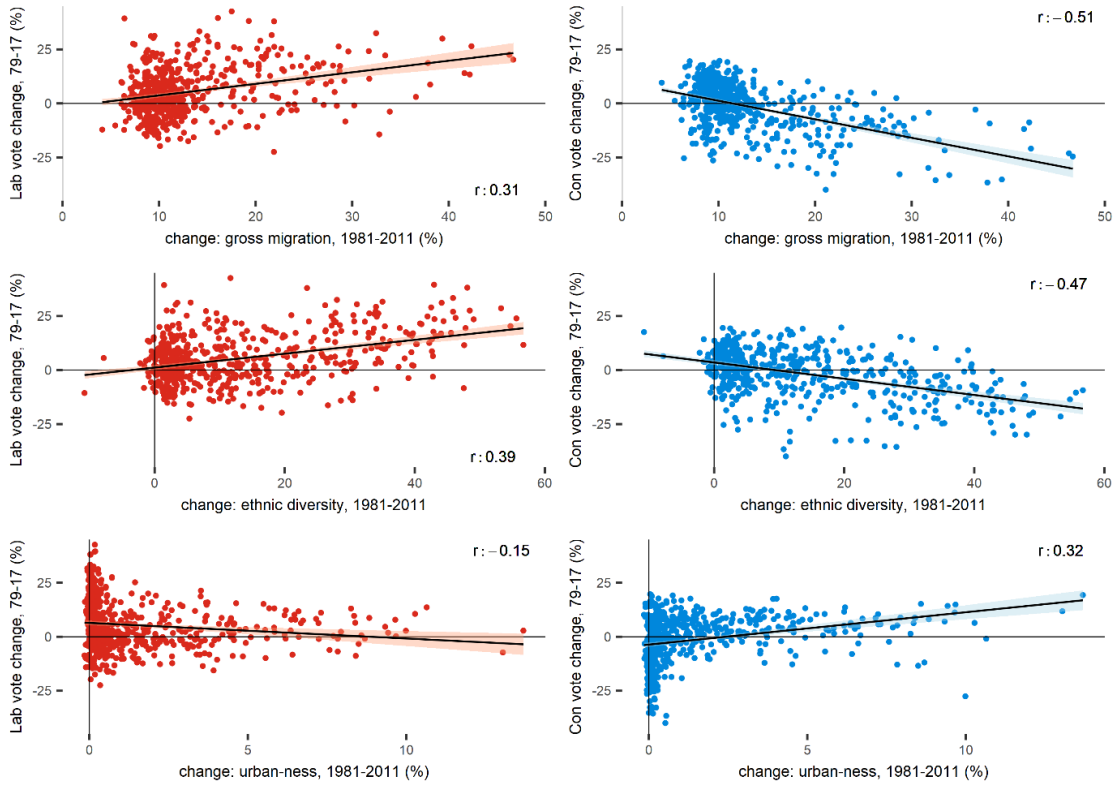

Figure 7.5 Scatterplot matrix comparing the relationships between the change in gross migration, ethnic diversity and 'urban-ness' and the change in Labour and Conservative vote shares between 1979 and 2017

7.3.1.4 Lower increases of 'cosmopolitan' jobs and degree-level qualifications

Figure 7.6 indicates that there is little association between the change in the proportion employed in 'cosmopolitan' industries and the change in vote shares for Labour or the Conservatives across constituencies between 1979 and 2017. For Labour, this

correlation is 0.08 and for the Conservatives -0.04. This is somewhat surprising given the changes that were uncovered in Chapter 6, namely that the association between the proportion employed in 'cosmopolitan' industries and Labour's vote share had become substantially more positive over time. However, many of the constituencies in which the proportion of 'cosmopolitan' jobs has increased most substantially are those that in 1979 had very low levels of service-sector employment and high levels of manufacturing. The correlation between the change in 'cosmopolitan' employment (1981-2011) and the 1979 proportion employed in 'cosmopolitan' employment is -0.65 while the correlation with manufacturing employment (1979) is 0.61. Similarly, the correlation with the change in manufacturing (1981-2011) is -0.62, indicating that many of the areas where there has been a relative increase in 'cosmopolitan' industries are those that had higher levels of manufacturing industries that have now declined. As such, some of the most positive changes have been in constituencies such as Stoke-on-Trent South (24.72), Neath (24.21) and Bolsover (23.64) – perhaps not places that are typically identified as 'cosmopolitan' today by most authors.

The association between vote share change and change in the proportions with degree-level qualifications is a little clearer. Perhaps unsurprisingly, relative to the mean, Labour's vote share has tended to increase in areas where the proportion of the population with degrees has also increased most significantly. Nonetheless, there is only a weak positive correlation coefficient of 0.20. For the Conservatives, the opposite association is evident, albeit with a slightly stronger negative association of -0.36.

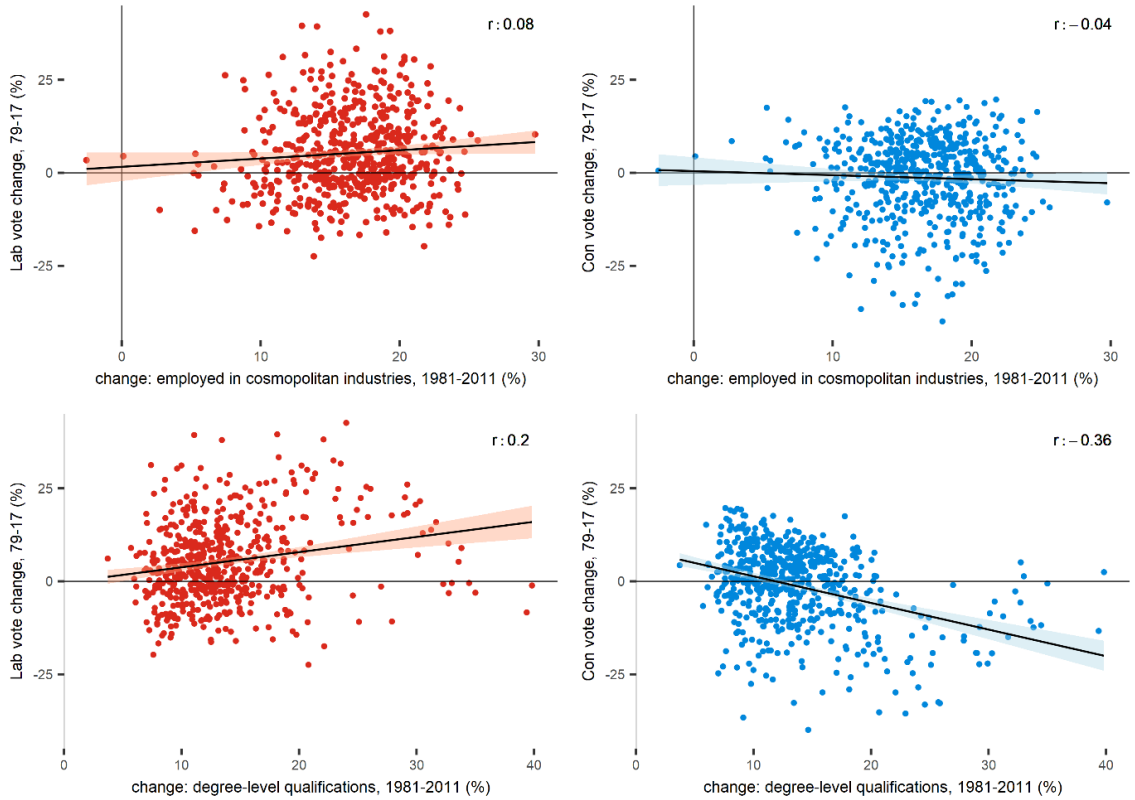

Figure 7.6 Scatterplot matrix comparing the relationships between the change in employment in 'cosmopolitan' industries, change in degree-level qualifications and the change in Labour and Conservative vote shares between 1979 and 2017

7.3.1.5 Relative population decline

A further measure of an increasingly 'left behind' area is relative population decline: areas that struggle to encourage new industries to establish and thereby are limited in attractive job creation are likely to have more slowly growing populations, or perhaps even populations in decline. Figure 7.7 suggests little association between the percentage change in population and either Labour or Conservative vote share changes between 1979 and 2017. However, it is clear from Figure 7.8 that a different pattern emerges in different periods within this wider time-frame. Between 1979 and 1992, there was a weak negative correlation between population percentage change and Labour vote change. This reversed in the 2005-2017 time period where there was a positive association of 0.4. This mirrors the association between population percentage change and Conservative vote change which was 0.27 in 1979-1992 and -0.38 in 2005-2017. Relative to vote share changes in other areas, Labour's support appears to have

improved, at the expense of the Conservatives, in areas where the population has grown, but this process has only occurred in recent years.

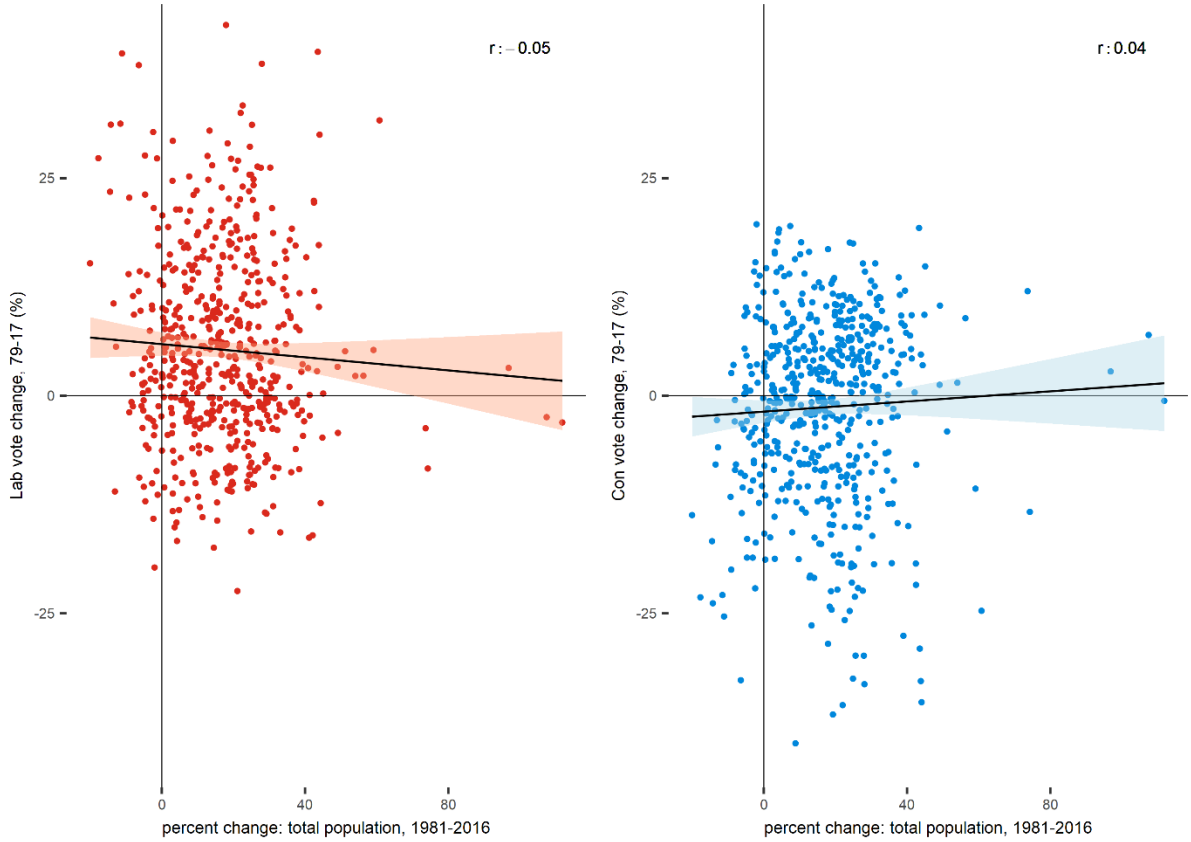

Figure 7.7 Scatterplots comparing the relationships between the percent change in the total population and the change in Labour and Conservative vote shares between 1979 and 2017

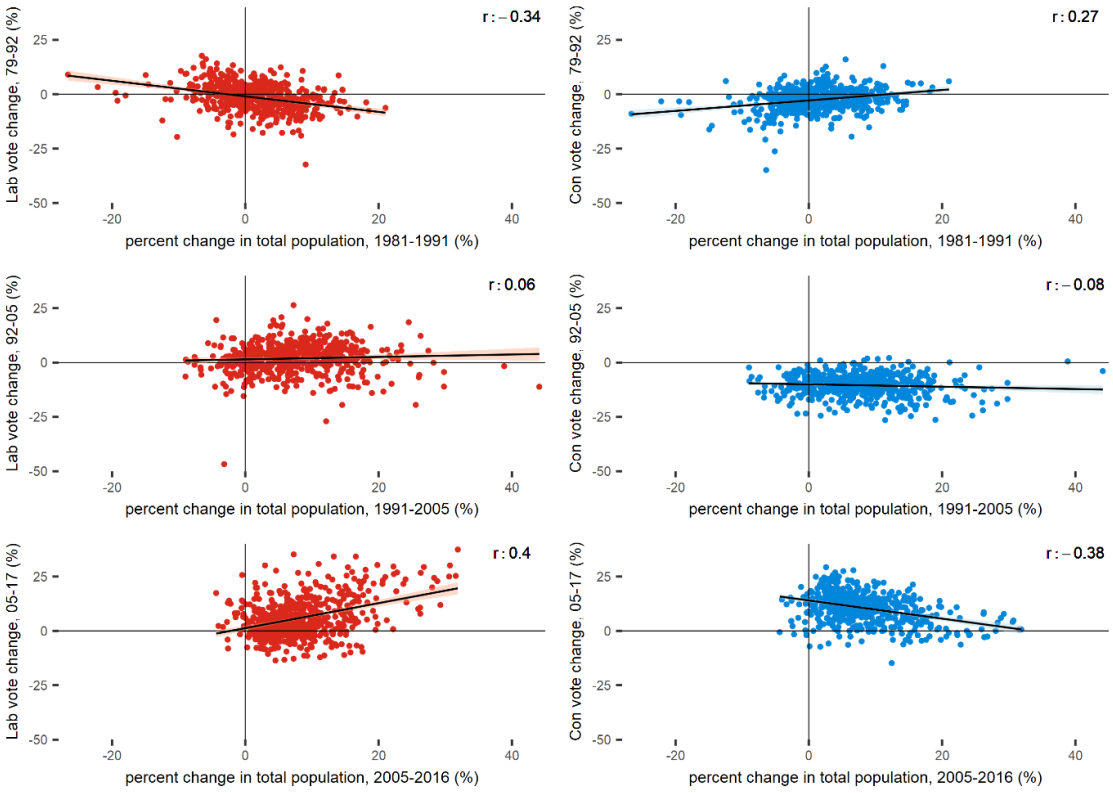

Figure 7.8 Scatterplot matrix comparing the relationships between the percent change in the total population and the change in Labour and Conservative vote shares at time periods between 1979 and 2017

7.3.2 Change in economic deprivation 'left behind' variables

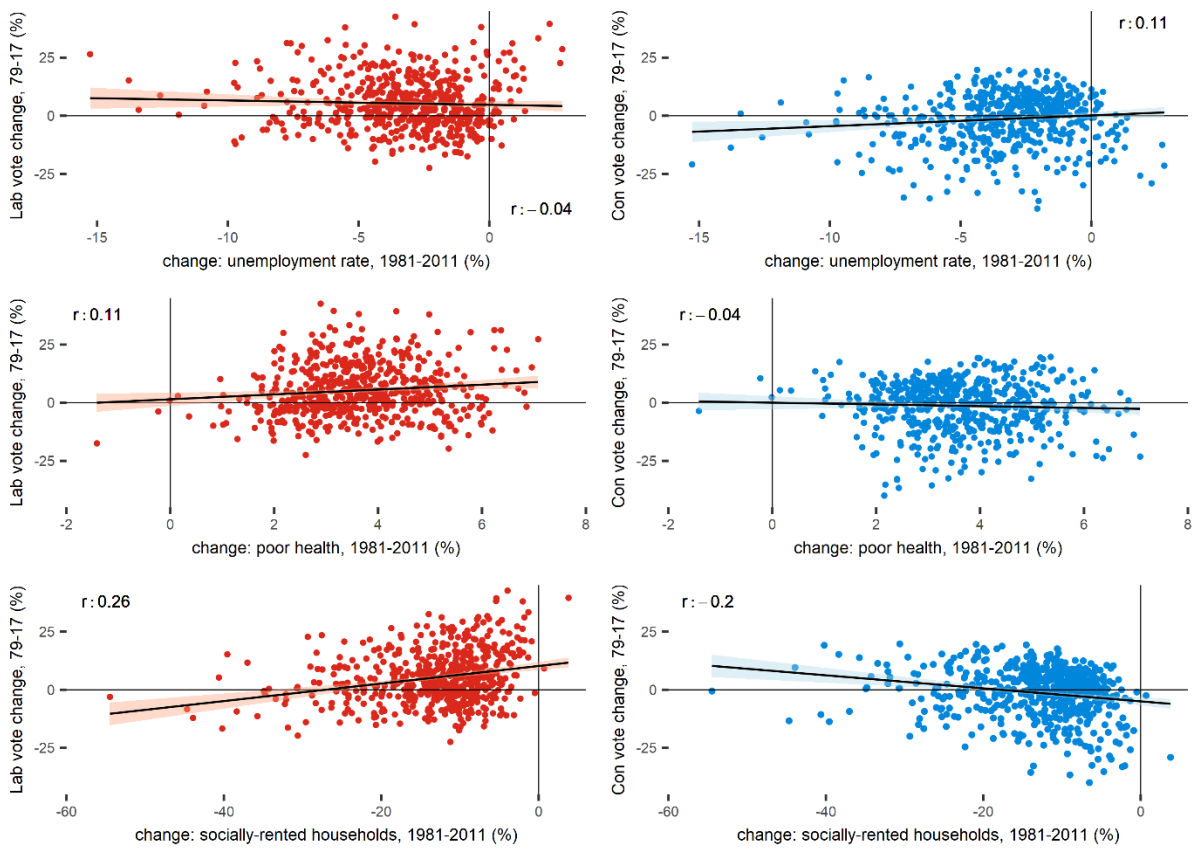

Figure 7.9 Scatterplot matrix showing the relationship between the change in deprivation and Labour and Conservative vote shares, 1979-2017

The rather weak patterns observed in Figure 7.9 perhaps should not come as a surprise given the consistent and largely unchanging support for Labour in areas of high deprivation that were reported in Chapter 6. Perhaps the only noticeable trend is that where the proportion of socially rented households has declined the most, Labour's vote share has fallen and the Conservative vote share has tended to rise. However, even the positive correlation between the change in proportion of socially-rented households and the change in Labour vote share and the negative correlation with the change in Conservative vote share are particularly weak.

Although the association between the change in economic deprivation and vote shares for the two main parties appears quite static between 1979 and 2017, this conceals substantial differences at shorter time frames. Between 1979 and 1992, the change in poor health had a moderately strong positive correlation with the change in Labour vote

share and a weak negative correlation with the change in Conservative vote share. Between 2005 and 2017, these associations were reversed: the correlation with change in the Labour vote share was -0.51 and with Conservative vote share was 0.43. This suggests that in areas that were becoming increasingly deprived between 1979 and 1992, Labour's vote increased by more than average, whereas between 2005 and 2017 it decreased by more than average (Figure 7.10). The opposite is true for the Conservatives. In combination with the results from Chapter 6, this implies that, although areas where the level of poor health is high tend to produce Labour MPs, areas where this measure of deprivation has significantly increased most recently have tended to see a relative decline in Labour support and a relative increase in Conservative support.

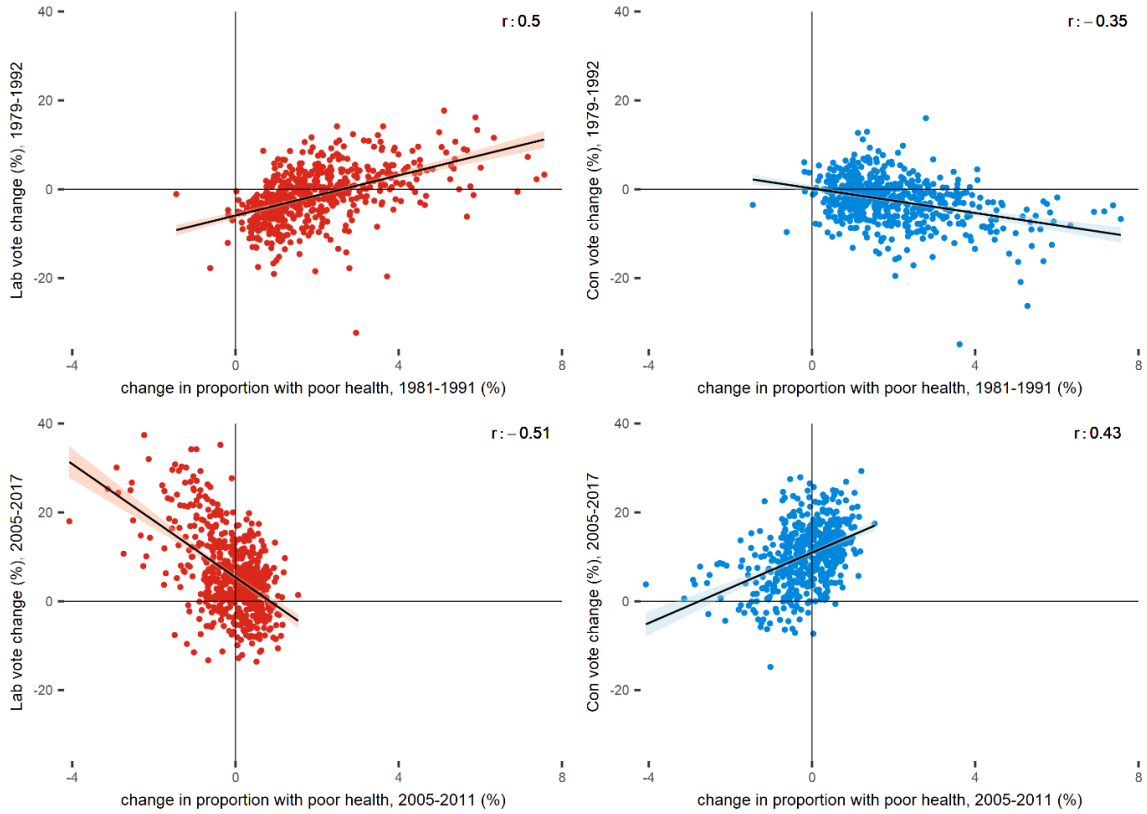

Figure 7.10 Scatterplot matrix comparing the relationships between the change in poor health and Labour and Conservative vote shares in 1979-2017 and 2005-2017

7.3.3 Change in precarious situation 'left behind' variables

Urban areas in particular have seen an enormous increase in the proportion of residents that privately rent properties (Jefferys, 2013). This increase is not a simple result of the

'studentification' of areas of large cities and towns but reflects the increasing inability of many young families to buy a home. While in some gentrifying areas of larger cities, an increase in renting may reflect an influx of younger, highly-educated residents, it is also indicative of an inability to access the housing market – a kind of 'left-behindedness' that disproportionately affects younger residents. Private rental contracts are also more likely to lead to precarious living arrangements than owning or socially renting (Corlett and Judge, 2017).

Perhaps unsurprisingly, given the association with younger residents living in urban environments, Table 7.4 shows that in areas where the proportion of rented households has increased most significantly, on average Labour have improved considerably and the Conservatives have experienced a decline in support. This is most pronounced in urban areas of London and the North West – both regions in which the mean Labour support has increased by more than 13 percentage points between 1979 and 2017. In London, for example, East Ham has experienced a 19.21 percentage point rise in rented households accompanied by a 31.64 percentage point increase in Labour vote shares and a 24.71 percentage point decrease in Conservative support respectively. Similar trends are seen across the whole of the North West in largely urban constituencies such as Liverpool Riverside, Preston, Manchester Central, Manchester Withington and Chester.

Table 7.4 Mean change in proportion of rental households and mean change in vote shares by region, 1979-2017

Region	Mean change in households renting (%)	Mean labour vote change (%)	Mean conservative vote change (%)
London	8.34	13.69	-11.16
North West	6.17	13.42	-7.65
Yorkshire and The Humber	5.73	8.10	-3.10
West Midlands	5.60	1.50	4.44
Wales	4.88	1.90	-0.54
East Midlands	4.64	3.17	3.69
East of England	4.60	1.02	4.30
North East	4.58	2.98	0.90
South West	4.35	0.97	0.03
South East	4.18	0.94	1.24

In support of these findings, Figure 7.11 indicates a weak positive association (0.26) between change in privately rented households and the change in Labour vote shares

between 1979 and 2017. The association with the change in Conservative vote shares is weak to moderately negative (-0.37).

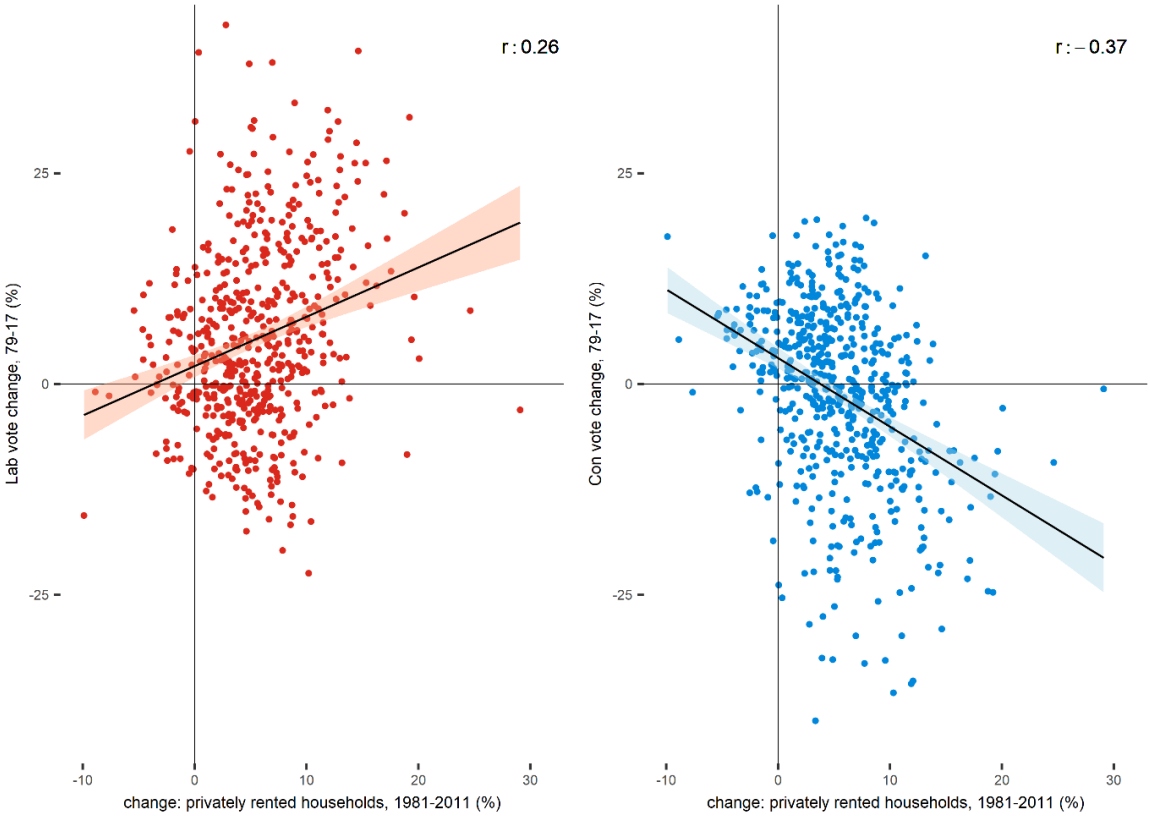

Figure 7.11 Scatterplots comparing the relationships between the change in privately rented households and the change in Labour and Conservative vote shares between 1979 and 2017

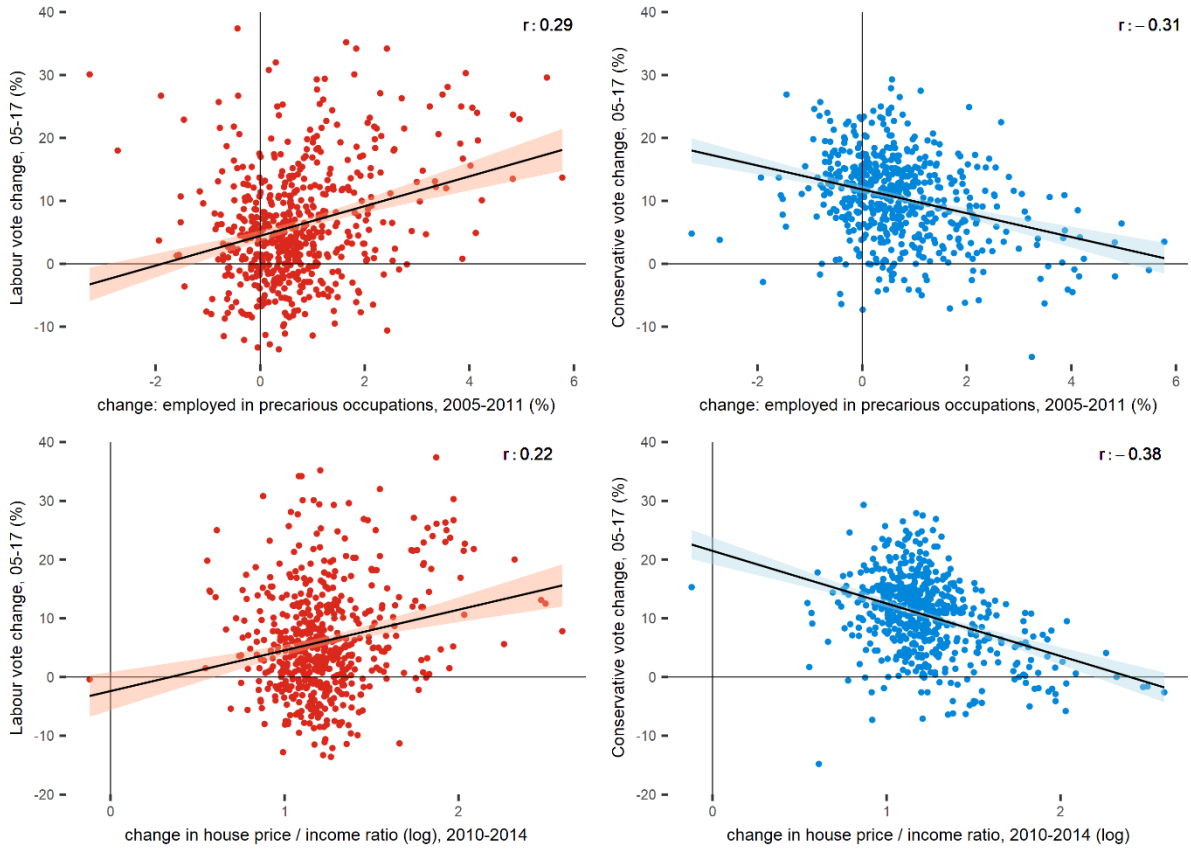

Figure 7.12 Scatterplot matrix comparing the relationships between the change in the precarious occupations and change in housing affordability of constituencies and the change in Labour and Conservative vote shares between 2005 and 2017

In Figure 7.12, there is a weak to moderate positive association (0.29) between the change in precarious employment and Labour vote share with the opposite pattern for the Conservatives (-0.31). An almost identical change can be seen between the graph showing the association between the log change of house price/income ratio and the change in Labour and Conservative vote shares. This indicates that, as the precariousness of an area increases, Labour's vote share is likely to increase and the Conservatives decrease, relative to the mean change of each.

7.4 Relative economic decline and vote share change

7.4.1 Creating a broad measure of relative socioeconomic decline, 1979-2017

After analysing the extent to which the three conceptualisations of change in 'left-behindedness' is associated with changing support for Labour and the Conservatives, a socioeconomic decline measure has been created to provide a broader analysis that makes use of more recently available data. An index of relative decline has been created by adapting measures constructed by Pike et al. (2013) and Jennings et al. (2017). These measures combine demographic and employment change variables into one index that determines the relative rate of decline of each area. Presumably because of difficulties related to boundary changes and data availability, neither Pike et al. (2013) nor Jennings et al. (2017) provide a long-term picture of relative decline. By using the data generated from overlaying 1981 census data onto 2017 constituencies and by predicting 1979 vote shares at 2017 boundaries, the index of decline used hereafter allows for a longer-term analysis of the association between socioeconomic decline and vote shares for Labour and the Conservatives.

Any index of area-level decline must reflect its multi-faceted nature rather than being based on a single indicator. The index used here incorporates widely accepted measures of economic decline. To calculate the index, different indicators are first calculated for each constituency in England and Wales at the boundaries used in 2017:

1. Change in proportion of the population with degree-level qualifications, 1979-2017

2. Change in total population, 1979-2017

3. Change in unemployment rate, 1979-2017

4. Change in proportion of households deprived on three or four measures, 2001-2011

5. Change in median weekly income (£), 2010-2017

6. Change in the proportion of professional jobs (calculated by adding together the change in managerial and professional employment with the change in 'cosmopolitan' employment), 1979-2017

7. Change in the number of businesses, 2010-2017

These indicators give a broad measure of the economic course that parliamentary constituencies have followed. Although due to data availability there is some variation in the time periods across the indicators, most are still in the 1979-2017 period and where they are not, the periods are of sufficient length to indicate some meaningful change rather than simply fluctuation. After calculating these indicators, they were standardised by calculating the 'z-scores' for each – that is, how many standard deviations above or below the mean the value is. For some of the variables – unemployment and household deprivation – the standardised score was reversed so that a negative score indicated decline. For all of the other variables, a positive standardised score contributed to the overall decline. The standardised scores were subsequently added together and divided by the total number of indicators to create an overall relative decline score for each constituency. The constituencies were subsequently ranked by their relative decline score so that the constituency ranked 1st (Cities of London and Westminster) has experienced the least rate of decline and the constituency ranked 572nd (Cheadle) the most. In light of the reader's likely surprise that Cheadle is ranked bottom, it is worth emphasising that this is not a measure that captures the area that is poorest or most economically deprived in 2017, but rather, a measure of relative change between 1979 and 2017. Less surprisingly, in the ranking positions 1-20, there are only three constituencies outside of London (Birmingham, Ladywood; Manchester Central and Milton Keynes South). It should also be noted that while some places are moving ahead and others are treading water, no constituency is economically collapsing. In this sense, relative decline is more a reflection that they are falling behind relative to other areas, not that economic conditions are becoming objectively worse. The full rankings with the relevant decline scores and standardised variables are in Appendix L.

7.4.2 More decline, more Conservative support?

In the scatterplot in Figure 7.13, along the x-axis is the decline ranking of each constituency from 1 to 572 and on the y-axis in the change in vote share between 1979 and 2017 for Labour and the Conservatives. The graph shows a clear, albeit relatively weak pattern: there is a slight negative correlation between decline and Labour vote share change and a slight positive correlation between decline and Conservative vote share change. In areas where the socioeconomic change has been most positive,

Labour's vote share has tended to increase more significantly than in areas where there has been more pronounced relative decline. For the Conservatives, their vote shares have, on average, improved slightly in areas that have experienced the most relative decline whilst they have often, but not always, lost votes in areas that have experienced relative economic improvement. The slightly stronger correlation between Conservative vote share change and decline rank (0.25) than for Labour vote change (-0.15) indicates that for the Conservatives, compared to Labour, there is a more significant difference in their vote share change between constituencies that have declined the most and those that have declined the least.

In Table 7.5, constituencies have been sorted into five categories according to the level of positive or negative relative change decline that they have experienced: highest relative positive change, above average relative positive change, average change, above average relative negative change and the highest relative negative change. Each category represents an equal number (114 or 115) or 20% of constituencies. For both Labour and the Conservatives, the most substantial changes have taken places in the constituencies that have declined the least, many of which are located in inner city areas of large cities such as London, Leeds, Liverpool, Manchester, Cardiff, Bristol and Brighton. In these areas that have experienced the highest relative positive change, Labour have increased their vote share by a mean 9.9 percentage points and the Conservatives have decreased theirs by a mean 7.6 percentage. For the Conservatives, this represents a marked difference with the other categories, for which the mean vote share change is generally close to zero. For Labour, their mean vote share change is positive across all categories, but considerably higher in the areas that have experienced the most positive relative change. It is clear that driving the pattern seen in Figure 7.13 is Labour improving and the Conservatives worsening their vote shares substantially in areas that have experienced significant positive socioeconomic change. In areas that might be becoming more 'left behind' – those that are declining most significantly – there is little to suggest any pattern that deviates too much from the mean change of a modest Labour increase and a tiny Conservative decrease in vote shares.

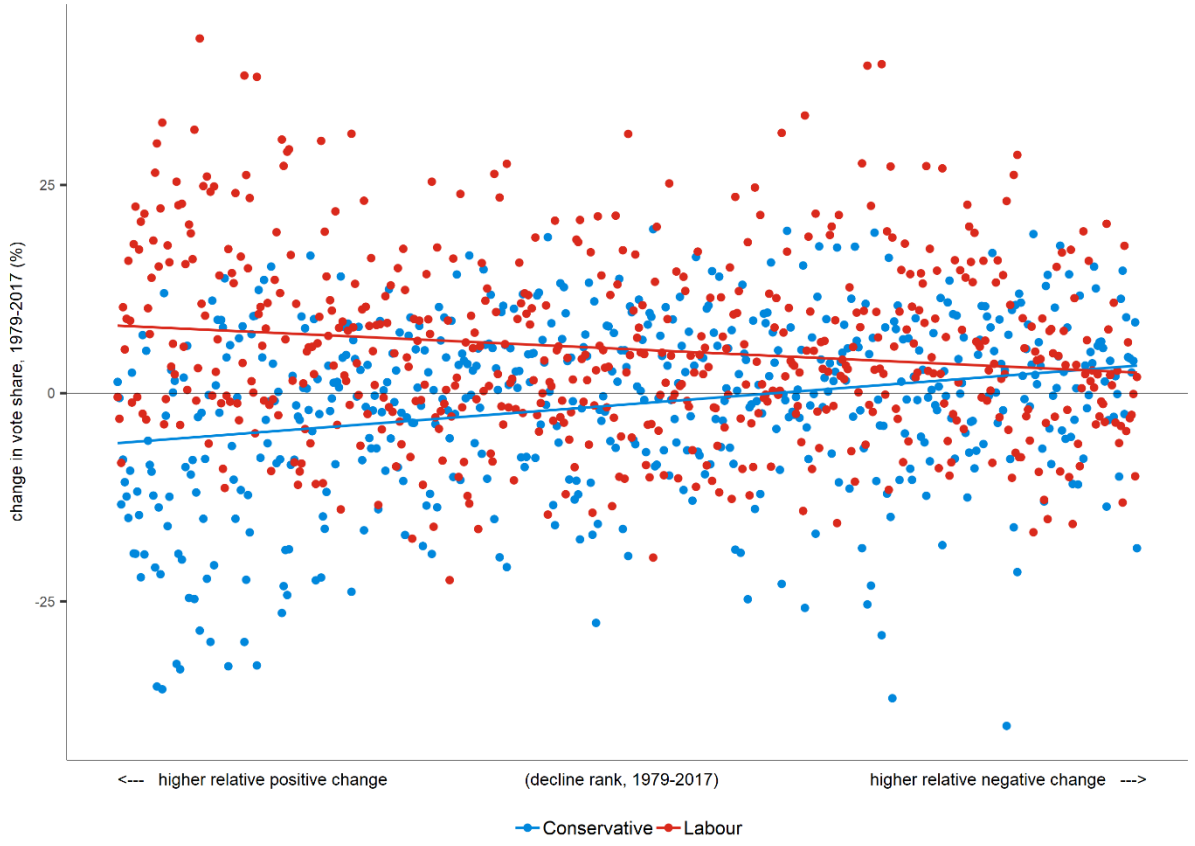

Figure 7.13 Correlation between relative decline rank and change in party vote shares by constituency, 1979-2017

Table 7.5 Vote share changes across constituencies categorised by the extent of their positive or negative socioeconomic change, 1979-2017

Change categories	Mean change: Labour vote share (%)	Mean change: Conservative vote share (%)	SD: Labour vote share change	SD: Conservative vote share change
highest relative positive change	9.87	-7.58	12.49	12.82
above average relative positive change	3.89	-0.51	10.45	8.66
average change	3.05	0.61	9.63	9.14
above average negative change	6.36	-0.75	11.17	10.79
highest relative negative change	3.30	1.57	9.87	9.03
all constituencies	5.30	-1.34	11.04	10.68

7.4.3 Deindustrialising areas: continued decline or recovery?

One specific type of decline that has been well documented in the UK is associated with deindustrialisation. Where manufacturing industries have diminished, some areas of the UK have replaced them with low-skilled, typically insecure, low-paid work. These are areas that have not recovered well from deindustrialisation are referred to here as areas of 'prolonged decline'. Other areas that have seen more successful regeneration and economic recovery have had significant rises in the proportion of the population employed in largely well-paid, managerial and professional roles. These areas are characterised by some degree of embourgeoisement. To capture these two types of contrasting deindustrialising areas, two groups of constituencies have been created:

'**Prolonged decline':** Constituencies that have had, between 1979 and 2017: 1) above mean declines in manufacturing; and 2) above mean changes in semi-skilled and unskilled occupations; 3) and below mean changes in managerial/professional occupations.

'**Embourgeoisement':** Constituencies that have had, between 1979 and 2017: 1) above mean declines in manufacturing; and 2) above mean changes in managerial/professional occupations 3) and below mean changes in semi-skilled and unskilled occupations.

In Appendix M, Table M.1 lists those constituencies that fall into the 'embourgeoisement' category and Table M.2 lists those constituencies that fall into the 'prolonged decline' category. Both tables also show their respective characteristics including vote share changes between 1979 and 2017. Table 7.6 shows the mean vote share changes by each group.

Table 7.6 Vote share changes across constituencies grouped by their occupational change whilst deindustrialising, 1979-2017

Constituency type	Number of constituencies	Mean Labour vote share change (1979-2017)	Mean Conservative vote share change (1979-2017)
'Embourgeoisement'	60	6.89	-2.06
'Prolonged decline'	92	-1.44	5.10
All constituencies	572	5.30	-1.34

By grouping constituencies in this way, clear findings emerge that are otherwise obscured when exploring manufacturing decline and the change in managerial and professional employment alone. In areas that, simultaneously to deindustrialising, have seen a growth in middle-class forms of employment, Labour's mean vote share has been slightly above their increase across all constituencies. For the Conservatives, precisely the opposite is the case: their vote share has decreased slightly more in these 'embourgeoisement' constituencies. Starker are the changes seen in areas that have seen simultaneous deindustrialisation and a growth in unskilled/semi-skilled labour. In these areas, Labour's mean vote share is -1.44 – significantly below their mean change of 5.30. In contrast, the Conservatives have in fact increased their vote share by 5.10 percentage points - significantly above their mean change of -1.34 percentage points across all constituencies. At the extreme end of these 'prolonged decline' areas are constituencies such as Harlow (Labour vote share change: -16.69%; Conservatives: 19.11%) and Havant (Labour: -15.11%; Conservatives: 14.21%). Of note also are the three constituencies of Stoke-on-Trent (Central, North and South) where Labour's vote share declined by more than 10 percentage points and the Conservatives' increased by the equivalent.

7.5 2005-2017: Increasing prosperity, increasingly Labour?

7.5.1 Socioeconomic development

In Figure 7.14, the association between places that are considered to be socioeconomically 'improving' and vote shares is explored, with the former measured perhaps somewhat crudely by the log change in business counts (2010-2017) and the change in university entry rates of 18-year olds (2006-2016). There is a moderate positive correlation (0.39) between the log change in the number of businesses and Labour vote share change and a moderate negative correlation (-0.48) with Conservative vote share change. For university entry rates, the relationships are in the same direction but weakly positive (0.22) for Labour vote share change and weakly negative (-0.24) for Conservative vote share change. In areas that might be considered improving on these two measures, Labour's vote share has improved, relative to other constituencies, whilst the Conservatives vote share has declined, relative to other areas.

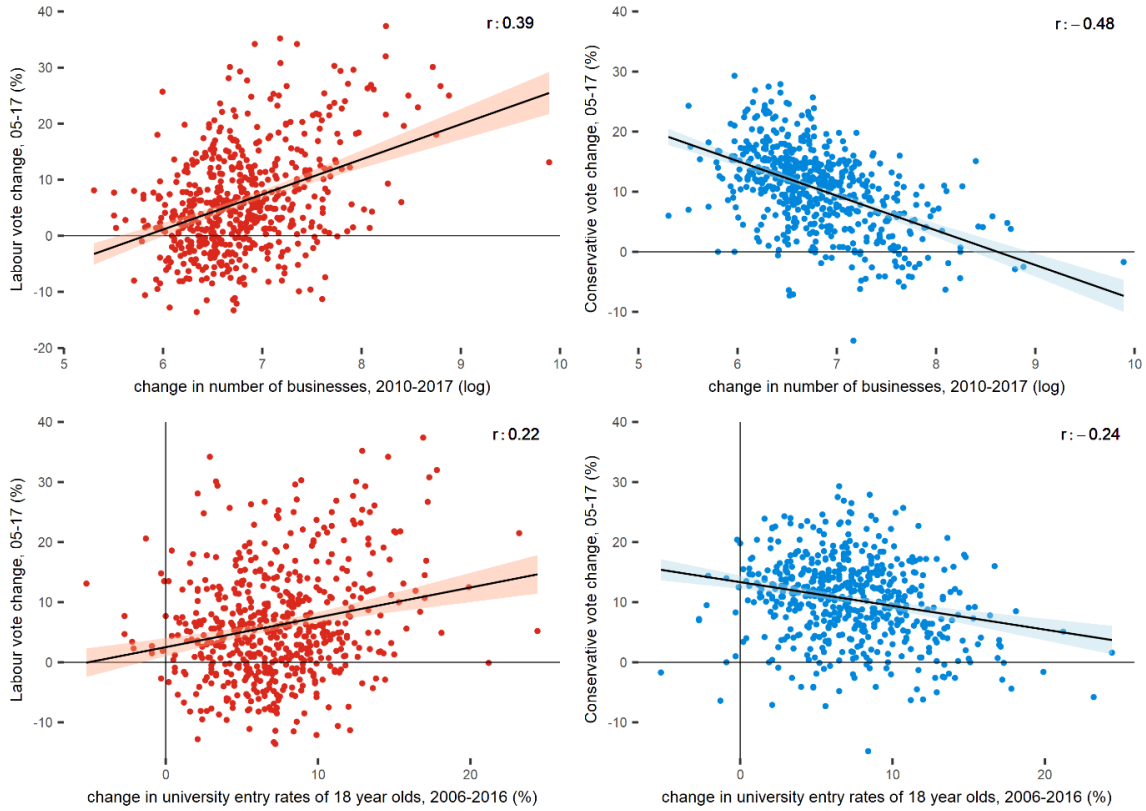

Figure 7.14 Scatterplot matrix comparing the relationships between 'improvement' in constituencies and the change in Labour and Conservative vote shares between 2005 and 2017

7.5.2 Increasingly 'middle-class' areas

When examining areas that are becoming more traditionally 'middle-class' – that is, those areas with, relative to the rest of England and Wales, increasing proportions of managerial/professional occupations, home ownership and people with degree-level qualifications, a pattern emerges that supports the findings from Chapter 6. There is a clear difference between the association between change in home ownership and change in vote share and the association between change in the proportion with degree-level qualifications and change in vote share. The former has a moderate negative correlation (-0.40) with change in Labour vote share change and a moderate positive correlation (0.42) with Conservative vote share change. In areas where the proportion of home owners has increased, Conservative support has changed more positively and Labour's more negatively, relative to the overall vote share change. This association was barely existent in the period between 1979 and 1992, but has become stronger since. For example, the association between change in owner-occupied households and

change in Conservative vote shares was only 0.18 in 1979-1992 but was 0.38 between 1992 and 2005 and 0.31 between 2005 and 2017.

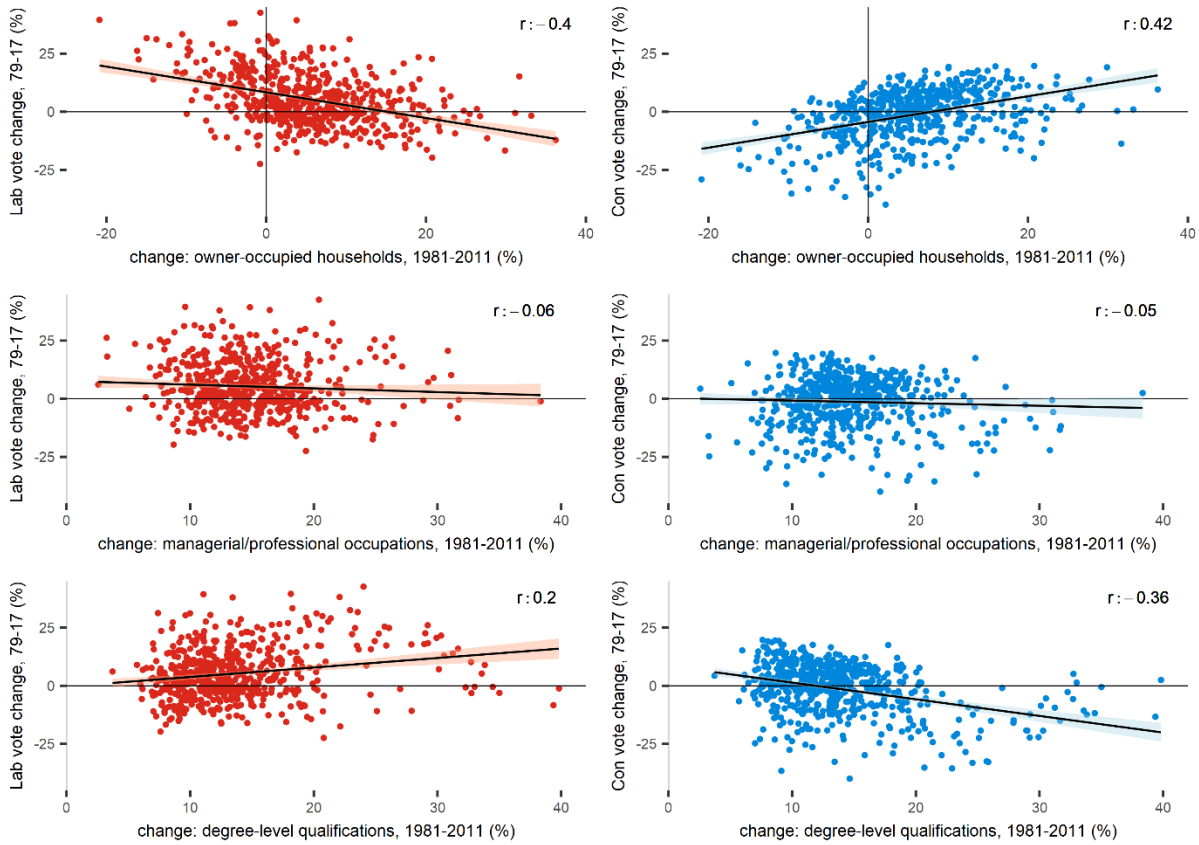

Figure 7.15 Scatterplot matrix comparing the relationships between the change in degree-level qualifications and Labour and Conservative vote shares between 1979 and 2017

7.6 Multiple linear regression models

The following section moves beyond analysing the bivariate relationships between sociodemographic and economic change and vote shares by considering which change variables predict change in Labour and Conservative vote shares for different time periods. To do so, multiple linear regression models have been executed for four time periods: 1979-2017, 1979-1992, 1992-2005 and 2005-2017. Most attention in this section will be paid to the 1979-2017 model, as this captures the effects associated with long-term change. A detailed description of the formation and specification of these models has been presented in Chapter 5.6.

7.6.1 Diagnostics: multicollinearity and key assumptions

As with the previous linear regression models analysed in Chapter 6, the regression models reported hereafter have been carefully constructed to remove multicollinearity and zero-variance and have undergone diagnostic tests to assess their accuracy. As with the previous models, it was essential to remove multicollinearity from the models to ensure that parameter estimates were stable and the effect of individual variables on vote shares could be accurately assessed. In cases where two independent variables have a strong positive or negative correlation of greater than +0.80 or less than -0.80, one of the predictor variables has been removed. VIF scores larger than 10 have also resulted in variables being removed from each model (see Appendix Q). Even in cases where multicollinearity is only present in one model, the same variables are removed from all models to ensure consistency. As a result, the variables measuring changes in gross migration and the proportion of social and private renters have been removed from all of the models. In addition, to retain consistency, the variables that are only available for the most recent time periods, such as university entry rates and house affordability, are not present in any model.

While OLS regression models do not rest on assumptions regarding the distribution of independent variables, possible problems may ensue when there is significant skewness or there are outliers. For the 1979-2017 models, the proportion aged 16 to 29, proportion with degree-level qualifications and 'urban-ness' variables are all positively skewed. The few observations in the tails can have an undue influence on the coefficients, distorting the fit for the majority of the observations. However, precise consequences are uncertain and with this in mind, the 1979-2017 change model has been executed twice - once with the aforementioned variables as normal and again using their log transformations. The results from these models, in terms of their explanatory power, ability to satisfy regression assumptions and the reported coefficients, are highly similar. They are found in Appendix N alongside an additional 2005-2017 model incorporating variables only available for this most recent time period. There is little evidence that using log-transformed variables improves the model in any of these regards. Log-transformed models were also executed for the 1979-1992 and 1992-2005 time periods with the same findings. As there was no perceptible benefit to including log-transformed variables, the models reported hereafter are those with non-transformed variables.

These regression models have been assessed for heteroscedasticity and a normal distribution of errors by plotting fitted values against studentised residuals and by generating QQ plots for each model. The plots can be found in Appendix O. In each case, the proximity of the points to the straight line on the QQ plots, albeit with a degree of skewness in some cases, indicates that most points are normally distributed. Similarly, the fitted values/residual plots indicate little significant evidence of heteroscedasticity or non-linearity as the points in each model are largely randomly distributed. Finally, the number of large standardised residuals and their associated Cook's distance values are reported for each model in Appendix R. The low Cook's distance values for each constituency with large residual values indicates that there are no observations in the models having undue influences on the model. The proportion of the residuals that are classed as large residuals (above 2 or below -2) in each model are around 5%, indicative of a normal distribution.

7.6.2 Regression output tables

Table 7.7 OLS regression coefficients for the model predicting Labour and Conservative vote share change, 1979 - 2017

	Vote share change, 1979-2017 (%)	
	Labour	**Conservative**
intercept	-4.080	2.860
	(3.440)	(2.930)
degree-level qualifications	0.110	-0.439***
	(0.188)	(0.160)
managerial/professional occupations	0.220	-0.117
	(0.212)	(0.181)
manufacturing industry	0.350***	-0.228***
	(0.094)	(0.080)
population change (rate)	-0.133***	0.162***
	(0.033)	(0.028)
poor health	1.540***	-0.939**
	(0.517)	(0.440)
aged 16-29	0.092	-0.423***
	(0.152)	(0.129)
aged 65 plus	-0.236	0.436***
	(0.167)	(0.142)
ethnic diversity	0.268***	-0.146***
	(0.051)	(0.043)
unemployment rate	-0.240	0.344**
	(0.200)	(0.170)
home owners	-0.510***	0.374***
	(0.061)	(0.052)
'cosmopolitan' industries	0.347**	-0.046
	(0.140)	(0.119)
urban-ness	0.641***	0.141
	(0.248)	(0.211)
N	572	572
Adjusted R^2	0.341	0.489

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 7.8 OLS regression coefficients for the model predicting Labour and Conservative vote share change, 1979-1992

	Vote share change, 1979-1992 (%)	
	Labour	**Conservative**
intercept	-1.910	-6.210***
	(1.250)	(1.130)
degree-level qualifications	-0.168	-0.244
	(0.183)	(0.164)
managerial/professional occupations	-0.044	0.136
	(0.158)	(0.143)
manufacturing industry	0.155***	-0.195***
	(0.058)	(0.052)
population change (percent)	-0.175***	0.126***
	(0.050)	(0.045)
poor health	1.680***	-1.240***
	(0.220)	(0.198)
aged 16-29	-0.714***	0.575***
	(0.225)	(0.202)
aged 65 plus	-0.754***	0.390*
	(0.243)	(0.219)
ethnic diversity	0.055	0.265***
	(0.112)	(0.101)
unemployment rate	-0.380**	-0.096
	(0.147)	(0.133)
home owners	-0.100	0.273***
	(0.061)	(0.055)
'cosmopolitan' industries	0.174	-0.028
	(0.113)	(0.101)
urban-ness	-0.074	-0.012
	(0.249)	(0.224)
N	558	558
Adjusted R^2	0.284	0.212

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 7.9 OLS regression coefficients for the model predicting Labour and Conservative vote share change, 1992-2005

	Vote share change, 1992-2005 (%)	
	Labour	**Conservative**
intercept	1.110	-10.500***
	(2.950)	(2.080)
degree-level qualifications	-0.067	-0.130
	(0.114)	(0.080)
managerial/professional occupations	0.211*	0.137
	(0.125)	(0.088)
manufacturing industry	-0.200**	0.058
	(0.091)	(0.064)
population change (percent)	0.084	0.058
	(0.052)	(0.036)
poor health	0.939***	0.049
	(0.328)	(0.231)
aged 16-29	-0.445***	0.046
	(0.149)	(0.105)
aged 65 plus	-0.028	0.119
	(0.209)	(0.148)
ethnic diversity	0.115*	-0.177***
	(0.063)	(0.045)
unemployment rate	1.000***	-0.137
	(0.164)	(0.116)
home owners	-0.367***	0.313***
	(0.092)	(0.065)
'cosmopolitan' industries	-0.514***	0.122*
	(0.099)	(0.070)
urban-ness	0.211	0.984***
	(0.452)	(0.319)
N	568	568
Adjusted R2	0.253	0.239

Notes:
***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 7.10 OLS regression coefficients for the model predicting Labour and Conservative vote share change, 2005-2017

	Vote share change, 2005-2017 (%)	
	Labour	**Conservative**
intercept	8.570***	5.670***
	(2.540)	(1.860)
degree-level qualifications	0.448	-0.444
	(0.441)	(0.323)
managerial/professional occupations	-0.382	0.312
	(0.519)	(0.380)
manufacturing industry	-0.205	-0.561**
	(0.384)	(0.281)
population change (percent)	-0.053	0.032
	(0.076)	(0.056)
poor health	-2.350***	0.839
	(0.895)	(0.655)
aged 16-29	0.076	0.544*
	(0.405)	(0.297)
aged 65 plus	-2.440***	2.280***
	(0.642)	(0.471)
ethnic diversity	-0.020	-0.091
	(0.144)	(0.105)
unemployment rate	-2.550***	0.871
	(0.847)	(0.621)
home owners	-0.250	-0.064
	(0.263)	(0.193)
'cosmopolitan' industries	-1.240***	1.030***
	(0.327)	(0.239)
urban-ness	1.120	-0.233
	(1.740)	(1.280)
N	572	572
Adjusted R^2	0.361	0.378

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

The model outputs in Tables 7.7-7.10 show the beta coefficients, standard errors and the statistical significance of each explanatory variable alongside the adjusted R-squared value for the models predicting Conservative and Labour vote share change between 1979 and 2017. The three models analysing change across shorter time periods have generally lower R-Squared values. This is unsurprising: the effect of changes over such a short time period upon the change in voting outcomes is naturally likely to be lower. Whilst some caution should be urged in that there are undoubtedly many other factors

(if data were available) that could improve the explanatory power of the models, the aim here is largely to test the extent to which certain variables have a statistically significant effect on vote shares rather than achieve the largest R-squared value. The R-squared value (0.489) is also considerably higher for the 1979-2017 model predicting Conservative vote shares than that predicting Labour vote shares (0.341). This means that the model incorporating these particular change variables can better account for the variation in the Conservative vote share changes than Labour vote share changes. It may be that a different set of explanatory variables would improve the explanatory power of the Labour change model or that any model of sociodemographic change simply cannot explain change in Labour vote shares as well.

Regression models using change variables on each side of the regression equation require careful interpretation. Whilst the constituencies with large values for $Y_{2017,i} - \hat{Y}_{1979,i}$ are more likely to have large values for $Y_{2017,i}$, this is not always the case. Nor is it the case at all that a high value for $Y_{2017,i} - \hat{Y}_{1979,i}$ would be positively correlated with a high value for $\hat{Y}_{1979,i}$. In short, areas where, for example, the Labour vote share has increased most significantly between two dates, may well be areas where the vote share was especially low to begin with and still not particularly high in 2017 relative to other places. The same logic also applies to the explanatory variables. For example, let us say that a one unit increase in poor health was associated with an increase in the Labour vote share. It is not possible, from this, to make any conclusions regarding whether vote shares are likely to increase in areas with high or low levels of poor health. It is only possible to conclude that a one unit increase in the proportion of the population in poor health is associated with an increase in Labour vote share.

7.6.3 Increasingly 'left behind': conventional definition

7.6.3.1 Change in manufacturing industries

The independent variable measuring the proportion of the workforce employed in semi-routine/routine jobs has not been included in these models as it could not be harmonised across different time periods. The manufacturing variable, however, provides some surprising results: the beta coefficient is positive in the model predicting

Labour vote share change and negative in the model predicting Conservative vote share change. Between 1979 and 2017, a 1 percentage point increase in the share of the population employed in manufacturing was associated with a 0.35 percentage point mean increase in Labour's vote share and a 0.23 percentage point decrease in the Conservative mean vote share. This finding may seem somewhat counterintuitive, but is likely to reflect relative improvements made by the Conservatives in areas that have gone through a process of intense deindustrialisation – constituencies where the decline in manufacturing has been most significant. Again, this runs counter to the class-based model of voting behaviour in which Labour's support is higher in largely working-class areas that were once at the heart of the UK's industrial economy. However, this relationship is not consistent throughout the time period. For example, change in manufacturing was a statistically significant negative predictor of Labour vote share change between 1992 and 2005 and was insignificant between 2005 and 2017. The observable effect in the 1979-2017 Labour model is likely a product of the relationship that existed in the 1979-1992 model that has since disappeared.

7.6.3.2 Ageing areas

The change in age composition of areas in predicting the change in Conservative vote shares is of key importance. The beta coefficients and statistical significance of the age 16-29 and age 65 plus variables show that, if the effects of the other predictors are held constant, they have a negative and positive relationship respectively with the change in Conservative vote shares. As the proportion of those aged 16-29 years increases by 1 percentage point between 1979 and 2017, the mean Conservative vote share decreases by 0.42 percentage points. On the contrary, as the proportion aged 65 plus increases by 1 percentage point, the Conservative vote share increases by 0.44 percentage points. The changing age structure of an area is an important and statistically significant predictor of the change in Conservative vote share. Even when accounting for other sociodemographic changes, if an area has aged considerably during this time period, it is likely that the Conservatives will have, relative to other areas, improved their vote share.

7.6.3.3 Change in ethnic diversity

Between 1979 and 2017, change in ethnic diversity is a statistically significant, negative predictor of the change in Conservative vote share. A 1-point increase in ethnic diversity between 1979 and 2017 resulted in a mean 0.15 percentage point decrease in the Conservative vote share and a 0.27 percentage point increase in Labour's vote share. Relative to other areas, the Conservatives appeal has increased in areas where ethnic diversity has increased most slowly, to the detriment of Labour. In the shorter time periods, this pattern is much less clear-cut: between 1992 and 2005 ethnic diversity was not statistically significant at the 95% level for Labour or the Conservatives. Furthermore, despite being a negative predictor ($\beta = -0.18$) of Conservative vote share change between 1992 and 2005, it was a positive predictor ($\beta = 0.27$) in the preceding 1979-1992 period.

7.6.3.4 'Cosmopolitan' employment

The importance of the change in proportions of 'cosmopolitan' employment in predicting the change in vote shares for either party is somewhat unclear. Whilst between 1979 and 2017, a 1 percentage point increase in the proportion of 'cosmopolitan' jobs was associated with a mean 0.35 percentage point increase in Labour's vote share, this was not a consistent finding throughout the shorter time periods. In fact, between 2005 and 2017, as the proportion of 'cosmopolitan' jobs increased by 1 percentage point, Labour's mean vote share decreased by 1.24 percentage points and the Conservative vote share increased by 1.03 percentage points. This, once again, is likely the result of the fact that many of the constituencies that have seen some of the most significant, recent increases in 'cosmopolitan' employment are those that had much lower levels of these service-sector jobs at the start of this time period and still are likely to have slightly lower proportions than the mean today.

7.6.3.5 Degree-level qualifications

Between 1979 and 2017, as the proportion of residents with degree-level qualifications increases by 1 percentage point, there is a statistically significant decrease in the mean

Conservative vote share of 0.44 percentage points. In areas that are becoming increasingly educationally 'left behind', support for the Conservatives has been improving, relatively speaking. For Labour, the change in degree-holders was insignificant in every time period. The aforementioned split in typically 'middle-class' variables – home-ownership and degree-level qualifications - is also clear in the model coefficients. Between 1979 and 2017, holding other characteristics constant, a 1 percentage point increase in home ownership was associated with a 0.51 percentage point decrease in Labour's vote share and a 0.37 percentage point increase in the Conservative vote share.

7.6.3.6 Population size change

The scatterplots presented in Figure 7.7 clearly showed that relative to other areas, Labour have improved their electoral performance in areas where the population grew between 2005 and 2017. However, the statistical insignificance of the variable during this time period suggests that this relationship is not a consequence of the change in population size itself, but instead of other variables in the model. Perhaps surprisingly, between 1979 and 2017, the change in population size is a statistically significant negative predictor of Labour vote share change and a positive predictor of Conservative vote share change.

7.6.4 Increasingly 'left behind': economic deprivation definition

The change in the proportion of the population in poor health is used here as a proxy for the change in the levels of deprivation in an area. Again, this variable shows diverging patterns through the time periods. Whilst it is a statistically significant positive predictor ($\beta = 1.54$) of Labour vote share change and a statistically significant negative predictor ($\beta = -0.94$) of Conservative vote share change between 1979 and 2017, the opposite effect is clear in the most recent period. Between 2005 and 2017, as the proportion of the population in poor health increases by 1 percentage points, the Labour vote share decreases by 2.35 percentage points. At the same time, for the Conservatives, change in poor health was not statistically significant during this time period. This differs markedly from the 1979-1992 and 1992-2005 periods during which

the statistically significant beta coefficient in the Labour models were 1.68 and 0.94. Whilst the variable was an insignificant predictor of Conservative vote share change between 1992 and 2005, it was a statistically significant negative predictor between 1979 and 1992 ($\beta = -1.24$).

When holding the other variables constant, the effect of the change in unemployment rate on Labour vote share change between 1979 and 2017 is insignificant. However, in the shorter time periods, there is a fluctuating effect that is negative in 1979-1992 and 2005-2017 but positive in the time period in between (1992-2005). Most notably, between 2005 and 2017, as the unemployed rate increases by 1 percentage point, there is a mean decrease in Labour's vote share of 2.6 percentage points. For the Conservatives, the positive coefficient indicates that change in the unemployment rate is a positive predictor of their vote share change in this time period, although it is an insignificant predictor in the shorter time frames. This concludes that, between 2005 and 2017, as an area becomes increasingly economically 'left behind' – as measured by increases in poor health and unemployment – there is a likely increase in relative Conservative support and a decrease in relative Labour support.

7.7 Chapter summary: increasingly 'left behind', increasingly Conservative?

The aim in this analysis section has been to understand the extent to which a process of becoming increasingly 'left behind' is both associated with and can predict changing success for Labour and the Conservatives between 1979 and 2017. As in Chapter 6, rather than assuming a single definition of 'left-behindedness', a multifaceted approach illuminates more complex geographical and political changes. By employing a method of spatial overlaying to generate accurate 1981 census data on the most recent parliamentary constituency boundaries and by using regression models to predict corresponding vote shares, a long-term analysis has been accomplished from 1979 to 2017. This extends upon the short-term change models produced by other researchers that have been restricted by changes in parliamentary constituency boundaries.

Before considering changes in 'left-behindedness' according to the three definitions outlined in Chapter 1.2, it is worth considering perhaps the clearest and most significant

finding in this analysis: the most substantial changes in vote shares between 1979 and 2017 have occurred in constituencies that have experienced the most positive relative socioeconomic changes. In these areas of economic growth, Labour's vote share has increased and the Conservatives' has decreased, relative to other areas. In fact, the negative overall relationship between decline and Labour vote share is wholly the result of the changes that have occurred in these areas. The same is also the case for the positive overall relationship between decline and Conservative vote shares. The reverse picture is not seen at the other extreme, as there is little to suggest here that relative to other areas, there has been a significantly positive change in Conservative vote shares in areas that have experienced the most relative decline. Nor has Labour's vote share change in these areas been substantially different from the mean change across all constituencies. The analysis of this index of 'left-behindedness' suggests that between 1979 and 2017, Labour have not been, relative to other areas, losing significant support in areas that have most significantly fallen behind, in socioeconomic terms – areas in which the Conservatives have also not made significant gains.

This is supported by scatterplots that showed little correlation between changes in economic deprivation and the vote share changes of either party between 1979 and 2017. If 'left behind' areas are conceptualised as those that have experienced the most significant increases in economic deprivation, there is little to suggest that Labour have been losing support or the Conservatives have been gaining support in these areas in this longer time period. However, a remarkably different pattern emerges between 2005 and 2017: not only has Labour's relative support declined in areas that have seen increases in relative poverty (poor health), also changes in poor health and unemployment are both negative predictors of the change in Labour's vote share and positive predictors of the change in the Conservative vote share. Whilst the long-term picture is largely unchanging, there is clear evidence that more recently, Labour's relative support is falling and the Conservatives' relative support is increasing in areas where relative economic deprivation is increasing. As the analysis in Chapter 6 showed, this does not imply that Labour's relative support is weakening in the most deprived areas of the country. Rather, it is decreasing in areas that are declining more rapidly or growing more slowly than others. In this case, measuring 'left-behindedness' as a process illuminates changes that are hidden from analyses using only a static conceptualisation.

In a time period in which the British economy has become increasingly driven by service-sector employment in larger, ethnically-diverse cities with many younger graduates, areas that are moving towards this sociodemographic composition most slowly are understood in this analysis to be those that are becoming 'left behind' on the conventional definition outlined in Chapter 1. It is certainly contestable to refer to these places as increasingly 'left behind', particularly given the rather more serious forms of decline that can be signified by rising unemployment, poor health or deprivation. Nonetheless, as many areas that have experienced the most significant growth in routine and semi-routine labour are far-removed from large cities, an interesting geographical story emerges. That is, relative to their largely increasing support in many inner-city areas where there have been sharp declines in these traditional forms of working-class employment, the change in Labour vote share has been below the mean in constituencies where these forms of employment have been increasing. In addition, Labour have, on average, lost a little support in deindustrialising areas that have simultaneously witnessed growth in other forms of working-class occupations. The Conservatives have clearly benefited in these areas, adding weight to the hypothesis that their support increases alongside the occupationally working-class nature of the workforce. This may also reflect the changing nature of work in these areas: from manufacturing workers represented by Labour-affiliated unions to a de-unionised and more atomised labour market of low-skilled workers.

At the same time, it is clear that in areas where the population is ageing most rapidly and becoming more educationally qualified most slowly, the Conservatives have increased their relative support, whilst their support has declined in areas with increasing proportions of younger people and degree-holders. The opposite is the case for Labour. This is, however, a more recent phenomenon: this effect of changing age composition has only occurred between 2005 and 2017. During the wider time period, areas where the increase in ethnic diversity has been slowest have also seen increased relative support for the Conservatives and a decrease in relative support for Labour. There is clear evidence to suggest that generally the Conservatives have witnessed more positive relative vote share changes in areas that are becoming conventionally 'left behind' – ageing, diversifying slowly with lower than average increases in gross migration and degree-holders and higher than average increases in typically 'working-class' occupations. This is most significantly the case in areas that have also rapidly deindustrialised, where Labour have lost ground.

If one understands areas to be becoming 'left behind' by increasingly precarious housing and employment conditions, there is little to suggest any relative gains have been made by the Conservatives. Labour have not only made substantial gains in many areas where the private rented sector has grown and home ownership declined most substantially, but they have also shown relative improvement in many constituencies where typically insecure forms of labour are increasingly the norm. These tend to be in areas, not necessarily where the proportions of young adults are increasing, but where the proportion of older, retired residents is in considerable decline. Whether one considers an area with increasing proportions of private renters, most often located in cities and large towns, as being 'left behind' is debatable. However, for many, private renting in a country with restricted tenants' rights reflects a more precarious form of housing than owning their own property or accessing cheaper social housing.

This chapter has provided evidence of relatively clear overall trends: areas with growing numbers of older, middle and working-class home-owners, typically removed from larger towns and cities, offer little to give Labour hope and give some relative positivity for the Conservatives. Where there should be substantial concern for Labour is in their relative decline in constituencies that have deindustrialised significantly yet remained particularly working-class in nature. If these, as well as broadly economically declining areas of the country, are those that are considered becoming 'left behind', they currently present Labour with more problems than the Conservatives if the trend towards the latter continues over time. However, for the Conservatives, areas where ever larger proportions of people are priced out of home ownership and pushed into both the precarious rental and labour market, present serious concerns. These urban centres may increasingly offer opportunities to their diverse residents, such that they might not always be considered in decline. Yet, if many of their residents continue to live in increasingly precarious situations, they might well feel that they are being 'left behind'.

Chapter 8. Analysis 3: The incorporation of space: the clustering of constituencies that do not fit with expectations

8.1 Introduction and summary of key findings

This chapter is built on the premise that the OLS models executed in Chapter 6 fail to account for spatial effects on voting outcomes and therefore do not sufficiently capture the spatial variation in the data. It also begins from the idea that 'space matters' – that there are some spatial determinants of voting that have impacted on voting above and beyond what has previously been explained by socio-demographic factors. In short, parliamentary constituencies do not exist independently of each other. Rather, neighbouring constituencies may share cultural commonalities that move beyond their precise socio-demographic composition. Areas that might be classified as 'left behind' in one area of the country may, through contextual factors, have different histories and political cultures and therefore electoral outcomes than another area in a different region with similar socio-demographic characteristics. These spatial patterns would not be accounted for by the OLS models produced in the previous chapters, as shown by the clustering of the residuals in the opening section of this analysis.

The chapter develops by exploring the evidence that spatial autocorrelation exists in either the dependent variable or the error terms of the models. It tests the extent to which values of the dependent variable or the error terms in particular locations are correlated with the same values in neighbouring locations. I hypothesise that the presence of spatial autocorrelation and clustering in the spatial distribution of residual values will reveal that, while socioeconomic and demographic factors are important in explaining party vote shares across General Elections in England and Wales, support for Labour and the Conservatives are influenced by space – or, more precisely, by the characteristics of neighbouring constituencies. In this case, Tobler's (1970, p. 236) first law of geography is confirmed: 'everything is related to everything else, but near things are more related than distant things'. The implication is that the regression assumption of independence of observations is broken.

After providing evidence for the clustering of vote shares and residuals and confirming the presence of spatial autocorrelation, the chapter explores two particular locations that do not fit with model predictions: Merseyside and Lincolnshire. The former is an area in which Labour consistently outperforms model predictions and the Conservatives underperform and the latter is the opposite way around. In an attempt to rectify this local clustering of large residuals, and the presence of global spatial autocorrelation more generally, an attempt is made initially to include any confounding variables that may be causing this. 'Non-spatial' OLS models are estimated for 2015 and 2017 with some additional variables, on the basis that 'When *all relevant* predictor variables are including in 'non-spatial' models, the residuals will not be autocorrelated' (Kühn and Dormann, 2012, p. 996). Such models are only estimated for these two most recent elections because the additional data used to create confounding variables is only recently available and because of time constraints. The analysis confirms that, even though the additional variables improve the model explanatory power, there remains significant spatial autocorrelation in the residuals, such that model assumptions are violated.

In order to account for the continued presence of spatial autocorrelation in the residuals and its potential effect on the findings produced in Chapter 6, spatial models must be produced. After observing spatial autocorrelation in both the errors and in the Labour and Conservative vote shares of the OLS regression models, spatial error and spatial lag models have been estimated. These spatial analytical approaches address the following research question (research question 4 from Chapter 1.2):

To what extent were spatial processes important in explaining 2015 and 2017 vote shares above and beyond the demographic and socioeconomic makeup of constituencies?

The resulting analysis of the two models in comparison to the adjusted OLS model (with additional variables) shows that by incorporating spatial dependence, the models and their predictive capabilities are improved and at the same time, the global spatial autocorrelation is all but removed. In addition, most of the findings from Chapter 6 still hold true. For example, in 2017, variables included in economic and precariat definitions of 'left-behindedness' - poverty (poor health) and insecure employment – remain positive predictors of Labour's vote share even after accounting for spatial autocorrelation. At the same time, the more conventional 'left behind' variables –

manufacturing and older people – remain negative predictors. For the Conservatives, the opposite remains the case: conventional 'left-behindedness' marked by high proportions employed in manufacturing and low proportions of young people and limited ethnic diversity remains positively associated. On the other hand, poverty (poor health) and insecure employment remain negatively associated with Conservative vote shares.

8.2 The spatial distribution of Labour and Conservative under- and over-performance

Figures 8.1-8.4 show the geographical distribution of the residuals from the OLS models executed in Chapter 6. In short, this presents a visualisation of the areas, at each election, where the model under- and over-predicted Labour and the Conservative vote shares. In each map, constituencies in green are those in which the respective party out-performed expectations (or where the model under-predicted their vote share), whilst red constituencies indicate the strongest under-performance (or where the model over-predicted their vote share). For brevity, only 1979 and 2017 models are presented here, as they mark the beginning and end of the analysis periods. The other maps can be found in Appendix S.

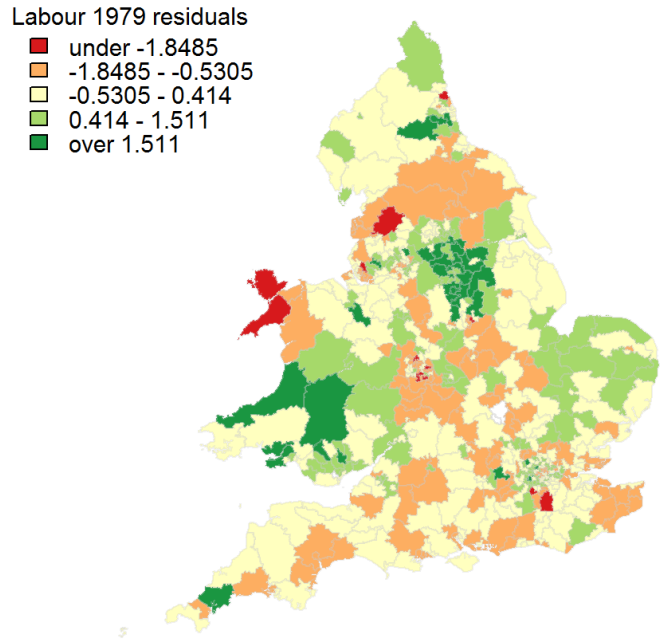

Figure 8.1 Choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 1979

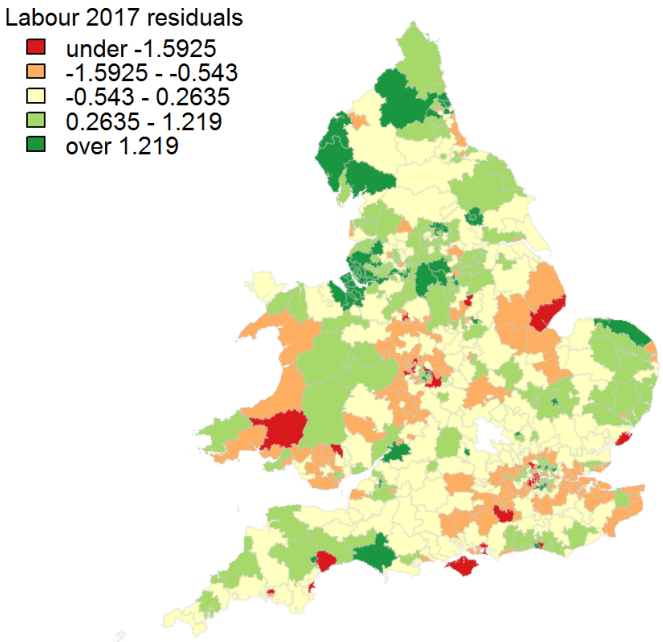

Figure 8.2 Choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 2017

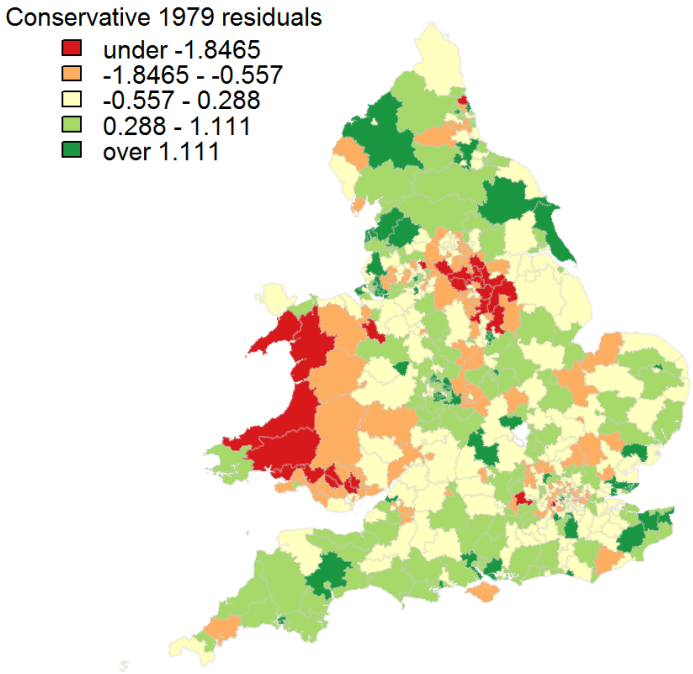

Figure 8.3 Choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 1979

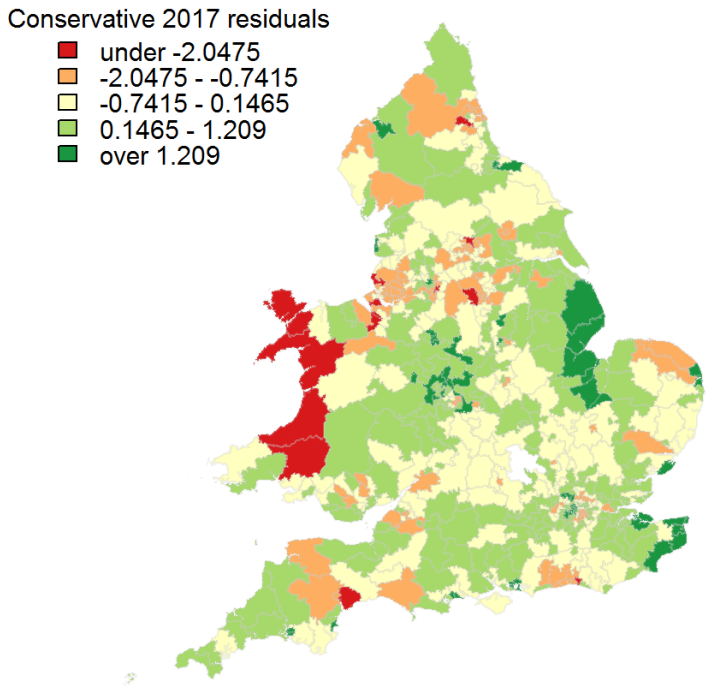

Figure 8.4 Choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 2017

Between 1979 and 2017, there has been a clear geographical shift in the areas in which Labour have over-performed, given their sociodemographic composition. In 1979, of the twenty-two constituencies in which the residual value was greater than 2 (i.e. those areas where the model most significantly under-predicted Labour vote shares), sixteen were in existing or former coal-mining areas. There was a clear clustering of high residual values in the former coalfields of South and West Yorkshire (e.g. Hemsworth, Rother Valley, Barnsley East), the North East (e.g. North Durham, North West Durham) and South Wales (e.g. Islwyn). The residual values for these constituencies and the others in which Labour over- and under-performed can be found in Appendix H. While this 'coalmining effect' has not disappeared since 1979, it has weakened considerably. By 1997, only 1 of the ten constituencies in which Labour most substantially over-performed (residual value >2) was located in a former or existing coal-mining area. By 2017, this was zero out of fourteen constituencies. Whilst Labour does continue to out-perform model expectations in many of these regions, particularly in areas of West and South Yorkshire and the North East, the overall trend is that coalmining areas have slowly shifted to become more 'typical' in the way that they vote. For the Conservatives, these areas have moved in the opposite direction: In 1979 and 1983 in particular, there is a clustering of negative residual values in areas of South and West Yorkshire and Derbyshire that by 1997 had all but disappeared.

Where in 1979, there was a strong 'coalmining effect', by 2017 there is a significant 'Merseyside effect' that the OLS models in Chapter 6 have not been able to account for. Indeed, in both 1979 and 1983, none of the constituencies in which Labour significantly over-performed (residual value >2) were located in Merseyside, yet by 2017 this had increased to 9 out of fourteen. Contrast the largely under-performing Labour Party in Merseyside in 1979 (Figure 8.1) with the clustering of dark green constituencies either side of the River Mersey in 2017 (Figure 8.2), indicating significant over-achievement in the area. The shifting of Labour's heartlands from mining towns to Merseyside might appear to fit with the narrative of their declining strength in white, working-class towns and increasing popularity in ethnically-diverse, urban areas. However, outside of the inner-city core of Liverpool, much of suburban Merseyside is white British and remains largely working-class. In this sense, by moving towards Labour so significantly, it has bucked the trends seen in similar areas elsewhere in England and Wales.

At the same time, Merseyside has undoubtedly become a very poorly performing area for the Conservatives. In the 1979 Conservative model (Figure 8.3), most Merseyside constituencies had a positive residual value, yet by 2017 (Figure 8.4), there is a clustering of negative residual values, showing that this relative over-performance has been replaced by a strong under-performance relative to sociodemographic and geographic characteristics. These findings are confirmed in Figure 8.5: whereas the mean Merseyside residual for Labour has remarkably increased in every model year except 1997 and 2015, for the Conservatives it has decreased from 0.7 in 1979 to -1.3 by 2017 – most significantly decreasing in the 2017 and 1992 models. Figure 8.6 shows that this is not simply a case of over-performance for Labour and under-performance for the Conservatives, as Merseyside is also a region in which the former has come to dominate at the latter's expense. Indeed, in 1979, the mean Labour vote share of 45.7% was only 7.7 percentage points above the mean Labour vote share in England and Wales of 38%. By 1987, this gap was 15.4 percentage points and by 2015 it was at a peak of 28.5 percentage points. In contrast, for the Conservatives, their mean Merseyside vote share was only 5.5 percentage points below the England and Wales Conservative mean in 1979. By 2017, their mean share was a full 22.6 percentage points below the England and Wales mean.

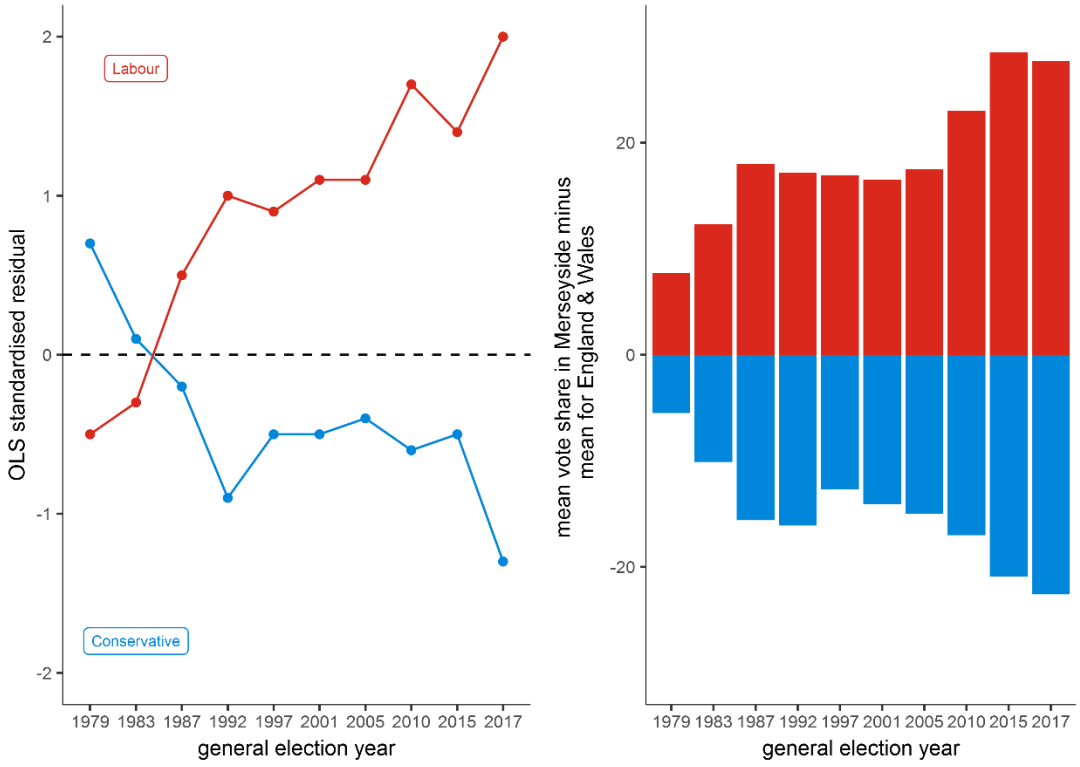

Figure 8.5 (left) Mean standardised residual values in Merseyside from the OLS models predicting Labour and Conservative vote shares (1979-2017)

Figure 8.6 (right) Mean Labour and Conservative vote shares in Merseyside at each General Election (1979-2017)

There is a notable and consistent clustering of over-performance in three areas for the Conservatives: 1) the suburbs of Birmingham and some of the surrounding West Midlands towns – constituencies such as Aldridge-Brownhills, Walsall North and Birmingham, Erdington; 2) Lincolnshire, where the Conservatives have consistently out-performed model predictions since 1987; 3) the far South Eastern coastal strip of Kent, in constituencies such as North Thanet and Folkestone and Hythe. Of the three aforementioned areas, Lincolnshire perhaps best represents the opposite case to Merseyside, in that it is an area where the Conservatives have both out-performed model predictions and also been broadly dominant in elections. In fact, at the 2017 General Election, South Holland and The Deepings – a predominantly rural constituency in South Lincolnshire – produced the largest Conservative vote share in England and Wales of 69.9%. As the graph in Figure 8.8 shows, the relative Conservative performance in Lincolnshire (excluding North Lincolnshire/North East

Lincolnshire and Lincoln[1]) compared to England and Wales as a whole has generally increased over time. In 1979, the mean Conservative vote share in the county was only 7.5 points above the England and Wales mean. This had increased to 15.1 points in 2001 and 20.1 in 2017. In contrast, Labour have consistently achieved vote shares considerably below their mean England and Wales performance between 1979 and 2017.

In Figure 8.7, the mean standardised residuals for Lincolnshire for the Labour and Conservative OLS models from Chapter 6 at each election have been plotted. The positive residuals for the Conservative models indicate that the Conservatives have out-performed the model's fitted values at every election between 1979 and 2017. While this is a consistent pattern, in 1979 and 1983 the residuals were only slightly above zero. At the General Elections in 1987, 1992 and 1997, the mean residual value increased sharply to a high of 1.8 in 1997. Since then, for each election model, the residual value for the Conservatives has been consistently between 1 and 1.4. There is some within-region variation, with the residual values in the constituencies of Boston and Skegness, South Holland and The Deepings and Louth and Horncastle generally higher than those elsewhere (see Appendix T for constituency-level values).

[1] In the statistical analysis that follows, the constituencies that constitute the analysis of Lincolnshire are Boston and Skegness, Gainsborough, Grantham and Stamford, Louth and Horncastle, Sleaford and North Hykeham and South Holland and The Deepings. These reflect the constituencies considered part of Lincolnshire (as opposed to North Lincolnshire or North East Lincolnshire) by the Boundary Commission for England, minus Lincoln, which is far less politically unusual.

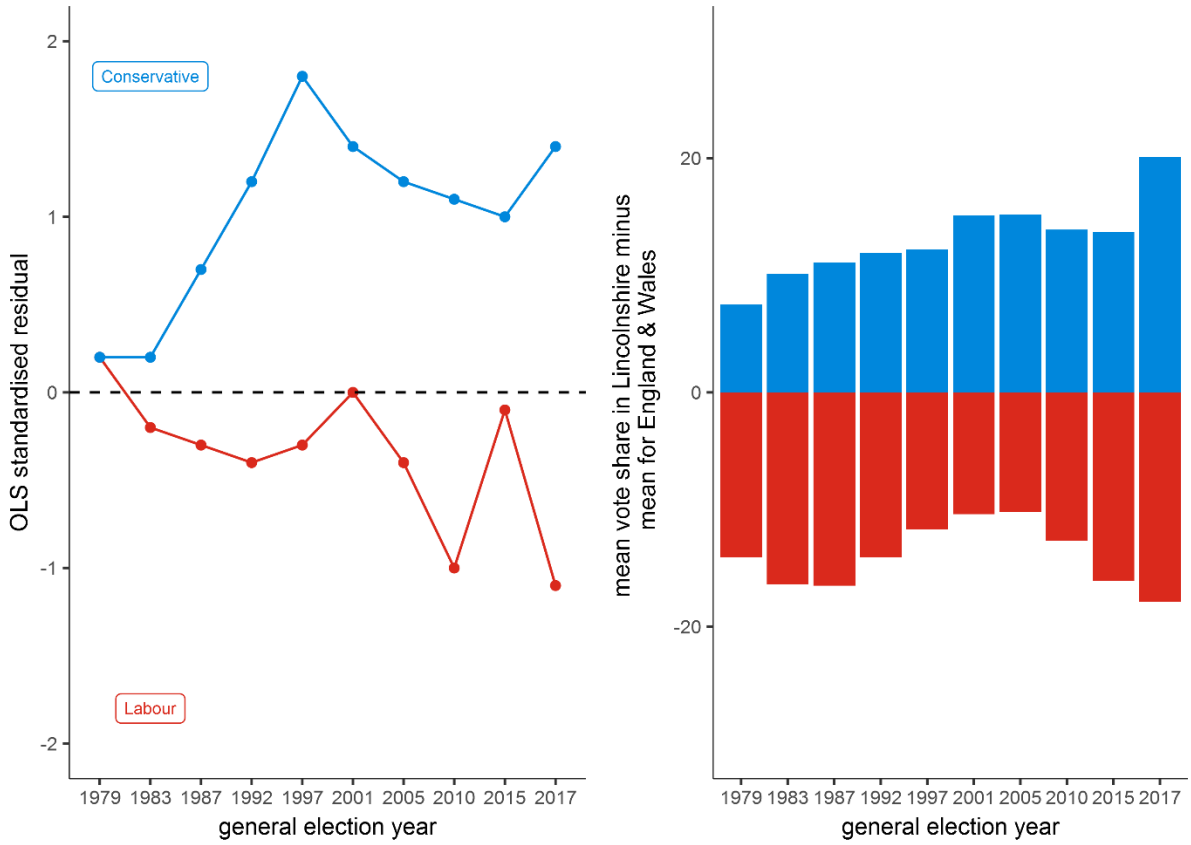

Figure 8.7 (Left) Mean standardised residual values in Lincolnshire from the OLS models predicting Labour and Conservative vote shares (1979-2017)

Figure 8.8 (Right) Mean Labour and Conservative vote shares in Lincolnshire at each General Election (1979-2017)

8.3 Global spatial autocorrelation

In order to understand the extent and geographical location of statistically significant spatial clustering in the residual values – as well as the Conservative and Labour vote shares – tests for spatial autocorrelation can be executed. The global Moran's *I* measures the extent of spatial autocorrelation in the whole dataset, or in this case, across the whole of England and Wales. In short, it tells us the extent to which constituencies that neighbour each other – across the whole of England and Wales – have statistically significant similar values for the characteristic of interest. Figure 8.9 and Figure 8.10 show the global Moran's *I* value for the Labour and Conservative OLS models at each General Election. The values have been calculated using a queen contiguity spatial weight in which constituencies with shared boundaries and common vertices are considered to be neighbours.

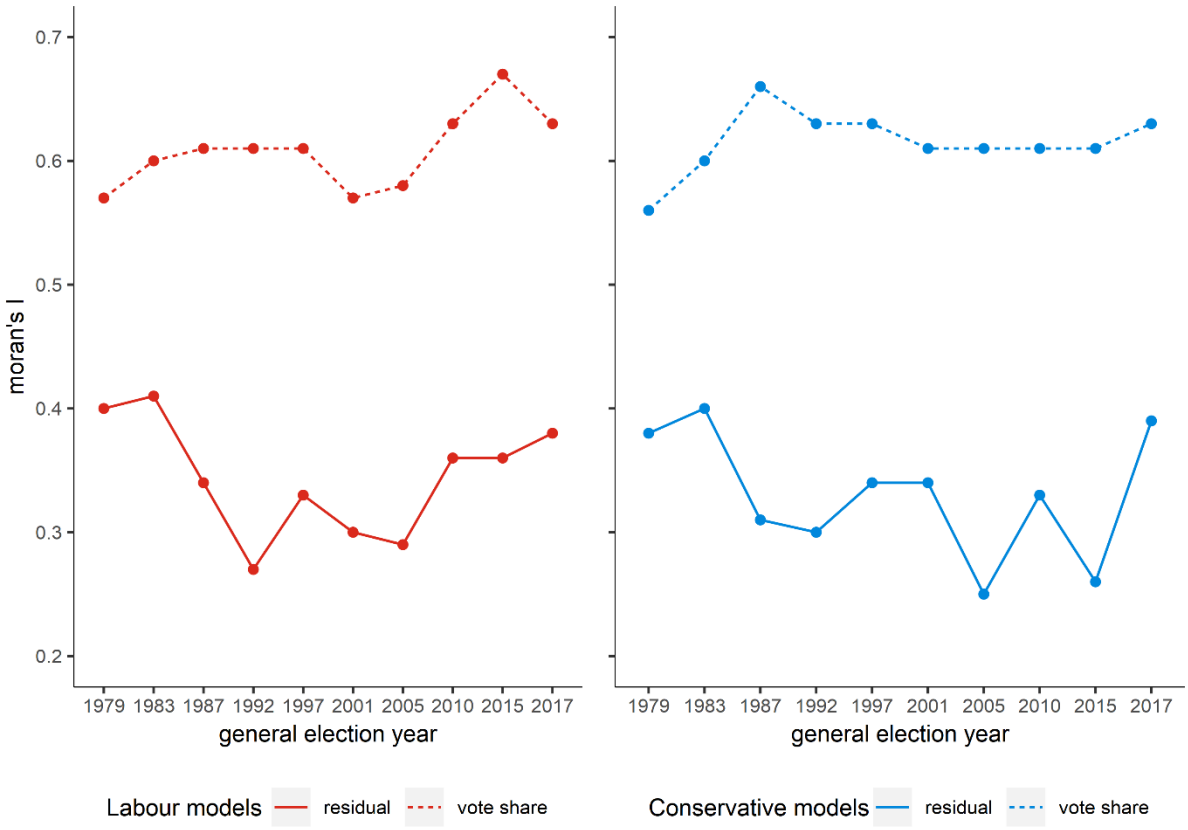

Figure 8.9 (Left) Global Moran's *I* statistics for spatial autocorrelation for OLS Labour models at each General Election (1979-2017)

Figure 8.10 (Right) Global Moran's *I* statistics for spatial autocorrelation for OLS Conservative models at each General Election (1979-2017)

For both Labour and the Conservatives, the global Moran's *I* statistic was statistically significant ($p<0.05$) at each election for the model residuals and the vote shares. The Moran's *I* vote shares value consistently falls between 0.56 to 0.67 for both parties, indicating a moderate to strong positive spatial autocorrelation. The extent to which there is spatial clustering of both Labour and Conservative vote shares in elections in England and Wales has remained consistently high. There is also a fluctuating, albeit weaker positive spatial autocorrelation in the model residuals for both parties, with the Moran's *I* value falling between 0.25 and 0.41 at each election. Places where Labour or the Conservative out-perform model expectations are somewhat likely to be located close to other places where similar relationships are present. The accompanying Moran's *I* scatterplots can be found in Appendix U.

8.4 Local Indicators of Spatial Association

In order to identify the location of the clusters of residual and vote share values, Local Indicators of Spatial Association (LISA) are calculated. As with the global Moran's *I*, a queen contiguity weight has been used. A local cluster map has been plotted for each model at each General Election, in order to show the changing locations where there is significant local spatial autocorrelation ($p<0.05$) as well as the type of association: constituencies with High-High values are those that have a high value of the attribute and whose neighbours also have a high value; constituencies with Low-Low values are those that share low values with their neighbours. There are also two types of spatial outliers: constituencies coloured in a faint red (High-Low) or faint blue (Low-High). The former are constituencies with high values of the variable surrounded by neighbouring constituencies with low values; the latter is the opposite way around.

8.4.1 Labour residuals and vote shares

Figure 8.11 and Figure 8.12 are local cluster maps of the residuals from the OLS models predicting Labour vote shares in 1979 and 2017. For the elections between these dates, the local cluster maps can be found in Appendix V. The 1979 map confirms the presence of statistically significant clusters of constituencies with large, positive residuals in coalfield regions of South and West Yorkshire, the North East close to Newcastle and South Wales. In contrast, there are clusters of constituencies with large, negative residuals in the West Midlands, Hampshire and Kent, as well as parts of Merseyside and the North West. The former are clusters of constituencies where Labour out-performed model predictions and the latter where they are under-performed against model predictions in 1979. By 2017, Figure 8.12 confirms that the clustering of High-High values around the South Wales and South Yorkshire former coalfields has for the most part disappeared. Instead, a clear, statistically significant clustering of large, positive residual values can be found in Merseyside, London, parts of Lancashire and West Yorkshire and Northumberland and the far North East. Low-Low clusters in Hampshire and the West Midlands have been supplemented with an additional cluster in Lincolnshire - further evidence of a significant regional under-performance in Lincolnshire. These regional shifts in under- and over-performance mark a continuing

process throughout the entire period (1979-2017), as demonstrated in the cluster maps in Appendix V.

The two maps in Figure 8.13 and Figure 8.14 show the statistically significant clustering of Labour's vote shares at the 1979 and 2017 General Elections. The regions of Low-Low clusters, where Labour generally perform poorly, are remarkably consistent across elections. Generally, this covers a swathe of rural southern England (from the far South West across to the South East) and the East of England, most notably south from Lincolnshire to Essex. The regional clustering of Hi-Hi constituencies with Labour's vote shares, were in 1979, largely concentrated in coal-mining areas of West and South Yorkshire, Lancashire, South Wales and the North East. Since 1979, at each election, the clusters in these areas, particularly South Yorkshire, have gradually decreased in size. At the same time, there has been a significant growth in the size of the cluster in Merseyside and London.

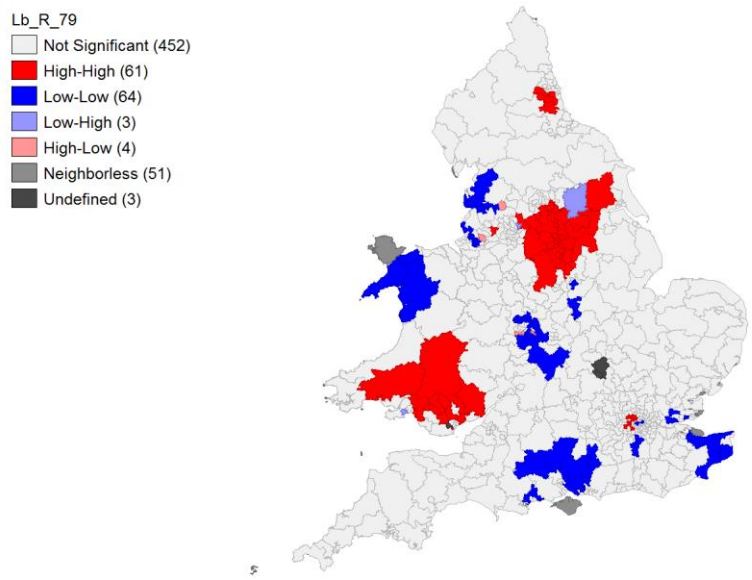

Figure 8.11 LISA cluster map of standardised residuals from the 1979 model predicting Labour vote shares

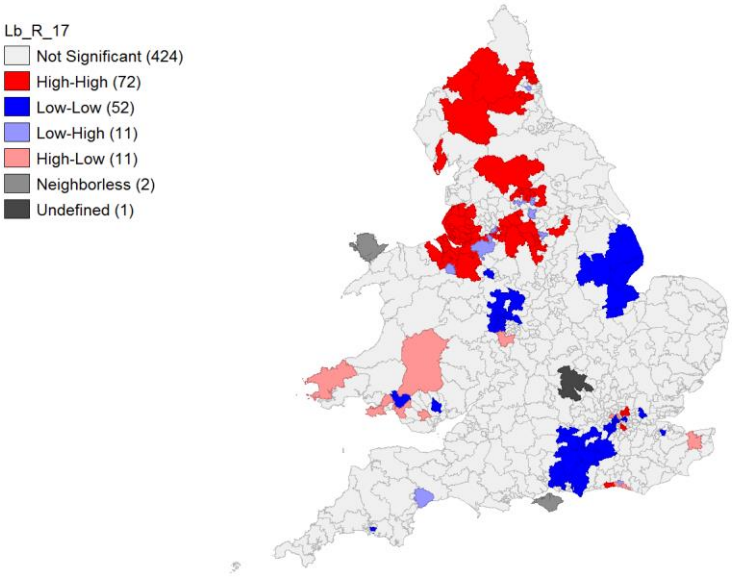

Figure 8.12 LISA cluster map of standardised residuals from the 2017 model predicting Labour vote shares

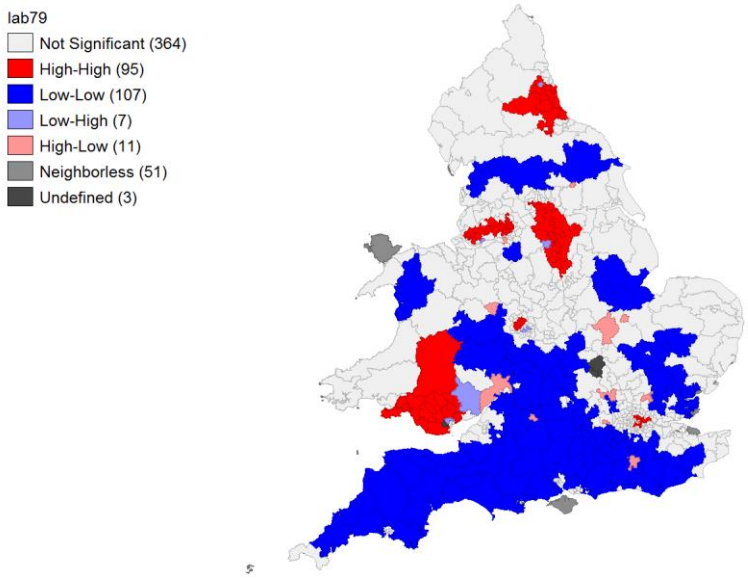

Figure 8.13 LISA cluster map of Labour vote shares from the 1979 General Election

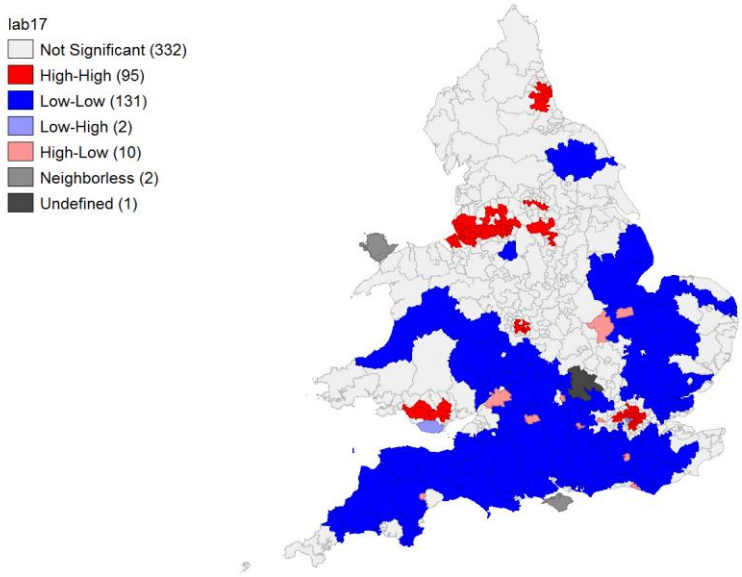

Figure 8.14 LISA cluster map of Labour vote shares from the 2017 General Election

8.4.2 Conservative residuals and vote shares

Figure 8.15 and Figure 8.16 are LISA cluster maps of the residual values from the OLS models predicting Conservative vote shares at the 1979 and 2017 elections. In 1979, the clustering of High-High values – groups of neighbouring constituencies where the Conservatives out-performed model predictions – can be seen across several disparate regions: Birmingham, rural North Yorkshire and Lancashire, and parts of Merseyside, Devon and Kent. By 2017, rather than out-performing model expectations in urban areas of Birmingham, this over-performance had moved elsewhere in the West Midlands to the north of Birmingham, around towns and cities such as Walsall, Wolverhampton and Stoke-on-Trent. At the same time, there is a significant increase in clustering of High-High values across Lincolnshire, providing statistically significant evidence for the tentative findings from the initial residual maps. Whereas the clustering of High-High values in much of the West Midlands is a more recent phenomenon, the trend has been prevalent in Lincolnshire – particularly South Lincolnshire – since 1992 (see Appendix V). Indeed, Figure 8.17 and Figure 8.18 below illustrate that, whilst in 1979 high Conservative vote shares were largely clustered in the rural south, they have since also began performing well in elections across the West and East Midlands, including the two aforementioned regions north of Birmingham and Lincolnshire.

In contrast, Figure 8.15 shows that in 1979 there was a statistically significant clustering of Low-Low values in most of West and South Yorkshire, parts of Derbyshire and most of Wales. The findings in Wales may also reflect the fact that Plaid Cymru's vote shares are not accounted for in the models. By 2017, the under-performance in former mining areas of West and South Yorkshire and South Wales had receded somewhat, being replaced by a cluster of Low-Low values in Merseyside.

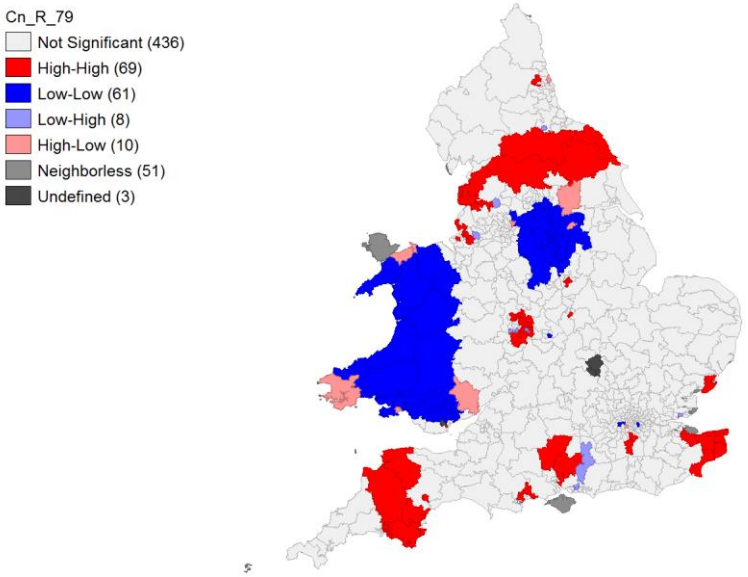

Figure 8.15 LISA cluster map of standardised residuals from the 1979 model predicting Conservative vote shares

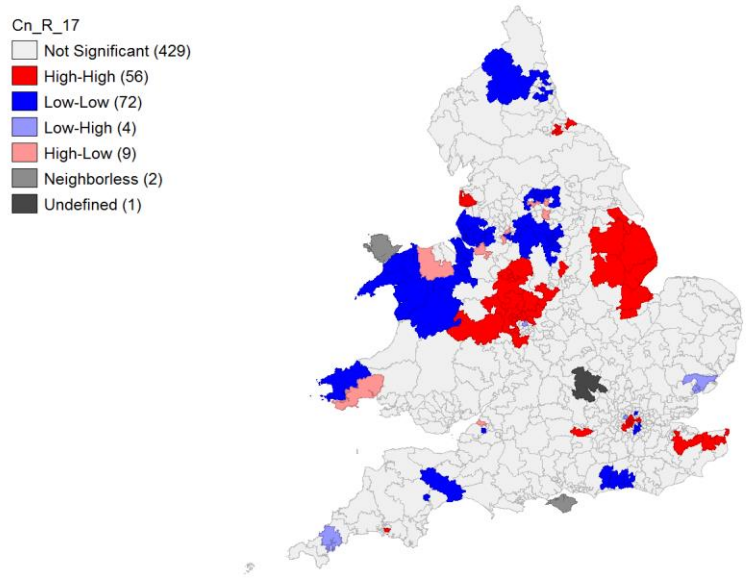

Figure 8.16 LISA cluster map of standardised residuals from the 2017 model predicting Conservative vote shares

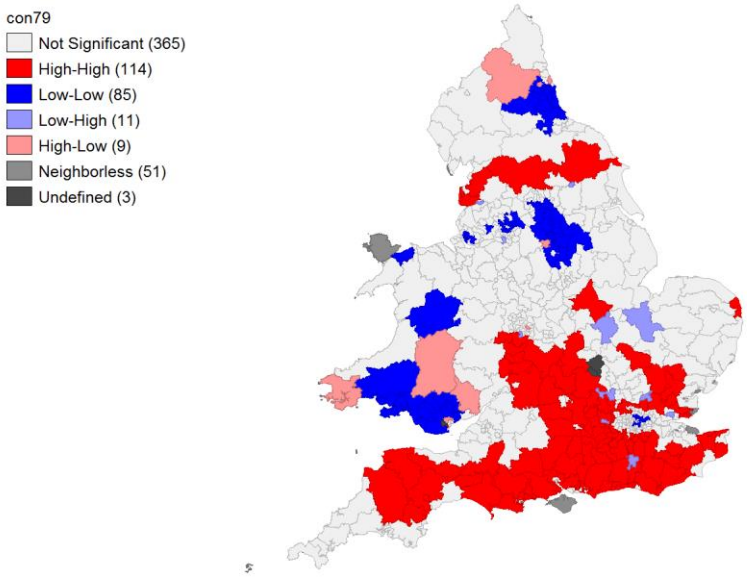

Figure 8.17 LISA cluster map of Conservative vote shares from the 1979 General Election

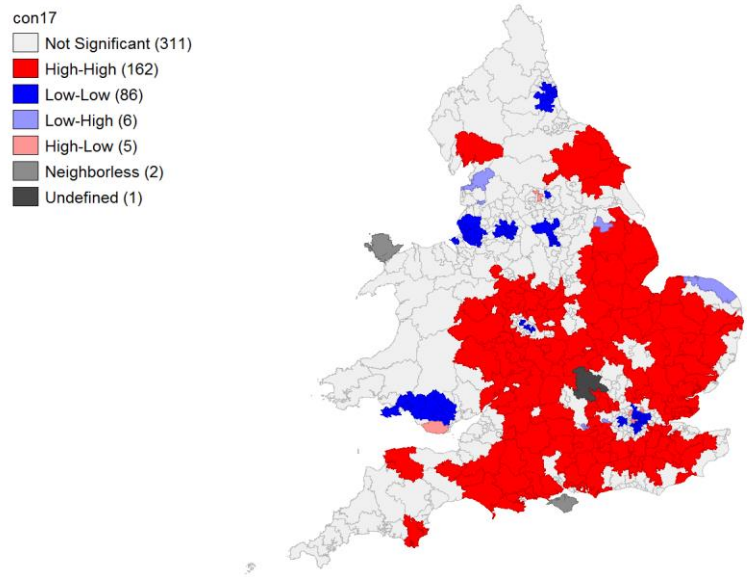

Figure 8.18 LISA cluster map of Conservative vote shares from the 2017 General Election

8.5 Composition or regional context?

There is clear evidence of significant spatial autocorrelation present in the OLS models predicting Labour and Conservative vote shares at each election between 1979 and 2017. In particular, a clustering of over-performance for Labour across Merseyside and for the Conservatives across Lincolnshire has developed – two regions that do not fit

the changing relationships between sociodemographic characteristics of places and their voting outcomes. The presence of spatial autocorrelation invalidates key assumptions of OLS models: that error terms are not correlated and that observations are independent of each other. As a result, parameter estimates are biased and inefficient. The first step to account for this problem is to identify any other variables that could be included in the models in order to understand the extent to which compositional factors – the sociodemographic characteristics of an area – can account for the spatial clustering of Labour and Conservative over- and under-performance in certain areas of the country. If incorporating more compositional variables into the models does not eradicate the spatial autocorrelation, nor improve the ability to predict these anomalous regions, then spatial models can be executed that account for regional contextual effects. This additional analysis is limited to the 2015 and 2017 General Elections due to the lack of data to include extra variables at earlier elections.

8.5.1 Composition: incorporating additional variables into 2015 and 2017 OLS models

OLS models for these two General Elections have been re-executed using the same variables as in Chapter 6 but with the following additional variables:

Union membership (regional-level). A regional-level measure of union membership in 2015 has been included as constituency-level information is not available (Office for National Statistics, 2016). The Labour Party was born out of a meeting of trade union and Socialist society delegates in 1900 (Harrison, 2018) and union membership has long been associated with support for left-wing parties (Leigh, 2005; Gray & Caul, 2000). Union membership may have knock-on effects on mobilising even non-unionised people in particular areas of the country to vote, thereby structuring the national electoral geography: 'unions as organizations have both the incentives and the resources to mobilize not only members but a wider constituency of the poor, minorities, and the working class – precisely the 'peripheral' voters argued to drive cross-national variation in voter turnout' (Flavin and Radcliff, 2011, p. 634).

Union membership in Merseyside is particularly high: in 2015, the proportion of unionised employees in the region was 32.5%, compared to 24.7% for the United Kingdom and 23.0% for England (Office for National Statistics, 2016). In fact,

Merseyside, of all regions, had the highest proportion of employees (37.0%) whose pay was affected by collective agreement in 2015. This can be contrasted with regions in which Labour have more recently under-performed model expectations – East and West Midlands. In 2015, only 23.1% of employees in the East Midlands had union membership and only 25.6% did so in the West Midlands Metropolitan County.

Public sector workforce. A significant body of literature has emphasised the importance of a production sector cleavage that divides voters along two axes – public sector and private sector employees (Dunleavy, 1980a, 1980b; Jensen et al., 2009) – the former being more supportive of left-wing parties and the latter right-wing parties. The statistic used here – coming from the Office for National Statistics (2017b) and accurate for each year of the 2015 and 2017 General Elections – is the proportion of employees that are employed in the public sector. In 2017, across the Merseyside parliamentary constituencies, there was a mean of 25.69% of employees employed in the public sector, compared to a mean of 17.52% across constituencies in England and Wales as a whole and only 13.01% in Lincolnshire (excluding Lincoln) (Office for National Statistics, 2017b).

University entry-rates. University entry-rates information comes from The Universities and Colleges Admission Service (UCAS) (2016). This figure is the proportion of 18-year olds in each parliamentary constituency that are accepted to higher education through UCAS in a given year. The 2015 models use 2015 data, whereas for the 2017 General Election models, data from 2016 is used as more recent data is not available. Whereas the proportion with a degree (used in Chapter 6 models) gives some indication of the educational situation in the past and the current and historical attractiveness of the area to university graduates, the entry rates variable encapsulates the current educational situation and the potential possibilities of the younger population.

Catholic population (proxy). There is considerable geographical variation in the Catholic population across England and Wales. In the North West, the broader region in which Merseyside sits, the proportion of Catholics is estimated at 15.3% - the highest regional percentage in England and Wales (Bullivant, 2016, p. 7). This is perhaps no surprise given the history of in-migration from Ireland: a quarter of Ireland's population – 2 million people – came either to or through Liverpool in the 1840s during the potato famine (Sykes *et al.*, 2013, p. 5). The long-term effects are still felt in an area with one of

the highest churchgoing populations in the England - largely a result of the 'exceptional proportion of Roman Catholics in the city' (Davie, 1993).

Before the Second World War, sectarianism between protestants and Catholics initially restricted the possibility of forming class-based political identities that would benefit the Labour Party (Davies, 1996). Since then, there has been significant evidence of a long-term party-denominational linkage between Catholics and Labour, albeit one that is possibly declining (Clements, 2017). The relatively large population of Irish descent is also thought to be a reason why statistically modelling has also under-estimated the Remain vote share in Merseyside in the EU referendum (Manley, Jones and Johnston, 2017). As the census does not cover denominations of Christianity, I have created a proxy measure in each constituency of the proportion of all schools – nursery, primary and secondary – that are affiliated to the Catholic church by merging separate data sources for England and Wales (Department for Education, 2017; Welsh Government, 2018). As postcodes but not parliamentary constituencies were included in the list of schools in Wales, data were aggregated to parliamentary constituencies through consultation with the ONS Postcode Directory (Office for National Statistics, 2018b). Data on schools rather than churches has been used as churches are less likely to reflect the popularity of or adherence to a particular religious denomination today.

Table 8.1 shows the proportion of schools that are Catholic in each constituency across Merseyside and Lincolnshire, with quite profound differences. In Merseyside constituencies, the mean proportion of schools that are Catholic is 27.83% versus an 8.81% mean for England and Wales and just 1.52% in Lincolnshire (excluding Lincoln). Table 8.2 is a list of the twenty constituencies in the country with the highest proportion of Catholic schools. 12 of the top twenty and 9 of the top 10 are located in Merseyside and are highlighted in orange.

Table 8.1 Proportion of schools that are affiliated to the Catholic Church by constituency in Merseyside and Lincolnshire (excluding Lincoln)

Merseyside		Lincolnshire (excluding Lincoln)	
Constituency	**Catholic schools (%)**	**Constituency**	**Catholic schools (%)**
Birkenhead	25.00	Boston and Skegness	2.13
Bootle	34.88	Gainsborough	0.00
Garston and Halewood	35.90	Grantham and Stamford	3.39
Knowsley	37.78	Louth and Horncastle	0.00
Liverpool, Riverside	30.77	Sleaford and North Hykeham	1.61
Liverpool, Walton	28.57	South Holland and The Deepings	1.96
Liverpool, Wavertree	26.19		
Liverpool, West Derby	44.74		
Sefton Central	27.50		
Southport	17.24		
St Helens North	28.57		
St Helens South and Whiston	33.33		
Wallasey	18.75		
Wirral South	14.29		
Wirral West	13.89		

Table 8.2 The twenty constituencies in England and Wales with the highest proportion of schools that are affiliated to the Catholic Church (Merseyside constituencies are highlighted)

Constituency	Catholic schools (%)
Liverpool, West Derby	44.74
Knowsley	37.78
Garston and Halewood	35.90
Bootle	34.88
St Helens South and Whiston	33.33
Liverpool, Riverside	30.77
Liverpool, Walton	28.57
St Helens North	28.57
Sefton Central	27.50
Ribble Valley	27.42
Wigan	26.32
Liverpool, Wavertree	26.19
Birkenhead	25.00
Halton	25.00
Jarrow	25.00
Makerfield	24.44
Newcastle upon Tyne Central	23.81
Blaydon	23.68
Stockton North	23.68
Wythenshawe and Sale East	23.68

Rural/urban classification. In the initial OLS models in Chapter 6, the 'urban-ness' variable was the proportion of the population not employed in agriculture. One weakness of this variable was the very low variance and the failure to differentiate between different types of predominantly urban constituencies. As the models in this section are only executed for the election years 2015 and 2017, a different measure can be used: The Office for National Statistics rural/urban classification. This is a categorical variable that classifies constituencies into six categories: 'Major Urban', 'Large Urban', 'Other Urban', 'Significant Rural', 'Rural-50' and 'Rural-80'. The three rural categories denote areas where the population that live in rural settlements and large market towns is: between 26 and 50 percent ('Significant Rural'); between 50 and 80 percent ('Rural-50'); and at least 80 percent ('Rural-80'). Data from the 2001 census applied to 2010 constituencies have been used as more recent data for Welsh constituencies are not available (Department for Environment Food & Rural Affairs, 2009).

8.5.2 OLS model analysis

Moving from the original OLS models to the new OLS models with additional variables, the adjusted R-squared values increase in all the models, implying that there is a decrease in the differences between the observed data and the predicted values. The R-squared value of the 2015 Labour model increases from 0.82 to 0.84 and in 2017 from 0.85 to 0.87 with the additional variables included. Similarly, the R-squared values in the Conservative models increases from 0.77 to 0.79 in 2015 and from 0.81 to 0.84 in 2017. In other words, by including the additional variables, there is a slight increase in the extent to which the variance in the dependent variable – Labour and Conservative vote shares – is 'explained' by the model.

The regression output from the Chapter 6 Labour models and the models with additional variables is shown in Table 8.3. The equivalent Conservative models are shown in Table 8.4. Comparing the original 2015 Labour model with the new 2015 Labour model, there are only small changes in the relationships. Ethnic diversity becomes a statistically significant positive predictor of Labour vote shares whereas unemployment rate is no longer a statistically significant positive predictor. Of the additional variables, the Catholic schools and university entry rate variables are statistically significant at the five percent level in 2015. With every one percentage point increase in the proportion of Catholic schools and university entry rates, there is a mean 0.37 percentage point and 0.24 percentage point increase in the Labour vote share respectively. By 2017, the university entry rate variable was no longer statistically significant. However, the Catholic schools variable remained a statistically significant positive predictor alongside the union membership and public sector variables. In 2017, with every one percentage point increase in union membership and public sector employees, there was a mean 0.42 and 0.09 point increase in the Labour vote share respectively. Interestingly, in the same year, by including these additional variables, the proportion of the constituency with degree-level qualifications became insignificant.

By including additional variables in the Conservative models, the only change in 2015 was that distance from the closest university became a statistically significant positive predictor of Conservative vote share. In 2017, degree-level qualifications and the unemployment rate were no longer statistically significant negative predictors and ethnic diversity became a statistically significant positive predictor. In terms of the additional

variables, in 2015, only union membership was statistically significant: a one percentage point increase in union membership was associated with a mean 0.65 percentage point decrease in the Conservative vote share. In 2017, the same variable was associated with a 0.78 decrease whereas the proportion of Catholic schools was associated with a statistically significant 0.18 decrease in the Conservative vote share.

Table 8.3 Regression summaries of the original OLS models and new OLS models predicting Labour vote shares at the 2015 and 2017 General Elections

	Labour vote share (%)			
	Chapter 6 OLS models		OLS models with additional variables	
	2015	2017	2015	2017
constant	-80.000**	-20.8	34.100***	26.400***
	(-33.8)	(-31.9)	(-6.62)	(-5.62)
unemployment rate	0.788**	0.608*	0.422	0.192
	(-0.354)	(-0.335)	(-0.342)	(-0.316)
manufacturing	0.048	-0.300***	0.045	-0.316***
	(-0.12)	(-0.115)	(-0.12)	(-0.112)
social renters	0.164**	-0.033	0.218***	0.026
	(-0.071)	(-0.066)	(-0.07)	(-0.064)
degree-level qualifications	-0.310***	0.198***	-0.516***	0.058
	(-0.086)	(-0.071)	(-0.098)	(-0.082)
secure employment (residual)	-1.600***	-2.430***	-2.080***	-2.480***
	(-0.45)	(-0.425)	(-0.455)	(-0.417)
aged 16 to 29	-0.125	0.394***	-0.057	0.257***
	(-0.097)	(-0.092)	(-0.105)	(-0.096)
aged 65 plus	-1.250***	-1.080***	-1.340***	-1.060***
	(-0.166)	(-0.158)	(-0.151)	(-0.142)
ethnic diversity	0.059*	0.085***	0.082**	0.163***
	(-0.033)	(-0.031)	(-0.037)	(-0.033)
poor health	4.960***	4.870***	3.920***	3.340***
	(-0.384)	(-0.364)	(-0.413)	(-0.383)
distance: 'cosmopolitan' LA	-1.31	0.437	-0.767	0.532
	(-1.06)	(-1)	(-1.01)	(-0.936)
distance: university	-7.970***	-10.800***	-11.000***	-11.900***
	(-2.94)	(-2.77)	(-2.7)	(-2.5)
urbanity	1.210***	0.465		
	(-0.326)	(-0.306)		
third party vote share	-0.777***	-0.642***	-0.585***	-0.621***
	(-0.09)	(-0.039)	(-0.088)	(-0.036)
small urban {ref: major urban}			-0.773	-0.738
			(-0.916)	(-0.847)
semi-rural/rural {ref: major urban}			0.549	0.789
			(-1.05)	(-0.969)
university entry rate			0.240***	-0.048
			(-0.079)	(-0.069)
public sector			0.067	0.088**
			(-0.046)	(-0.042)
Catholic schools			0.367***	0.389***
			(-0.058)	(-0.053)
union membership			0.180*	0.417***
			(-0.101)	(-0.092)
N	572	572	572	572
Adjusted R^2	0.818	0.852	0.836	0.873

Notes: ***Significant at 1 percent level, **Significant at 5 percent level, *Significant at 10 percent

Table 8.4 Regression summaries of the original OLS models and the new OLS models predicting Conservative vote shares at the 2015 and 2017 General Elections

	Conservative vote share (%)			
	Chapter 6 OLS models		OLS models with additional variables	
	2015	2017	2015	2017
constant	61.300*	54.800*	66.200***	74.900***
	(-33.7)	(-30.8)	(-6.63)	(-5.38)
unemployment rate	-0.563	-0.763**	-0.351	-0.471
	(-0.353)	(-0.323)	(-0.343)	(-0.302)
manufacturing	0.424***	0.545***	0.605***	0.709***
	(-0.12)	(-0.111)	(-0.12)	(-0.107)
social renters	-0.076	0.103	-0.129*	0.019
	(-0.07)	(-0.063)	(-0.07)	(-0.061)
degree-level qualifications	0.194**	-0.243***	0.261***	-0.119
	(-0.086)	(-0.069)	(-0.098)	(-0.079)
secure employment (residual)	2.090***	2.240***	2.300***	2.140***
	(-0.449)	(-0.411)	(-0.456)	(-0.399)
aged 16 to 29	-0.553***	-0.521***	-0.453***	-0.332***
	(-0.097)	(-0.089)	(0.105)	(0.092)
aged 65 plus	0.689***	1.210***	0.684***	1.160***
	(-0.165)	(-0.153)	(-0.151)	(-0.136)
ethnic diversity	0.022	-0.029	-0.051	-0.133***
	(-0.033)	(-0.03)	(-0.037)	(-0.032)
poor health	-5.320***	-5.740***	-3.860***	-3.960***
	(-0.382)	(-0.352)	(-0.414)	(-0.367)
distance: 'cosmopolitan' LA	-1.44	-1.750*	-1.5	-1.610*
	(-1.05)	(-0.966)	(-1.02)	(-0.896)
distance: university	5.590*	6.240**	6.470**	7.150***
	(-2.93)	(-2.68)	(-2.7)	(-2.4)
urbanity	-0.016	0.179		
	(-0.325)	(-0.295)		
third party vote share	0.219**	-0.220***	0.052	-0.254***
	(-0.09)	(-0.037)	(-0.089)	(-0.035)
small urban {ref: major urban}			1.34	0.504
			(-0.918)	(-0.811)
semi-rural/rural {ref: major urban}			-0.508	-1.560*
			(-1.05)	(-0.927)
university entry rate			0.016	0.098
			(-0.079)	(-0.066)
public sector			-0.035	-0.064
			(-0.047)	(-0.04)
Catholic schools			-0.09	-0.175***
			(-0.058)	(-0.051)
union membership			-0.654***	-0.757***
			(-0.101)	(-0.088)
N	572	572	572	572
Adjusted R^2	0.773	0.808	0.793	0.838

Notes: ***Significant at 1 percent level, **Significant at 5 percent level, *Significant at 10 percent level.

It is clear, therefore, that particularly in 2017, the proportion of Catholics, union members and public sector workers were associated with increases in Labour vote shares. Meanwhile, the proportion of Catholics and union members were associated with decreases in Conservative vote shares across England and Wales. However, the following questions remain:

1) To what extent has the positive spatial autocorrelation in the model residuals been reduced by including these additional variables?

2) To what extent does the clustering of poorly estimated vote shares remain present in Merseyside and Lincolnshire?

To answer the first question, one must consult the global indicator of spatial autocorrelation – the global Moran's *I*. From Table 8.5, it is evident that in the new models with the additional variables, there is a slight reduction in the strength of the positive spatial autocorrelation in the residuals. Accompanying global Moran's *I* scatterplots can be found in Appendix W.

Table 8.5 Comparison of global spatial autocorrelation (Moran's I values) across old and new models at the 2015 and 2017 General Elections

		Moran's I values	
Party	**Year**	**Old model**	**New model**
Labour	**2015**	0.36	0.30
	2017	0.38	0.32
Conservative	**2015**	0.26	0.24
	2017	0.39	0.34

To answer the second question, LISA cluster maps of the new OLS models can be initially consulted in Appendix X. Comparing these cluster maps with those produced for the original OLS models (see Appendix V), it is clear that despite some reductions in clustering of High-High and Low-Low values, there is still significant spatial clustering in Merseyside and Lincolnshire, alongside South and West Yorkshire, the West Midlands and the far North East. Table 8.6 summarises the mean standardised residual values across Merseyside and Lincolnshire (excluding Lincoln) constituencies for the original Labour and Conservative models and the new models (with additional

variables) in 2015 and 2017. The 'change: proximity to zero' column shows whether, by including additional variables, the new mean residual value was closer to zero, and by how much so. Table 8.6 shows that, except for Labour's 2015 vote shares in Lincolnshire and the Conservatives' 2015 vote shares in Merseyside, the models that included additional variables were more accurate at predicting the under- and over-performances of both parties across these two regions. Once again, however, the improvements in the model fit in these regions is marginal. The QQ-plots and plots of fitted values against studentised residuals and the large residuals with constituency names can be found in Appendix Y and Appendix Z respectively.

Table 8.6 Comparison of the mean standardised residuals in Merseyside and Lincolnshire constituencies for the original OLS models and the new models with additional variables (2015-2017)

		Labour models			Conservative models		
year	region	original mean std. residual	new mean std. residual	change: proximity to zero	original mean std. residual	new mean std. residual	change: proximity to zero
2015	Merseyside	1.4	0.9	0.5	-0.5	-0.6	-0.1
	Lincolnshire	-0.1	-0.3	-0.2	1.0	0.8	0.2
2017	Merseyside	2.0	1.4	0.6	-1.3	-1.2	0.1
	Lincolnshire	-1.1	-0.8	0.3	1.4	1.0	0.4

While the new models with additional variables have reduced the spatial clustering in the residuals, positive global spatial autocorrelation remains present as well as regional clustering of large residuals in broadly the same locations, most notably Merseyside and Lincolnshire. The presence of spatial autocorrelation in the residuals is a significant problem on two counts: it violates the model assumptions resulting in incorrect error probabilities and it can impact upon the coefficient estimates (Kühn and Dormann, 2012). Accounting for these spatial effects and the importance that the regional context appears to play in structuring vote shares can only, therefore, be achieved by producing spatial models.

8.5.3 Regional context: Spatial lag and spatial error models

This section of this chapter aims to eliminate the spatial autocorrelation of the errors and vote shares by producing spatial error and spatial lag models to predict Labour and

Conservative vote shares in 2015 and 2017. This may not only provide further confirmation of a contextual 'Merseyside effect' and contextual 'Lincolnshire effect', but will also produce more accurate coefficients that can be interpreted in relation to the initial research questions that sought to understand the changing sociodemographic predictors of Labour and Conservative voting outcomes. The specification of the spatial error and spatial lag models has been stated in Section 5.7 of Chapter 5. The key difference between the models is in the location of the spatial autocorrelation that they account for. The spatial error model implies that there are unmeasured factors which are spatially correlated across neighbouring constituencies. In an ideal scenario, it would be possible to know what these spatially correlated factors in the error term are, but as they are unknown, the solution is to model the spatial dependence in the errors. The spatial lag model implies a kind of diffusion effect in which the dependent variable – in this case vote share – is influenced by the vote shares of neighbouring constituencies. The presence of spatial dependence in vote shares may, in this case, be an aggregation of spatially dependent individual-level voting behaviour, in which an elector's voting intentions has an impact on the voting intentions of those living nearby, even when nearby means across constituency boundaries

The analysis of these models will focus on three points: firstly, whether by accounting for space, the direction and significance of the association between socio-economic and geographical variables and Labour and Conservative vote shares change; secondly, whether using spatial modelling improves the performance of the models in comparison to the OLS models; thirdly, the extent to which the model more accurately predicts vote shares in Merseyside and Lincolnshire. For the purposes of brevity, the focus remains only on the 2015 and 2017 General Elections.

8.5.3.1 What are the effects of incorporating spatial autocorrelation on the other predictors?

It is important to test the extent to which the findings from the OLS models in 2015 and 2017 discussed in Section 8.5.2 of this chapter remain valid once spatial effects are accounted for. Tables 8.7- 8.10 - present the coefficient values for each model – OLS, spatial error and spatial lag – for each election and party.

Labour models 2015: The vast majority of the variables that were significant in the OLS model remain so in both the spatial error and spatial lag models. However, it is clear that the importance of social renters on Labour vote shares is over-stated prior to spatial autocorrelation being accounted for in both models. The variable, which had a statistically significant positive association with Labour vote share in the 2015 OLS model, is no longer significant at the 5% level ($p<0.05$) in either spatial model. The effect of the proportion of social housing may be accounted for either by some unmeasured spatially correlated characteristics of the constituency and neighbouring constituencies, or by the voting behaviour of neighbouring constituencies. Precisely the same occurs with university entry rates, whilst for the distance from the closest university, the negative association might be over-stated in the OLS models, but it still remains present, albeit weaker in the two spatial models.

Labour models 2017: All of the variables that were statistically significant in the OLS model remain so in the spatial lag model. However, in the spatial error models, manufacturing no longer has a statistically significant negative association with Labour vote shares, implying that its effect may be the result of other characteristics that are spatially correlated with neighbouring constituencies. In addition, the positive effect of the proportion employed in the public sector is no longer present in the spatial error models.

Conservative models 2015: By accounting for the spatial dependence in the vote shares and errors, there is very little change in the importance of the variables. The only changes of note are that degree-level qualifications is no longer a statistically significant positive predictor in the spatial error model. In the same model, ethnic diversity develops a statistically significant negative association with Conservative vote shares – a finding that was not present in the original OLS model. In both models, the coefficient of the manufacturing variable is weakened, from 0.61 in the OLS model to 0.35 and 0.48 in the spatial error and spatial lag models respectively.

Conservative models 2017: The magnitude and significance of any associations from the OLS model largely remain in the spatial models predicting Conservative vote shares in 2017 as well. Interestingly, unemployment rate becomes a significant negative predictor in the spatial error model, whereas there is no discernible effect present in the other two models. There is also a weakening effect of manufacturing and distance from the closest university in the two spatial models.

One of the advantages of specifying spatial lag models is that they allow the reader to distinguish between the direct and indirect marginal effects of explanatory variables. The 'average direct impact' is a measure that is 'similar in spirit to typical regression coefficient interpretations that represent the average response of the dependent to independent variables over the sample of observations' (LeSage and Pace, 2009, p. 37). In short, it captures the average change that an explanatory variable in constituency *i* has on the Labour or Conservative vote share in constituency *i*. In contrast, the 'average indirect impact' refers to the average impact of a change in the value of the explanatory variable across neighbouring constituencies upon the Conservative or Labour vote share in a particular constituency. The 'average total impact' of a variable is its 'average direct impact' plus its 'average indirect impact'. These effects are found in Appendix AA and are briefly interpreted below.

These measures confirm the additional effects that specific characteristics of surrounding constituencies have on the Labour and Conservative vote shares in a constituency. While a constituency being ethnically diverse with a young age profile, high rates of poverty and both public sector and unionised employees has an overage a positive effect on Labour's vote share, there is an additional positive effect of being surrounded by other constituencies with a similar demographic profile in 2017. This is shown by the statistically significant and positive direct and indirect effect values for these variables in the spatial lag model estimating Labour vote shares in 2017. Notably, as with the direct effects, the positive indirect effects of the age 16-29, public sector and union membership variables only became statistically significant in 2017. This implies that Labour's success was even more likely to be embedded in both constituencies and constituencies within regions with these characteristics in 2017. The statistically significant positive direct and indirect effects of the proportion of Catholic schools also implies that Labour's vote share was likely to be substantially higher than average in both constituencies and regions (such as Merseyside) that had a high proportion of Catholics.

For the Conservatives, their likely success in conventionally 'left behind' constituencies situated in conventionally 'left behind' regions is confirmed, particularly in 2017. In both 2015 and 2017, there was a positive direct and indirect effect of manufacturing and the proportion of the population aged 65 and over. By 2017, there was an additional negative direct and indirect effect of ethnic diversity and the

proportion with degrees no longer had a statistically significant positive direct and indirect effect. This implies that higher Conservative vote shares were more likely to be located in constituencies and regions with low ethnic diversity, high rates of manufacturing employment and high proportions of older people. At the same time, the 2015 and 2017 Conservative vote share was negatively impacted – both directly and indirectly – by the proportion in poor health and positively directly and indirectly impacted by the proportion in secure employment (after accounting for its shared effect of degree-level qualifications). The implication is that while Labour's vote shares were more positive in 'left behind' constituencies and regions as defined by economic deprivation and precarious employment conditions, Conservative vote shares were lower in these areas.

Table 8.7 Regression summaries of the models predicting Labour vote shares at the 2015 election

Labour 2015 models			
	OLS	**spatial error**	**spatial lag**
intercept	34.061***	30.438***	42.450***
	(6.619)	(6.849)	(5.509)
unemployment rate	0.422	0.230	0.131
	(0.342)	(0.359)	(0.283)
manufacturing	0.045	0.190	-0.050
	(0.120)	(0.137)	(0.100)
social renters	0.218***	0.094	0.101*
	(0.070)	(0.067)	(0.058)
degree-level qualifications	-0.516***	-0.379***	-0.586***
	(0.098)	(0.097)	(0.081)
secure employment (residual)	-2.082***	-1.432***	-2.465***
	(0.455)	(0.469)	(0.378)
aged 16 to 29	-0.057	-0.081	-0.047
	(0.105)	(0.089)	(0.086)
aged 65 plus	-1.337***	-1.241***	-1.049***
	(0.151)	(0.154)	(0.127)
ethnic diversity	0.082**	0.164***	0.080***
	(0.037)	(0.037)	(0.030)
poor health	3.920***	3.626***	2.158***
	(0.413)	(0.479)	(0.368)
distance: 'cosmopolitan' LA	-0.767	-1.263	0.192
	(1.015)	(1.364)	(0.842)
distance: university	-11.014***	-9.019***	-8.057***
	(2.697)	(2.647)	(2.236)
small urban ref: major urban	0.549	0.467	1.115
	(1.052)	(0.937)	(0.870)
semi-rural/rural ref: major urban	-0.773	-0.837	0.773
	(0.916)	(0.878)	(0.764)
university entry rate	0.240***	0.125*	0.029
	(0.079)	(0.075)	(0.067)
public sector	0.067	0.038	0.072*
	(0.046)	(0.036)	(0.038)
Catholic schools	0.367***	0.203***	0.258***
	(0.058)	(0.063)	(0.049)
union membership	0.180*	0.419***	-0.005
	(0.101)	(0.151)	(0.085)
third party vote share	-0.585***	-0.569***	-0.542***
	(0.088)	(0.085)	(0.073)
N	572	572	572
Adjusted R2	0.836		
Log Likelihood		-1,828.894	-1,809.945
Akaike Inf. Crit.		3,699.787	3,661.891
Wald Test (df = 1)		286.137***	199.578***
LR Test (df = 1)		138.362***	176.258***

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table 8.8 Regression summaries of the models predicting Labour vote shares at the 2017 election

	Labour 2017 models		
	OLS	**spatial error**	**spatial lag**
intercept	26.394***	20.172***	29.758***
	(5.616)	(5.889)	(4.944)
unemployment rate	0.192	-0.073	0.048
	(0.316)	(0.331)	(0.277)
manufacturing	-0.316***	-0.147	-0.322***
	(0.112)	(0.126)	(0.098)
social renters	0.026	0.032	-0.043
	(0.064)	(0.062)	(0.056)
degree-level qualifications	0.058	0.081	-0.045
	(0.082)	(0.085)	(0.073)
secure employment (residual)	-2.475***	-1.788***	-2.799***
	(0.417)	(0.436)	(0.367)
aged 16 to 29	0.257***	0.286***	0.274***
	(0.096)	(0.083)	(0.084)
aged 65 plus	-1.056***	-0.995***	-0.835***
	(0.142)	(0.143)	(0.126)
ethnic diversity	0.163***	0.234***	0.147***
	(0.033)	(0.034)	(0.029)
poor health	3.336***	3.120***	1.912***
	(0.383)	(0.440)	(0.360)
distance: 'cosmopolitan' LA	0.532	-0.131	1.170
	(0.936)	(1.234)	(0.822)
distance: university	-11.868***	-9.432***	-9.616***
	(2.502)	(2.471)	(2.196)
small urban ref: major urban	0.789	-0.057	1.312
	(0.969)	(0.880)	(0.850)
semi-rural/rural ref: major urban	-0.738	-0.500	0.595
	(0.847)	(0.818)	(0.750)
university entry rate	-0.048	-0.008	-0.167***
	(0.069)	(0.068)	(0.062)
public sector	0.088**	0.039	0.094**
	(0.042)	(0.033)	(0.037)
Catholic schools	0.389***	0.233***	0.311***
	(0.053)	(0.058)	(0.047)
union membership	0.417***	0.623***	0.241***
	(0.092)	(0.132)	(0.082)
third party vote share	-0.621***	-0.629***	-0.574***
	(0.036)	(0.032)	(0.032)
N	572	572	572
Adjusted R2	0.873		
Log Likelihood		-1,787.783	-1,793.198
Akaike Inf. Crit.		3,617.566	3,628.395
Wald Test (df = 1)		220.478***	126.162***
LR Test (df = 1)		130.656***	119.827***
Notes:	***Significant at the 1 percent level.		
	**Significant at the 5 percent level.		
	*Significant at the 10 percent level.		

Table 8.9 Regression summaries of the models predicting Conservative vote shares at the 2015 election

	Conservative 2015 models		
	OLS	**spatial error**	**spatial lag**
intercept	66.203***	80.171***	33.845***
	(6.634)	(6.936)	(6.841)
unemployment rate	-0.351	-0.644*	-0.179
	(0.343)	(0.370)	(0.306)
manufacturing	0.605***	0.350**	0.477***
	(0.120)	(0.139)	(0.107)
social renters	-0.129*	-0.028	-0.061
	(0.070)	(0.070)	(0.062)
degree-level qualifications	0.261***	0.162	0.364***
	(0.098)	(0.101)	(0.088)
secure employment (residual)	2.301***	2.223***	2.655***
	(0.456)	(0.484)	(0.406)
aged 16 to 29	-0.453***	-0.588***	-0.495***
	(0.105)	(0.095)	(0.093)
aged 65 plus	0.684***	0.530***	0.530***
	(0.151)	(0.159)	(0.135)
ethnic diversity	-0.051	-0.079**	-0.042
	(0.037)	(0.038)	(0.033)
poor health	-3.860***	-3.323***	-2.365***
	(0.414)	(0.484)	(0.392)
distance: 'cosmopolitan' LA	-1.500	-1.394	-1.293
	(1.018)	(1.327)	(0.904)
distance: university	6.474**	6.333**	4.724**
	(2.704)	(2.766)	(2.407)
small urban ref: major urban	-0.508	-0.400	-0.672
	(1.055)	(0.995)	(0.937)
semi-rural/rural ref: major urban	1.336	1.127	-0.042
	(0.918)	(0.920)	(0.824)
university entry rate	0.016	-0.056	0.048
	(0.079)	(0.079)	(0.071)
public sector	-0.035	-0.0005	-0.026
	(0.047)	(0.039)	(0.041)
Catholic schools	-0.090	-0.082	-0.078
	(0.058)	(0.065)	(0.052)
union membership	-0.654***	-0.768***	-0.314***
	(0.101)	(0.138)	(0.095)
third party vote share	0.052	-0.099	0.038
	(0.089)	(0.089)	(0.079)
N	572	572	572
Adjusted R^2	0.793		
Log Likelihood		-1,857.837	-1,849.345
Akaike Inf. Crit.		3,757.674	3,740.690
Wald Test (df = 1)		137.956***	114.589***
LR Test (df = 1)		83.148***	100.132***
Notes:	***Significant at the 1 percent level.		
	**Significant at the 5 percent level.		
	*Significant at the 10 percent level.		

Table 8.10 Regression summaries of the models predicting Conservative vote shares at the 2017 election

Conservative 2017 models			
	OLS	**spatial error**	**spatial lag**
intercept	74.857***	84.647***	42.466***
	(5.376)	(5.627)	(5.528)
unemployment rate	-0.471	-0.710**	-0.374
	(0.302)	(0.313)	(0.263)
manufacturing	0.709***	0.297**	0.491***
	(0.107)	(0.120)	(0.094)
social renters	0.019	0.072	0.081
	(0.061)	(0.059)	(0.053)
degree-level qualifications	-0.119	-0.121	0.094
	(0.079)	(0.080)	(0.071)
secure employment (residual)	2.140***	1.885***	2.423***
	(0.399)	(0.411)	(0.348)
aged 16 to 29	-0.332***	-0.462***	-0.455***
	(0.092)	(0.078)	(0.080)
aged 65 plus	1.161***	0.992***	0.931***
	(0.136)	(0.135)	(0.120)
ethnic diversity	-0.133***	-0.163***	-0.099***
	(0.032)	(0.032)	(0.028)
poor health	-3.958***	-3.436***	-2.418***
	(0.367)	(0.418)	(0.345)
distance: 'cosmopolitan' LA	-1.610*	-1.234	-1.298*
	(0.896)	(1.191)	(0.779)
distance: university	7.146***	5.891**	5.003**
	(2.395)	(2.320)	(2.086)
small urban ref: major urban	-1.558*	-0.570	-1.547*
	(0.927)	(0.822)	(0.806)
semi-rural/rural ref: major urban	0.504	0.882	-0.821
	(0.811)	(0.767)	(0.715)
university entry rate	0.098	-0.019	0.089
	(0.066)	(0.063)	(0.058)
public sector	-0.064	-0.002	-0.060*
	(0.040)	(0.030)	(0.035)
Catholic schools	-0.175***	-0.112**	-0.135***
	(0.051)	(0.055)	(0.044)
union membership	-0.757***	-0.802***	-0.433***
	(0.088)	(0.131)	(0.081)
third party vote share	-0.254***	-0.250***	-0.272***
	(0.035)	(0.030)	(0.030)
N	572	572	572
Adjusted R2	0.838		
Log Likelihood		-1,751.601	-1,765.909
Akaike Inf. Crit.		3,545.203	3,573.819
Wald Test (df = 1)		289.618***	142.398***
LR Test (df = 1)		153.039***	124.423***

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

8.5.3.2 To what extent do the models improve by accounting for spatial dependence?

In order to assess the extent to which the model performances improve by incorporating spatial processes, Akaike Information Criterion (AIC) scores and log-likelihood scores from each model are compared. Whilst these values do not give information about the actual fit of the model, they allow an understanding of the relative fit. In cases where the AIC score is lower, the model is always preferred, as it indicates that relative information loss is minimised. From Table 8.11 and Table 8.12, it is clear that in all cases, the AIC scores are highest for the OLS model. In the 2015 models, the AIC scores are lower in the spatial lag models than the spatial error models, with the opposite the case in the 2017 models. This indicates that in 2015, the spatial lag model performs marginally better than the spatial error models and vice versa in 2017. The corresponding log-likelihood scores are higher in the spatial error models in 2015 and in the spatial lag models in 2017. In all cases, the OLS non-spatial models are weaker than those that account for spatial autocorrelation.

Table 8.11 Comparison of the AIC and log-likelihood scores for different models predicting Labour vote shares at the 2015 and 2017 General Elections

	2015 models		2017 models	
Model	**AIC**	**Log-likelihood**	**AIC**	**Log-likelihood**
OLS	3836.1	-1898.1	3746.2	-1853.1
spatial lag	3661.9	-1810	3628.4	-1793.2
spatial error	3699.8	-1828.9	3617.6	-1787.8

Table 8.12 Comparison of the AIC and log-likelihood scores for different models predicting Conservative vote shares at the 2015 and 2017 General Elections

	2015 models		2017 models	
Model	**AIC**	**Log-likelihood**	**AIC**	**Log-likelihood**
OLS	3838.8	-1899.4	3696.2	-1828.1
spatial lag	3740.7	-1849.3	3573.8	-1765.9
spatial error	3757.7	-1857.8	3545.2	-1751.6

The Global Moran's *I* scatterplots in Appendix AB reveal that the positive global spatial autocorrelation of the residual values has been removed in the spatial lag and

spatial error models. The residuals are at least close to randomly distributed across England and Wales and the spatial clustering of over- and under-performance has largely been removed. Nonetheless, the spatial cluster maps in Appendix AC show the continued – albeit reduced – presence of some statistically significant local spatial outliers. In the Labour models, there remains some local clustering of High-High values, or over-performance, in Merseyside and South Yorkshire in both spatial models. However, the statistically significant spatial clustering of low residuals in Lincolnshire is removed in both spatial models. For the Conservatives, there continues to be a local clustering of High-High values in areas of the West Midlands in both spatial models in both years. Their under-performance in Merseyside, as indicated by the clustering of blue Low-Low values – remains present in the 2017 models.

8.5.3.3 To what extent do spatial models more accurately predict Labour and Conservative vote shares in Merseyside and Lincolnshire in 2015 and 2017?

The LISA cluster maps in Appendix AC have shown that the presence of spatial clustering of High-High or Low-Low residual values in Lincolnshire has been largely removed and in Merseyside has been at least reduced. Table 8.13, showing the mean studentised residuals for each region in each model, confirms that the two spatial models produce more accurate predictions of Labour and Conservative vote shares. Indeed, in Merseyside, the extent to which the model under-predicts Labour and over-predicts Conservative vote shares is reduced. In Lincolnshire, the extent to which the model over-predicts Labour vote shares and under-predicts Conservative vote shares is also reduced.

Table 8.13 Comparison of the mean studentised residuals for Merseyside and Lincolnshire for different models predicting Conservative vote shares at the 2015 and 2017 General Elections

		Labour models			Conservative models		
Year	Region	OLS mean studentised residual	Spatial lag mean studentised residual	Spatial error mean studentised residual	OLS mean studentised residual	Spatial lag mean studentised residual	Spatial error mean studentised residual
2017	Merseyside	1.4	0.9	1.1	-1.2	-0.8	-0.8
	Lincolnshire	-0.8	-0.8	-0.6	1.0	0.8	0.8
2015	Merseyside	0.9	0.3	0.7	-0.6	-0.4	-0.5
	Lincolnshire	-0.3	-0.3	-0.4	0.8	0.7	0.6

8.6 Conclusion: space matters

The most clear-cut finding from this section is that when seeking to understand the relationships between sociodemographic characteristics and electoral outcomes, space matters. The presence of global spatial autocorrelation in the 2015 and 2017 models confirms Tobler's (1970) first law of geography: places that are near each other, both in terms of vote shares or the under- or over-performance of either party, are more similar than places that are far away. While the composition of constituencies, including any measure of how 'left behind' or 'cosmopolitan' they might be, can fairly accurately predict vote shares, there remains a spatial structure to the data in which specific regions under- or out- perform model predictions. At the regional level, the combination of clustering in both vote shares and model under- and over-predicting of vote shares is most noticeable in Merseyside and Lincolnshire. By building and executing spatial lag and spatial error models, the accuracy of the predictions in these areas and elsewhere is somewhat improved. What remains unclear, however, is the mechanism behind these spatial effects: what are the unaccounted-for characteristics - shared across constituency boundaries – that are impacting upon aggregated voting behaviour? While their impact is accounted for by the spatial models, the characteristics of the regional-level contextual effects remain largely unknown. A better understanding of this mechanism is gained in Chapter 9 by considering the shared cultural, historical and political characteristics across different regions.

Chapter 9. Analysis 4: Place matters in Merseyside and Lincolnshire

9.1 Introduction

Although incorporating additional compositional variables and spatial dependence into the models has improved the predictions in Merseyside and Liverpool, it still does not account for *why* these places are so different. The fact that the spatial models offered significant improvement in the accuracy of predicted vote shares above and beyond a model with additional compositional variables suggests that, rather than any further explanations being found in the sociodemographic composition of the constituencies, there are contextual effects on voting that move across constituency boundaries within these wider regions. There must be certain contextual factors – perhaps specific to each region or some of the local areas within – that appear to impact on their electoral outcomes and ultimately the broader electoral geography of England and Wales. While one might, given the sociodemographic characteristics, expect Labour to have some electoral success in Merseyside and the Conservatives in Lincolnshire, the strength of the parties in these areas cannot be precisely predicted. Many areas of Merseyside – particularly outside of Liverpool – have significant ageing, largely white, working-class populations that this research has already shown would likely lead to a decline in Labour support and a rise in Conservative support. Similarly, while the Conservatives should expect to do well in predominantly rural Lincolnshire, towns such as Boston and Skegness have significant levels of urban poverty and precarious employment that appears to do little to reduce their vote shares or increase Labour's.

If Labour's over-performance in Merseyside and the Conservatives' over-performance in Lincolnshire are caused by hitherto unaccounted for regional characteristics, what are these? To what extent might the regional histories and resulting dominant narratives about these areas play a role in the clustering of unusual electoral outcomes? How much of a role can be attributed to something unique in the ascendant cultures of these areas? Or might further explanations be found in the organisation and activities of the main political parties? However much the statistical models have illuminated causal relationships and the changing relationships between different notions of 'left-behindedness' and Labour and Conservative support, these questions cannot be

answered in a quantitative manner alone. Instead, in this section, answers are sought through qualitative data from elite interviews with local political experts, the iterative exploration and observation of constituencies within the regions by the researcher and information from secondary sources. A 'place-based' approach is taken up in order to better understand the local contextual factors that are shaping the political geography of these regions. By attempting to 'explain' unusual associations between variables and vote shares in constituencies that are not accounted for in either an aspatial or spatial model, this research moves far beyond the vast majority of studies in British electoral geography. A more detailed focus is given to constituencies where the local associations between demographic, socioeconomic and geographical variables and voting outcomes differ most substantially from those witnessed 'globally' across England and Wales: Sefton Central in Merseyside and both South Holland and the Deepings and Boston and Skegness in Lincolnshire.

In Merseyside, key findings behind Labour's relative success and the Conservatives' failures include an increasing physical and psychological connectedness between a more left-wing Liverpool and its suburbs, the proliferation of a Scouse identity defined against established notions of Englishness, the effects of the Hillsborough disaster and Conservative ideas of leaving Liverpool in 'managed decline' and a long history of inward-migration as an important port city. In Lincolnshire, the findings are perhaps more tentative, though some factors include responses to a recent increase in inward-migration of non-voting Eastern Europeans, a culture of deference to aristocratic rule etc.

9.2 The interviewees

Merseyside and Lincolnshire have been chosen as the case studies because they represent opposite sides of the same coin: in the former, Labour have extremely high vote shares and also out-perform model predictions; in the latter, outside of Lincoln, the same is true for the Conservatives. Elite interviews in these two regions with people that are in some way actively engaged in local politics may illuminate why these areas are so markedly different in politics from each other and the rest of England and Wales. Table 9.1 provides a summary of the interviews, including information about the association to politics of each interviewee. Interviewees were sought from across the

political spectrum, as in both locations this is not only a case of one party out-performing but of the other main party under-achieving. This also limits the likelihood of attaining a particularly one-sided or politically biased picture about the relative success and failures of both parties and the reasons behind this. Ethics clearance was successfully attained to conduct these interviews. This is provided alongside consent forms, interview discussion guides and participant information sheets in Appendix AD. All of the interviewees gave written consent for their real names and job titles to be used in the thesis. All interviewees will be hereafter referred to by their first names only.

Table 9.1 Summary of the interviewees and their connection to politics in Merseyside and Lincolnshire.

Region	Name of interviewee	Job or connection to local politics
Merseyside	**Dr Stuart Wilks-Heeg**	Academic in the Department of Politics at the University of Liverpool. He has written a recent article on Labour's electoral success in Merseyside's suburbs, with a focus on Sefton Central.
	Councillor Peter Brough	Conservative councillor for the Ainsdale ward on Sefton council (since May 2018). He was previously a councillor between 2000 and 2007.
	Claire Hamilton	Political Reporter for BBC Radio Merseyside since October 2012.
	Dr David Jeffery	Researcher in the Department of Politics at the University of Liverpool since 2017. He has written a PhD thesis examining the causes of Conservative decline in Liverpool.
	Sheila Murphy	Labour activist organising political and community campaigns in Liverpool. Previously, she was the Senior Regional Director of the Labour Party in the North (1997-2009).
Lincolnshire	**Councillor Robert Parker**	Labour councillor for the Carholme ward. He has twice been leader of the Labour group on Lincolnshire County Council (1991-1993 and 1997-2013) and was leader of the Labour-Liberal Democrat Lincolnshire council (1993-1997).
	Councillor Kelham Cooke	Communications Officer for the Conservative MP for Grantham and Stamford, Nick Boles. Councillor for Casewick ward and, since 2017, Deputy Leader of South Kesteven District Council.
	Councillor Angela Mary Newton	Independent councillor for Spalding West ward since 2013. Previously a councillor for the same ward between 1981 and 1993. Opposition leader on South Holland District Council.
	Councillor Philip Dilks	Labour councillor representing the Deeping St James ward on South Kesteven District Council since 2011. Previously a councillor on Lincolnshire County Council. Former journalist and Labour Party press officer.
	Councillor Tom Ashton	East Lindsey District Conservative Councillor for Sibsey & Stickney ward since 2015. Also elected to the Lincolnshire County Council ward of Tattershall Castle in 2017.
	Paul Kenny*	Previous councillor on Boston borough councillor (2011-2015) and former Mayor of Boston 2013-2014. Labour Party candidate for Boston and Skegness constituency in 2017.
	Pam Kenny*	Labour Party activist in Boston
	Jane Hancock*	Labour Party activist in Boston
	Keith Hancock*	Labour Party activist in Boston

* Originally, the interview was planned with only Paul Kenny, but became a focus group with Pam Kenny, Jane Hancock and Keith Hancock.

Accessing potential interviewees proved somewhat difficult, with a very low proportion of individuals responding to emails, at least initially. The interviews ranged in length, but generally were around 30-40 minutes with the one focus group being considerably longer. All interviews were recorded and some have been transcribed in full so that responses could be repeatedly examined to understand their meaning in the context of the conversation. A semi-structured interview approach was employed in order to allow

the respondents to influence the thematic direction of the interview and to acquire an understanding of what they, as 'local experts', considered to be important explanations for the unusual voting behaviour in these regions. Interview guides for the two regions ensured that interviews were not completely unfocused and that some themes that had been identified in a review of the literature were discussed. With one exception, all interviews were conducted in person, as it was thought this would allow a better rapport to be built between myself as interviewer and the interviewees. It also gave me the chance to spend several days in each region, gaining a better understanding of their geographical characteristics. One interviewee – Stuart Wilks-Heeg gave me an academic 'tour' of the Sefton Central constituency. Some observations from my explorations across parts of Merseyside and Lincolnshire are included in the analysis below.

9.3 Merseyside: Labour's new heartlands

9.3.1 Introduction: 'even in North Korea, you still have a second party': Labour's dominance across Merseyside

Whilst many of the inner-city constituencies close to Liverpool city centre have long been Labour-dominated in General Elections, some of the more suburban seats have previously produced Conservative MPs during Thatcher's leadership, Labour MPs during Tony Blair's time and now Labour MPs under Jeremy Corbyn. The first reaction to this is that surely the cause is located in demographic change from inward and outward-migration, yet constituencies in suburban Merseyside have had very low gross migration rates. In 2011, of all constituencies in England and Wales, Sefton Central had the lowest gross migration rate of 12.38 per cent, closely followed by Wirral South (13.86 per cent) and Knowsley (13.98 per cent) – all in Merseyside. There are therefore likely to be a considerable proportion of older voters in the region that have transitioned from voting for Margaret Thatcher in the 1979 General Election and the 1980s to voting for Tony Blair in 1997 and then Jeremy Corbyn in 2017. This not only makes the area particularly unique but also offers some counter-evidence to the Big Sort idea (Bishop and Cushing, 2009) – that is, that the regional political landscape is changing largely on the basis of some kind of self-selection of individuals into the area.

In the nineteenth and early twentieth century, Liverpool itself – as a busy port city – was the unlikely home to widespread Conservative support from an amalgamation of working-class Protestants concerned about Irish migration and middle-class monarchists (Belchem, 2006). Indeed, Stuart describes how in the 1950s, unlike other large cities, Liverpool maintained 'a very strong tradition of working-class conservativism' with 'the constituency Labour parties in the north end of Liverpool […] the smallest in the country in the 1940s, 1950s in terms of membership'. The struggles that the Labour Party faced are well documented by Davies (1996), in a book that also exposes the gerrymandering behind much of the Conservative dominance on Merseyside in the early twentieth century.

The change in which Merseyside became an area of Labour dominance was slow. In Liverpool itself, it was not until the 1970s and 1980s that Labour became dominant in national elections, whilst in Local Elections in the fifty years after Labour first took control of Liverpool city council in 1956, they only held control for twenty-three years (Wilks-Heeg, 2018). Beyond the core city, the Conservatives were broadly dominant until the 1997 General Election, when Labour took control of suburban constituencies such as Sefton Central and Wirral West – areas which by 2017 had become some of the unlikeliest Labour seats in the country.

Labour's dominance today is nonetheless staggering - a point David emphatically makes: 'Even in North Korea, you still have a second party'. In inner-city areas of Liverpool, there is essentially no credible opposition in General Elections whilst Labour's support is so deeply engrained: 'My uncle George, a woodbine-smoking bricklayer from Bootle would vote for Corbyn every day of the week […] He also voted for Tony Blair […] He wouldn't vote any other way' (Tony). What is even more remarkable than Labour's consistent support amongst an older, white working class who have deserted them in other areas is their success in largely middle-class, white, suburban parts of Merseyside, such as the Sefton Central and Wirral West constituencies. Tony sums this up rather well: 'in Freshfield […] per capita of the population there are more millionaires there than anywhere in the country. For them to vote Labour is bonkers but they are'. The suburban wealth of Sefton Central is clear from the wide, tree-lined streets flanked by large, red-brick Victorian houses, vast golf courses, newer gated homes, lawn tennis clubs, private schools and a large private park. It simply does not feel 'Labour' – this is not the young, educated middle-class demographic that swung towards the party in 2017; it is older, white and wealthy. Wilks-

Heeg (2018, p. 1) supports this conclusion: 'substantial swings to Labour in suburban constituencies like Sefton Central and Wirral South in 2015 and 2017 cannot be explained with reference to wider evidence of the party's increased support among younger, more diverse, cosmopolitan populations'. Figures 9.1 – 9.6 – photographs taken during my stay in the Sefton Central constituency – give some idea of quite how suburban and well-to-do much of the area is.

Figure 9.1 (left) A typically wide, tree-lined street in Crosby, in the Sefton Central constituency

Figure 9.2 (right) A row of shops in Crosby

Figure 9.3 (left) One of many gated houses in the area

Figure 9.4 (right) A not atypical suburban street of large, detached homes and big gardens

Figure 9.5 (left) Entrance to a grand, Catholic retirement home in Crosby

Figure 9.6 (right) Entrance to Sacred Heart Catholic College - a Catholic comprehensive school in Crosby

Until 1997, these wealthier constituencies of Wirral South, Wirral West and Crosby (which became part of Sefton Central in 2010) were generally Conservative-dominated. When Labour took control of these constituencies in 1997, 'Tony Blair was surprised, as was Cherie who was actually from here [Sefton Central]' (Stuart). What is even more surprising is that whereas in other areas of the country, similar suburban seats with older, white, wealthy home-owners have moved back towards the Conservatives, in Merseyside this has not occurred: 'In the context of the Blair landslide, these Labour victories in previously safe Conservative seats on Merseyside were remarkable, but not exceptional. What was exceptional was that Labour subsequently retained them' (Wilks-Heeg, 2018, p. 7). Under the headings that follow, different reasons are explored for this political anomaly as well as that of Merseyside more generally.

9.3.2 The Conservatives and Liverpool's 'managed decline' in the 1980s

In the 1980s, Liverpool was preceded by a poor reputation based on years of population decline, urban decay, economic decline, de-industrialisation and political mismanagement. After the Hillsborough and Heysel disasters, dock strikes, Toxteth riots and local political infighting, 'many commentators simply wrote Liverpool off', labelling the city 'a huge infuriating problem which would not go away' (Crosby, 2014, p. 65). While some outsiders may have cruelly attributed blame on the people of Liverpool, the dominant narrative within the city was that Margaret Thatcher and the Conservatives were at fault. Sheila explained that 'as far as they [the people of

Liverpool] are concerned, the Tories tried to destroy it [Liverpool]. They tried to break them as people and it will take a long, long time for them to be forgiven'.

The blame attributed to the Conservatives for this troubled period has only strengthened, most obviously following the publication of government documents in 2011 revealing that Margaret Thatcher's chancellor, Geoffrey Howe, had questioned whether Liverpool should be abandoned to 'managed decline' (Parker, 2019). This is not something that has been easily forgotten by people on Merseyside, as Claire explains: 'That stuck with people and that's the narrative that has come back again, that the Conservatives would have seen us fail, that they would have been happy if Liverpool hadn't come back again'. The local newspaper, *The Liverpool Echo*, generally regarded as left-leaning and Labour-supporting, 'made sure as many people as possible knew about that story', Stuart noted. It is no surprise then that Sheila also echoes this idea of 'people having this strong sense of what the Tories did to Merseyside in the 80s', going on to identify long-term effects: 'there are parts of Merseyside that have never ever recovered. The poverty is staggering'.

The perceived or real economic effects of Conservative policy upon Liverpool during the 1980s contributed to a significant and long-lasting anti-Conservativism in the inner city and a collapse in Conservative support. At the same time as Liverpool becoming increasingly associated with Labour, because of the negative image attached to the city from the outside, many residents in suburban areas engaged in an 'act of disassociation' – declaring that they were from Lancashire not Merseyside or Liverpool (Benbough-Jackson and Davies, 2011, p. 7). This disassociation was also political: 'To a remarkable degree, political identities in the affluent Merseyside suburbs were underpinned in the 1980s and early 1990s by a concern to disassociate from the economic decline of Liverpool, its related social problems and its descent into political chaos' (Wilks-Heeg, 2018, p. 8). One way of disassociating from the city was to 'maintain the Conservativism' that was in opposition to the Militant-led, Labour-controlled city centre, according to Stuart.

9.3.3 1970s-1980s: the rise of the Liberals

The 1970s and 1980s were marked by increasing support for the Social Democratic Party (SDP)-Liberal Alliance and then the Liberal Democrats across Merseyside. Through their innovative use of 'pavement politics', the Liberals and then the Liberal Democrats built up support, both amongst those unhappy with the radical and inefficient Labour council and then amongst those unhappy with Heath and then Thatcher's national Conservative government (Jeffery, 2017; Wilks-Heeg, 2018). The Liberals became the main party of opposition across large areas of Merseyside, with the consequence of reduced Conservative vote shares. For many voters who had previously voted for the Conservatives, the Liberal party acted as a kind of 'gateway' to New Labour. Wilks-Heeg (2018, p. 8) explains that with Labour's move to occupy the centre ground of British politics under Tony Blair, 'Voters who had supported the Alliance in the 1980s had little difficulty switching to New Labour in 1997'. In Crosby, for example, Stuart notes that the surprise SDP victory in the 1981 by-election created a 'kind of disruptive effect' in which it took 'a chunk out of the Conservative vote long-term which they never recovered'.

9.3.4 1990s: Liverpool's regeneration and the increasing connection with its suburbs

Alongside the Liberal party facilitating a shift in support from Conservatives to Labour, other explanations for this shift can be found in the regeneration of Liverpool and its subsequent changing image and relationships with its hinterlands. Liverpool city centre has been completely transformed since the early 1990s, with significant investment, regeneration projects and rapid population growth, particularly in affluent young professionals. Such is the change that 'no longer stigmatised, Liverpool itself is the region's 'unique selling point', its cultural and 'historic' core' (Belchem, 2006, p. xix). The image transformation is obvious by comparing the sentiments expressed in the preface to the first edition of *Merseypride* (Belchem, 2000) with the preface to the second edition, entitled *'The new 'Livercool''* (Belchem, 2006). Although scholars such as McAteer (2017) and Jones & Wilks-Heeg (2004) have questioned the extent to which the urban transformation has addressed social and economic inequalities and included existing

poorer residents(McAteer, 2017; see Jones & Wilks-Heeg, 2004), it is unquestionable that perceptions of the city from the outside have changed. Most notably, the desire to disassociate from Merseyside amongst residents of wealthier, more distant suburbs appears to have subsided somewhat.

Every interviewee agreed that suburban Merseyside has become more willing to be associated with an increasingly 'cosmopolitan' Liverpool/Merseyside and less with Lancashire or Cheshire. Initially, according to Stuart, people were quite resistant to the creation of a Merseyside county council in the more outlying areas, something that perhaps would not be the case today: 'when I first arrived here in the late 1990s […] people were very proud on the Wirral at that time that their postcodes were switching from Liverpool to Chester because there was a sense of prestige and higher status and so on. I don't think they feel that way now'. Winning the bid for the European Capital of Culture in 2008 only enhanced the city's image amongst people in the suburbs, according to David:

> When Liverpool became cool again, the Capital of Culture in 2008, people who were living in areas like Sefton, like Crosby like the Wirral were less likely to get offended if they went on holiday and they told someone they were from the Wirral. 'Oh you're a Scouser'. They're not gonna go, 'no I'm from the Wirral'. They'll be like 'yeah actually I'm from Liverpool'.

Survey research in Sefton in 2004 found that 51% of respondents felt they belonged very or fairly strongly to Merseyside compared to 35% to Lancashire (Ipsos Mori, 2004a). A similar report on the Wirral – historically part of Cheshire – came to the same conclusions (Ipsos Mori, 2004b). For Stuart, 'people have developed this new relationship with the city, a kind of ease with the city that wasn't there before' that has enabled a more 'cosmopolitan' or metropolitan identity to push out from the core of the city into it suburbs. He explains that this spreading of a more 'cosmopolitan' identity is likely to have political consequences:

> It changes how people see their relationship with the city and probably changes how they see themselves in some cases. A lot of this is about identity and what they feel comfortable with and with Labour being much more the party of the metropolis, I think that this is feeding into people's political identities.

Labour's increasing cosmopolitanism appears to have coincided with an increasing desire amongst residents across outer Merseyside to associate with precisely that – a 'cosmopolitan' city. Claire also explains that the establishment of a city region and associated mayor has reflected and contributed to this increasing connectedness between the core city and places such as Southport, with a greater sense of political unity: the 'city region identity has maybe shaped some of the suburbs' such that now 'there is this kind of unified, coherent zone now that is represented by a Labour person'.

9.3.5 Football, Hillsborough and *The Sun*

There are further interrelated factors unique to Merseyside that have shaped its political trajectory: the Hillsborough disaster, the boycott of the Sun newspaper and the relationship between football and politics. On 15th April 1989, 96 Liverpool football fans died in a crush at Hillsborough football stadium. In spite of the Taylor Report highlighting several critical failings by South Yorkshire police, there was significant collusion amongst politicians, the media and the police to ensure that most of the blame was attributed to the behaviour of Liverpool fans, despite no evidence for this (Taylor Lord Justice, 1990). The Heysel disaster for which Liverpool fans were held broadly responsible may have clouded the judgment of politicians and the media. Margaret Thatcher and the Conservatives were condemned on Merseyside for allowing the fabrication of police witness statements and for failing to act on the Taylor Report. Indeed, Thatcher has since received significant criticism from politicians, the mainstream media and academics for the antipathy she showed towards football and football supporters (Williams, 2012) and for her support of a supposedly partisan police force (Dunt, 2012). One consequence, for Stuart, was widespread anti-Conservativism across the whole region:

> Almost everybody who has lived here for a long time knows somebody who was there and went through the trauma or somebody who died. So as the truth emerged in the 1990s onwards, that did I think feed quite strongly into this anti-Conservative mentality. And that wasn't just at the core of the city of Liverpool, that was really right out into the suburbs. There is a Hillsborough memorial in Crosby, there is one in the Wirral.

The Hillsborough disaster 'stitch-up' is also associated with *The Sun* newspaper, which had a headline on the following day falsely accusing fans of pick-pocketing victims and urinating on and attacking police. There has since been an orchestrated boycott of the right-wing tabloid newspaper across Merseyside and the banning of its journalists from Liverpool FC's stadium and its training ground. The strength of feeling should not be underestimated, as Stuart explains, 'I've lived here since 1998 and I've only seen someone reading the Sun newspaper twice […] and in the last five years there has been a boycott of places that were even selling it so places would refuse to sell it'. According to David, 'The Sun boycott seems to be getting stronger […] there's Facebook groups where people will go 'this newsagents on this road has been selling it… let's go round and give them a piece of our mind' […] You can see that spreading out to the Wirral, to Knowsley to Sefton'.

For David, the political effect of the boycott is likely to be most pronounced on Conservative support amongst Merseyside's working class: 'you've basically taken away the key working-class, right-wing voice in the media'. Another recent study found evidence that the drop in readership of the Sun led to a significant increase in pro-EU attitudes in Merseyside during the 1990s (Bischof and Foos, 2018). Although there is no research on the impacts on political behaviour, given this evidence, there is little to believe that it would not have also led to a decrease in support for a broadly Eurosceptic Conservative Party. This is even more the cases as the Conservatives have generally been associated with the denigrated newspaper and Labour with the *Justice for the 96* campaign for those responsible for Hillsborough to be held accountable. Stuart emphasises this link: 'it was really only when Labour were in power that the issue was then looked at again with any degree of seriousness'. This undoubtedly helped forge a distinction between the Labour and Conservative stances on the issue, at least in the minds of supporters.

There is a widely held belief that Liverpool Football Club (FC) has a more broadly left-leaning culture. In the run-up to the 2017 General Election, banners adorned with Jeremy Corbyn's face appeared in Liverpool's famous Kop (Figure 9.7). The prevalence of foodbanks at both Anfield (Liverpool FC's stadium) and Goodison Park (Everton's stadium) also acts as a link between the football clubs and the local Labour Party, at the same time as solidifying the image of the clubs and city as socialistic: 'you've got football supporters foodbank organising which is done at Liverpool and Everton and that is all,

I think it's Walton CLP (Constituency Labour Party) members that have started or they're certainly heavily involved' (Claire). For some supporters, Liverpool FC is simply not an apolitical football club, as a recent fan's blog post confirms:

> Liverpool FC, befitting the city they're based in, have always been a club you can't fully separate from politics. The city's history as a bastion of the working class, of unions, and of anti-Tory sentiment that peaked during the Thatcher years and has remained strong ever since informs the club's local fanbase.
>
> **(Chomyn, 2017)**

Figure 9.7 (left) A banner declaring 'we're not English we are Scouse' at Anfield. Downloaded from https://www.theanfieldwrap.com/2013/10/get-yer-scouse-in-order/ in February 2019.

Figure 9.8 (right) A banner featuring Jeremy Corbyn and John McDonnell at Anfield. Downloaded from https://www.independent.co.uk/sport/football/premier-league/liverpool-corbyn-banner-southampton-kop-anfield-a7722521.html in February 2019

9.3.6 Merseyside exceptionalism: performing an anti-Conservative or pro-Labour Scouse identity

> An oppositional culture often finds its raison d'être in that which it opposes.
>
> **(Benbough-Jackson and Davies, 2011, p. 2)**

> The whole literature on Liverpool is 'Liverpool is exceptional, it is a place beyond England'. It's bollocks! But it's part of the popular conception.
>
> **(David)**

All of the factors discussed hitherto have contributed to a pre-existing perception of Liverpool's exceptionalism – that the city and its inhabitants are somehow different to other cities and their populations in northern England. The social, political and cultural peculiarities of Liverpool and its past are, alongside critical examinations of any notion of exceptionalism, widely discussed in academic literature (Croll, 2003; Belchem, 2006; Powell, 2007; Ball, 2017). Whether Liverpool's difference is real or imagined, it is clear that there is a strong Scouse identity that is loosely constructed in opposition to notions of the establishment, Englishness and conservativism. It is a widely held belief that for many people on Merseyside, their Scouse identity is more important than their English identity (Millward and Rookwood, 2011). Indeed, alongside the 'we are not English we are Scouse' banner at Anfield (Figure 9.7), there is an inscription on a pillar in the Museum of Liverpool with a quote from the late politician Margaret Simey: 'The magic of Liverpool is that it isn't England'. Stuart identifies this clear sense of difference with other English cities as people frequently repeat on Merseyside that 'Liverpool has more in common with Marseille or Naples than it does with Manchester or Sheffield or Leeds. I'm not sure it's really true but again people keep saying it'.

It may even be the case that a 'cosmopolitan' Liverpool today is defined by its residents in relation to a more 'introspective and parochial Lancashire' (Benbough-Jackson and Davies, 2011, p. 6). This fits with Liverpool's history as a diverse port city and a commonly held narrative – whether real or imagined – that the city was and still is a place of openness where difference is accepted and celebrated (Phillips and Brown, 2011). While this self-defined openness and oppositional identity may manifest in a less Eurosceptic attitude and a rejection of English nationalism, the Conservatives may also be negatively associated with notions of both Englishness and the establishment more broadly. Tony explains this connection: 'Part of Liverpudlian psychology is to challenge the establishment […] And so the Conservatives will always be seen as the establishment party as so to challenge the Conservatives would be seen to be quite sensible'. Voting Labour or at least being anti-Conservative may be, just like the accent or supporting Liverpool or Everton FC, a way of performing Scouse identity. David notes how challenging this is for local Conservative activists: 'You could knock on as many doors as you wanted, and you still wouldn't be able to convince enough people on the merit of your argument because it's like a hand on your shoulder stopping you from voting [Conservative] because it goes against your identity'. This idea that Scouse

identity is defined and performed in opposition to conservativism was perhaps crystallised in the period of decline during the 1980s:

> In the 80s it did seem like the rest of the country was against Liverpool… it was like a self-defence mechanism. If everyone is calling Liverpool a shithole, instead of trying to compete with the rest of the country on these Thatcherite terms of economic progress and efficiency, we are going to compete on solidarity and on being compassionate and sport.
>
> **(David)**

It is quite difficult to assess precisely the extent to which Scouse identity in Merseyside is characterised in opposition to England or conservativism or how much comes down to pro-Labour political sentiments. When asked this question, Claire identified that Labour, much like Catholicism and football may be a positive signifier of Scouse identity:

> I think it goes to the heart of a sort of Scouseness in that it is passionate and it is kind of an emotional connection I think in some ways that people feel that relationship to those things that we've already mentioned - religion and football - and maybe the Labour Party is still part of that for a lot of people.

9.3.7 Local organisation of political parties

Inevitably, coinciding with their electoral strengths and weaknesses, the organisational structures and access to resources of the two main parties have diverged. Due to Labour's popularity in Merseyside, they have many more activists ready to go door-knocking than the Conservatives, most notably in 2017 with the support amongst members for Jeremy Corbyn's more radical approach. Tony described local Labour councillors and activists on Sefton Council going about their job with a kind of 'evangelical zeal'. The enormous majorities for Labour in inner city seats mean that many young, invigorated activists in Liverpool can campaign in more marginal suburban constituencies: 'if you live in Bootle or Walton or Knowsley you know what your result is going to be but you're looking to Wirral West, Weaver Vale, Southport and you think, 'right well we'll go and help out there' (Claire). Stuart notes that with a good public

transport system across the metropolitan area, 'it's quite easy [for Labour] to move people out to campaign in Southport or the Wirral'.

In contrast, Sheila points out that 'the Tories just haven't got the bodies. On the Wirral the Tories actually employ a company to go out and deliver their leaflets'. This is a result of both their wider unpopularity but also a support base that is increasingly older and less mobile. Tony explained that 'we used to have what often shouldn't be referred to as the blue rinse brigade […], well that generation has passed through and there aren't those people coming behind'. As Stuart points out, it is also more difficult to motivate activists to campaign or stand for election without a strong organisational structure behind them and with the inevitable prospect of losing: 'people don't want to stand for election just to get annihilated. People don't want to campaign. And that kind of spreads outwards I think so the party is by now organisationally very weak right across Merseyside'.

9.3.8 2010s: the collapse of the Liberal Democrats and the failure of UKIP

The success of the Liberals in the 1980s acted as a 'gateway' to many people on Merseyside voting Labour in national elections under Tony Blair. Whereas in other areas that are, like the outskirts of Merseyside, predominantly older and white, many of these voters have found their way back to their initial home in the Conservatives, Labour have actually become stronger here. Two simultaneous political processes may have contributed to this anomaly. The first is that in a time period in which the Conservative brand was largely toxic on Merseyside, the Liberal Democrats went into coalition government with the Conservatives. Sheila notes the effect on Local Elections:

> With the Lib Dems going into coalition with the Tories, we just hammered them continually […] The numbers that we won by was just ridiculous and that was not a lot to do with the Labour Party but to do with the Lib Dems nationally, working with the Tories because the Tories as you know are just hated.

The second political process that has contributed to this anomaly is the failure of UKIP across Merseyside. At the 2015 General Election, whereas elsewhere in the country Labour benefited from the collapse of the Liberal Democrats but simultaneously lost

votes to UKIP, across Merseyside the latter process was far less substantial. In fact, despite the largely white, working-class composition of many areas of Merseyside, UKIP struggled to have any political impact. For Tony, this is a reflection of the broad support for multiculturalism across Merseyside: 'People's colour and creed, that's not an issue in my view in Liverpool. We don't have that sort of racial issue […] You can go up to Yorkshire and find that it's still alive and kicking. Here it isn't'. David similarly locates UKIP's lack of appeal in the self-perception of Liverpool as an open, port city: 'I think it's this identity… Liverpool sees itself as this open, welcoming city, we were built on immigration'. Yet, he continues to note how this identification as a multicultural city does not fit with reality in a city with relatively limited ethnic diversity: 'this myth of Liverpool being a melting pot probably contributes to this idea that UKIP aren't doing too well'. Performing the Scouse identity for many people would certainly not consist of voting for a party perceived by some to be parochial, English and racist. The extent to which this embrace or at least tolerance of multiculturalism would have survived if Liverpool had witnessed the levels of immigration experienced by cities such as Bradford or towns such as Blackburn or Burnley remains unclear.

UKIP 's failures across Merseyside in 2015 appears to have had a knock-on effect on election outcomes in 2017. In large parts of England, the Conservatives saw large increases in their vote shares in areas where UKIP were strong in 2015 but subsequently collapsed in 2017. For many ex-Labour voters or previous non-voters, UKIP acted as a 'gateway' to subsequently voting for the Conservatives – a party who were endorsing and broadly supportive of Brexit. As so few voters moved to UKIP in the first place across Merseyside, this 'gateway' simply did not exist.

9.3.9 Conclusion

To conclude, it is clear that there are many place-based factors that have led to the under-performance of the Conservatives and the over-performance of Labour across Merseyside. The widespread anti-conservativism that has become fully a part of the Scouse identity was developed in the 1980s when the city was in serious economic decline and the blame was targeted at the Conservatives. At the same time, the collusion between police, media and government to blame Liverpool supporters following the Hillsborough disaster has caused significant anger towards Margaret Thatcher and the

Conservatives. These feelings have only strengthened over time with the uncovering of documents showing the government considered letting Liverpool go into 'managed decline', further evidence about the Hillsborough 'stitch-up' and the subsequent boycott of the right-wing *Sun* newspaper. It is not simply anti-Conservativism but also pro-Labour attitudes, as people associate the Labour Party is often embedded in Scouse identity: 'Somebody told me in Kirby once in Knowsley that it's like a religion Labour to people. They're Catholic, they vote Labour, they support Everton or Liverpool. Those are things that people identify with' (Claire).

Psephological factors have since exacerbated the situation, with the 'gateway' that the Liberals/Liberal Democrats played as a transition from Conservative to Labour for many voters not subsequently being matched by a UKIP 'gateway' acting in reverse. The challenge for the Conservatives is made greater as Labour's dominance has allowed them to become strongly organised across Merseyside with many young, enthusiastic activists ready to campaign.

9.4 Lincolnshire: agricultural trade unionism to Conservative Party stronghold

9.4.1 Introduction: 'being a member of Labour in South Holland is like being a member of a Rare Breed Society'

Just as Merseyside has not always been the cradle of the Labour Party that it is today, the history of rural Lincolnshire is not without challenges to economic orthodoxy. In fact, in the 1870s, Lincolnshire was an important part of the agricultural labourers' movement often referred to as the 'revolt of the field' (Dunbabin, 1963). Phil identifies that 'historically, this was the home of trade unionism, certainly in the agricultural sector'. That seems quite difficult to believe today, given the recent dominance of the Conservative Party and the relative insignificance of the Labour Party in General Elections across south Lincolnshire. The interviewees representing the Labour Party all emphasised quite how challenging the region is for them, sometimes with humour: 'being a member of Labour in South Holland is like being a member of a Rare Breed Society' (Paul).

The strength of anti-Labour sentiment is so strong that in order to appeal to voters, Phil removes any mention of the Labour Party from the boards that people put up in support of him in the Local Elections: 'I stand as 'Fair Deal Phil' to kind of soften the Labour bit. I can't claim that it said 'vote Labour' [...] and they knew I'm Labour and it does say Labour on the ballot papers […] but if I did all that stuff, I can't do that, that would not work'. In Figure 9.9 – an example leaflet that Phil used in 2013 - the disassociation from the Labour Party is clear.

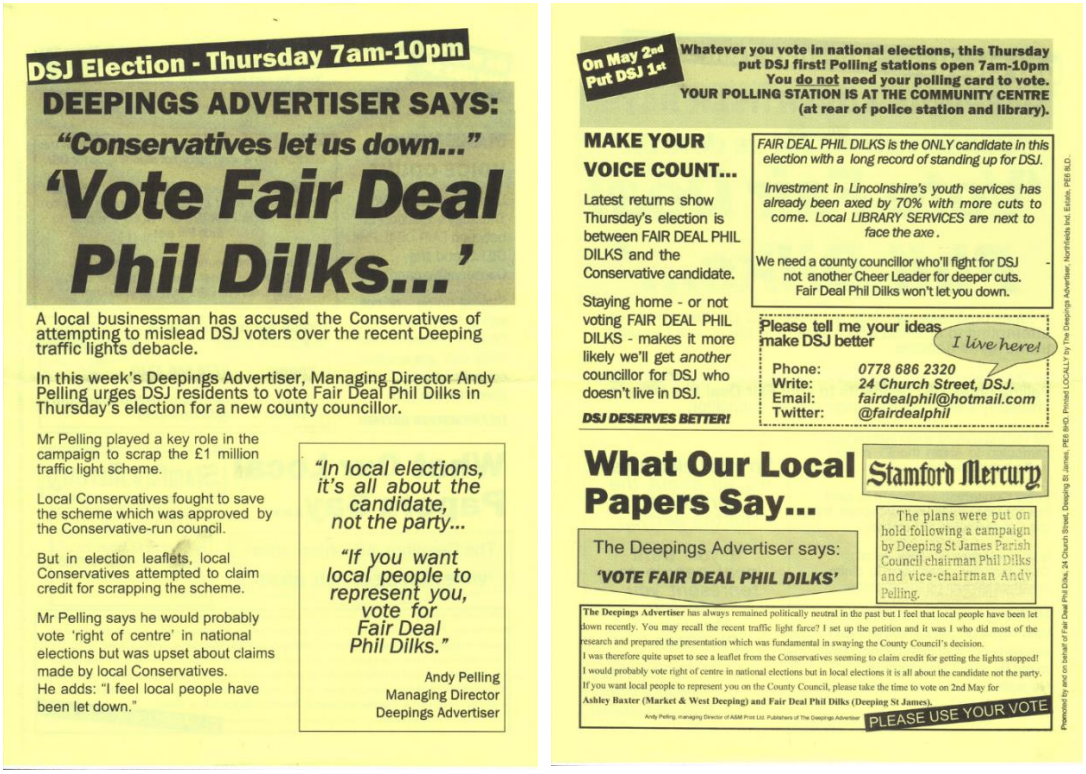

Figure 9.9 (left and right) Two sides of a leaflet used by Phil Dilks in the run up to the 2013 Local Elections in Deeping St James

The composition of south Lincolnshire is unique in the English context. There are very few areas of England that have significant older, white, rural populations yet at the same time are predominantly working-class with a high number of Eastern European migrants. Taking Boston and Skegness for example, in 2011, according to calculations made in Chapter 6, the constituency was the third furthest away from a university and had: the fifth highest proportion of the population employed in precarious forms of employment; the sixth lowest proportion employed in 'cosmopolitan' industries (South Holland and the Deepings has the 2nd lowest); the seventeenth highest proportion employed in agriculture; the second highest proportion employed in routine/semi-

routine occupations; and an above average proportion of migrants. Of 572 constituencies, according to the measure of decline that was calculated in Chapter 7 (see Appendix L), Boston and Skegness had the 24th highest socioeconomic decline score between 1979 and 2017. On the same measure, South Holland and the Deepings had the 147th highest score. Keith and Paul perhaps best summarise the frustration felt by local Labour Party activists who feel that elsewhere in the country, the poor economic conditions, working-class history and austerity measures might create more favourable conditions:

> The place is falling around people's ears with the hospital, the doctor's, the schools, things like that. Yes, it's caused by central government initially […] People can see it's happening but when it comes to voting [...] you still can't get them to vote Labour! [...] No matter what happens it's going to be an X for the local Conservative.
>
> **(Keith)**

Figure 9.10 (left) North Street, Bourne does not give the impression of an economically thriving area

Figure 9.11 (right) The unique geography of the flatland in the Fens of south Lincolnshire, close to Spalding

9.4.2 A culture of deference to landowners and farmers

In the nineteenth century, a dominant narrative about rural politics, best espoused by Moore (1976), was that it was structured by the hierarchical communities that existed within. Moore's (1976) influential idea was that many electors in rural areas – existing in 'deferential communities' - voted in accord with the wishes of their landlords or the

primary landowners in the local area who they regarded as economically and socially superior. This was highly likely prior to the Ballot Act of 1872, which ensured that elections were held by secret ballot, limiting the sway that landowners could have on employees (Newby, 1979). In a study of nineteenth century Lincolnshire's politics, Olney (1973, p. 249) to some extent contested this idea but still concludes that 'the broad but intangible truth is that the 'heavy' agriculturalists of Lincolnshire, and particularly the arable farmers, suffered from Conservativism almost as an occupational disease. They seemed to inhale it from the very furrows that they ploughed'.

Interviewees associated with the Labour Party were keen to emphasise the persistence of a deference to the 'landed gentry' even today. Phil describes the moment that, as an employee for the Louth Standard newspaper, he covered Jeffery Archer's political rally in 1974:

> It was absolutely packed with people wanting to meet Mr Archer and he pulled up, all the other candidates sat on the podium, and we had to wait for Mr Archer, and he came like a bride at a wedding [...] The doors at the back of the hall opened up and this Rolls Royce arrived. Fucking Rolls Royce! [...] And Mr Archer gets out and he comes down the aisle. And as he comes down the aisle people doffed their caps at him.

The extent to which this is typically deference or also protecting one's own economic interests is questionable, as exemplified by numerous stories of farm workers voting Conservative to protect the interests of their landowner but also their own employment:

> It's almost like a feudal system here. Because basically there is no industry other than to do with land work […] and the ones that are actually working are in fear of their jobs if they don't vote for their governor. In other words, 'we work on the land, when it comes to voting they're paying my wages, I'm going to vote for them'.
>
> **(Keith)**

> I've known people who have told me working on the land that the day before the election the foreman or the boss, the farmer, would call all the workers together in the yard and tell them to make sure they got out to vote tomorrow for the Conservatives because if you vote Labour on Thursday you will not

> have a job on Friday [...] It's the age of deference [...] and it hasn't entirely gone.
>
> **(Phil)**

The extent to which this situation persists today is unclear, but it seems at least logical that farm labourers might vote not simply out of deference to land-owners but because it is in their perceived economic interests to do so. This is particularly the case when there are few other industrial jobs for farm labourers and limited opportunities to commute from a poorly connected area.

9.4.3 Negative experiences of national and local Labour governance

Just as there was dominant narrative that the Conservatives failed to support Merseyside in the 1980s, some voters in rural Lincolnshire seem to feel that Tony Blair's Labour government overlooked issues that concerned people in rural areas. Tom explains that, 'I don't think the experience of the countryside during the Blair years was one which it is likely to forget in a hurry'. In particular, Labour have received significant blame for the ban on fox hunting and the rise in immigration from Eastern Europe in the Boston area: 'I remember the countryside marches, I remember the BSE crisis, and […] the immigration that we saw at the time, which has had a demonstrable effect on how people vote'. Tom's experience suggested that many voters in Lincolnshire developed a negative, long-lasting impression of the Labour Party that has not disappeared since. A significant portion of this discontent relates to the enlargement of the European Union in 2004 and 2007 and the subsequent increase in the number of Eastern European immigrants in south Lincolnshire:

> Lots of people blamed Labour and Tony Blair and Gordon Brown for in 2004 when Germany and other places in Europe put like an 18 month holding situation before they allowed people to come, Gordon and Tony they listened to the Farmers Union and they listened to the CBI who then said to them 'don't put restrictions on people coming' […] I told them it would be the Achilles heel of the Labour Party and Tony Blair would be known as 'the man who let all the foreigners in'.
>
> **(Paul)**

Paul points out that it is not just the rise in immigration that some residents negatively associated with the Labour Party, but also the introduction of a minimum wage in 1999. The influx of workers from more deprived areas of the country could no longer be relied upon by farmers as conditions in their own areas improved at the same time as local workers requiring more substantial pay packets: 'When [the influx of workers] stopped because of better living standards and they got jobs in those areas, they stopped coming. You've got the minimum wage issue and at that stage they were realising that the only way you could get local labour, you'd have to get labour to come and live in Boston'.

9.4.4 Immigration: a critical issue

The extent to which immigration has been of concern in south Lincolnshire has been featured quite heavily in the media, both with the rise in support for UKIP between 2010 and 2015 and then the subsequent vote to leave the European Union in 2016 (Harris *et al.*, 2015; for example: Chakelian, 2016; Jack, 2019). The increase in the proportion of migrants in this region – most notably in Boston and in South Holland - owed itself initially to a large Portuguese population but more recently and substantially to the in-migration of Eastern European people following the expansion of the European Union in 2004 and 2007. In south Lincolnshire, many are employed in agriculture or food processing industries (Robinson and Reeve, 2006; Green, Jones and Owen, 2007; Tuckman and Harris, 2009). There is much to suggest that the changing population did not go unnoticed by local residents: 'People don't talk about much else [than immigration] in that place [Boston] actually' (Rob).

There has been a fairly widespread backlash against immigration in the area that, whilst sometimes manifesting in legitimate change, has at other times, resulted in cases of racism and xenophobia (Barnes and Cox, 2007; Lumsden, Goode and Black, 2018). Keith explained that, 'It's almost like Boston is still stuck a little bit in the past, whether it's someone with a different colour of skin or they come from another part of the world, it's not good news'. Phil noted two significant instances of racism, the first referring to a Polish man who was the Labour Party 2017 candidate and constituency chairman for South Holland and the Deepings: 'A friend of his wife challenged her in the street and said "I don't understand why you're still here". She replied, "what do you

mean? It's my home". "No, your home is in Poland. You should go back to Poland" [...] And she was so upset that she has gone home'. Equally as concerning was a story that Phil told about regarding local residents' responses to the possibility of a traveller site in the area during the 1990s:

> The district went fucking mad. All these little communities saying 'we don't want bloody gypos here'. And we had a public meeting in the leisure centre here [...] Somebody got up in that meeting and said 'we had some travellers and they moved in three or four doors down from us and unfortunately they had to move away because somebody put a brick through the windows. And the mood of the audience was 'yeah fucking right, get rid of them'.

Much like in Merseyside, where the Liverpool Echo is accused of, and at times quite clearly demonstrates a left-wing bias, newspapers in south Lincolnshire were criticised for legitimising such racist and xenophobic beliefs after the arrival of migrants from Portugal: 'The local press started to get very racist. It allowed unreasonable behaviour or attitudes to be aired so people would say comments and normally where the press would say no we are not going to record that, they did and they allowed lots of letters [...] awful letters' (Phil).

While the relative level of racism or xenophobia cannot be determined from these anecdotes, it is clear that there has been a strong rejection of pro-immigration ideas across Lincolnshire, particularly in the south of the county, where in 2015 UKIP performed particularly well. One cause of this is the perception that south Lincolnshire is largely 'declining' or becoming 'left behind' – a common theme throughout the interviews that mirrors my own findings in Chapter 7. People are susceptible to blaming these economic conditions on high levels of immigration, according to Rob: 'if you're out of work or you can't get a house, then you look for reasons and you can be directed by political parties towards a scapegoat'. This is compounded by the fact that the out-migration of younger, educated residents leaves many remaining residents with fewer marketable qualifications in direct competition with foreign workers for jobs in shops, packing in factories and working on the land: 'All the talented people leave Boston and the kids that are left behind to be honest about it aren't able to do much more than use their hands in terms of manual jobs […] And that's easily done by someone coming in from elsewhere who is willing to work for less' (Rob). Anti-immigrant sentiment is likely to be harsher as much of the incoming labour is low-skilled work, with significant

research showing that public responses to this type of immigration tend to be more negative (Hainmueller and Hiscox, 2010). Kaufmann (2017) has shown that this is even more likely the case when the speed of ethnic change is rapid.

Finally, some of the cause might be related to a widespread feeling of nostalgia – a feeling that may be stronger in an area that has seen relative decline than one such as Merseyside which has seen substantial economic growth:

> There is an awful lot of misty-eyed nostalgia of for instance Boston looking back to the late 90s, this sort of perfect utopian market town where everything was wonderful. It wasn't! […] People who have migrated here have migrated because there are jobs and those jobs are there because the food industry and food processing, farming, vegetables and everything through to making sandwiches and pizzas [...] Would people sooner have no thriving industry, no job, no immigrants?
>
> **(Tom)**

9.4.5 Immigration: Labour's pain, UKIP's gain

The rapid population change in south Lincolnshire first occurred under the most recent Labour government following the enlargement of the EU in 2004 and 2007. According to Paul, many of those with negative feelings about the rise in the number of immigrants have attached some of the blame for this on Labour: 'people will say they're from a Labour background but over the last few years on immigration they've got used to not voting Labour'. He continues to explain how the increasingly urban, 'cosmopolitan' and liberal nature of the Labour Party has perhaps not helped this situation: 'I think some people feel the Labour Party have left them behind'. An increasingly frustrated section of the white British population coincided with a recently arrived immigrant population from the EU, many of whom were not eligible to vote. Indeed, the recent arrival to the UK combined with low naturalisation rates mean that in 2015, only an estimated 5% of Polish residents had voting rights (Ford and Grove-White, 2015, p. 7). Given that most migrant groups register relatively high vote shares for Labour, the political disenfranchisement of the Eastern European people in south Lincolnshire may well have benefited the Conservatives at Labour's expense. However,

UKIP have also gained: 'I think after 2011, UKIP was the principal beneficiary of all or most of that discontent [about immigration]' (Tom). Such was the discontent, Paul explains how in the 2015 Local Elections, UKIP 'just put one candidate up but they could have put anybody up, and they won. They didn't need to canvass. They didn't need to make a message'.

At the Lincolnshire county elections in 2013, UKIP took sixteen seats from the Conservatives, most of which were in the south and south east of the county. Two years later, they tied with the Conservatives for control of Boston council but failed to win Boston and Skegness constituency in the General Election, despite receiving 33.8% of the vote. UKIP's true popularity in 2015 may have been even higher, only obscured by tactical voting: 'if they were a solid Conservative voter, looking at the choice of either a Labour Miliband government or a Cameron government, in Lincolnshire they would have held back in the General Election. I don't think they held back in the locals' (Tom).

9.4.6 UKIP as a 'gateway' to the Tories or UKIP and then back home again?

In Merseyside, the lack of support that UKIP had in 2015 appears to have benefited Labour as it limited the potential for UKIP to act as a 'gateway' for some voters between voting Labour pre-2015 to voting Conservative in 2017. In Lincolnshire, UKIPs strength at the General Election in 2015 may have aided this process, as Rob explains: 'Soft Labour voters […] found themselves easily able to get to the Conservatives by going through UKIP. They would never have countenanced the idea of going from Labour to the Conservatives but found a route through UKIP'. Paul identified that UKIPs 2015 support moved more heavily towards the Conservatives in 2017: 'The UKIP vote split up in two ways really. The Tories got two votes for every one of theirs and we only got one'.

The extent to which voters that moved from UKIP to the Conservatives had previously voted Labour in Lincolnshire is not particularly clear, as Angela's opinion exemplifies: 'they [former UKIP voters] went back to the Conservatives mainly. It was pretty obvious to me that that's where they'd come from'. It may well have been the case, as

has been found elsewhere, that many voters had already left Labour between 2001 and 2010, perhaps abstained from voting for some time before voting UKIP in 2015, followed by the Conservatives in 2017: 'these are people who could well have voted Labour in 1997 and 2001. To use Boston and Skegness constituency as an example, in 1997 Labour got within 600 odd votes, in 2001, 500 odd votes before it started going the other way' (Tom). A further reason why some of these former UKIP voters – particularly those that had come from the Conservatives - switched to the Conservatives in 2017 was the pro-Brexit stance taken up by Theresa May and most of her party: 'Even just party membership-wise some that were totally against Europe and were UKIP-lite almost, a lot of those supporters have come back [to the Conservatives]' (Kelham).

9.4.7 Insecure, seasonal labour and the lack of unionisation

While immigration has aroused a negative response from some residents in south Lincolnshire, it has also resulted in a significant population of the working class – that is, recent EU migrants – being disenfranchised. Labour's left-wing economic message may have had less traction in an area where many of those that such policies might be perceived to benefit cannot actually vote. In addition, even those with voting rights are unlikely to be members of trade unions that might be affiliated to the Labour Party and afford a sense of class solidarity. Low unionisation may reflect a legacy of a trade union movement that 'has not always been a good friend to migrant workers, often mistakenly viewing them as willing help-mates to employers seeking to cut wage rates and other terms and conditions' (UNISON, 2013). It may also be the result of characteristically low rates of union membership of Eastern European migrants specifically (Hardy and Clark, 2005). Paul describes how 'the union movement have never really grasped Eastern Europeans', such that they are more easily accepting of exploitative conditions:

> You'll hear the farmers say this and the people who own the factories, 'what we like about the Eastern Europeans is that they'll come in for their shift, and if we say to them 'work another 5 hours' they say 'yeah, ok, no problem''. When they say things like 'there's no work today, come back tomorrow' […] some of the locals would say 'fuck off'. We have scenarios here when you go into the town centre […] and about twenty buses turn up […] They'll take you

> to the factory at about 5 or 6 o clock [...] and if they don't need you they'll say to them on the bus 'we don't need you tonight'. You either wait for the bus or you make your own way home.

In contrast to the public sector or large private sector companies that might offer or at least not oppose the unionisation of employees, much of the agricultural workforce is organised by gangmasters who some interviewees suggested would be more resistant: 'If they're controlled by gangmasters [...] if you're a trouble maker which is what union members will be classed as [...] "don't bother coming to me for work if you're a trouble maker. I've got 50 men to replace you"' (Jane). In contrast to the dominance of the insecure, agriculture workforce around south Lincolnshire, other towns across the Midlands and even in the far north of the county (e.g. Grimsby and Scunthorpe) retain some heavier industry and have industrial legacies with most likely larger unionised workforces. As the models in Chapter 8 showed, low levels of unionisation are likely to result in low Labour vote shares. The union membership variable was only at regional level meaning any political consequence of the likely very low union activity specific to south Lincolnshire is unlikely to have been captured.

It is not only employment in agriculture in the Boston area and in South Holland that is characterised by high levels of insecurity and low levels of trade union membership. The coast, around Skegness, is also broadly mono-industrial, as Paul explains: 'Skegness has only got one thing going for it and that is the holidays' with significant employment on caravan sites. Not only is employment in the seaside tourist industry unlikely to have significant union involvement, it is also often seasonal, meaning a likely younger, working-class population that might be more receptive to Labour's message may be registered to vote elsewhere – a point that is made by Angela: 'Skegness because they've got a lot of people coming in during say March to September, for the summer season, and a lot of people who are taking low paying jobs in the hotels and places like that. The elections are often in May if they've even registered their vote'. Those residents that are permanently domiciled in the town and therefore vote in the Boston and Skegness constituency are much more likely to be the older, working class population – precisely the demographic that has moved away from Labour towards the Conservatives in recent elections.

9.4.8 Geographical and cultural disconnectedness: support for independents

The occupational structure of the working class is certainly not the only characteristic that makes this region unique. All of the interviewees picked up on a strong sense of independence across Lincolnshire that in part comes from the geographical and cultural isolation of the area. Many identified how this independence is built on the idea of self-sufficiency - that ultimately keeping the government and London at a distance is perceived as being much better for the local area: 'We are in the East Midlands but Nottingham is a long way from Boston. The self-confident want to be left on their own and are not too bothered about the people who do need the state. And the self-confident are the decision-makers' (Rob).

This culturally ingrained desire for self-determination perhaps also offers some explanation for the success of independent candidates in Local Elections. Rob makes the link with the politics rural United States: 'I'm not going to be told by Washington what's going to go on. Leave me to my own devices at a distance... therefore they stand as individual people with the respect of not being told what to do'. As a result, he argues, 'the party structure is not very solid [...] here it's Labour, Liberal Democrat, Conservative, Independent, or Independent and another Independent'. There are currently two highly competitive independent groups active on Lincolnshire county council holding four seats between them. It is perhaps too speculative to suggest that these independent councillors limit support for other parties competing against the Conservative hegemony. Nonetheless, in 2007 for example, one independent group – The Boston Bypass party – clearly acquired votes from former Labour voters, as Paul explains: 'in 2007 we all got knocked out by the Boston Bypass Party. We lost all of our seats in one clean swoop'. Even if independents only directly weaken Labour support in Local Elections, it can further the perception that Labour have little chance of winning across much of Lincolnshire and weaken the organisational structure of the local party going into a General Election.

9.4.9 Political organisation: 'how are Labour functioning in the more far flung parts of the county? They're not!'

In a mirror image of Merseyside, the aforementioned factors have resulted in a dominant and organisationally strong Conservative Party and a weak Labour Party. Kelham describes the significant resources available to help them build local support for the Conservative Party: 'by having a safe seat for a long period of time, the party has the resources, like us here, we own our own building, we have a paid member of staff and then we have people focused on the re-election of Conservatives whether that's doing events, socials or fundraising'.

As a result of having paid staff and access to buildings from which to run campaigns and events, standing for the Conservatives was perceived as a much easier task than for any other party. Angela suggested that, 'if I was to stand as a conservative, I wouldn't have to work hard like I do'. She continues to explain her reasoning: 'the MPs here except Lincoln are conservative and they've all got agents and those agents have got offices in your town […] All of the volunteers flock to there because they've got paid people who can collate a lot of the information that councillors want'.. This is in sharp contrast to the Labour Party organisation that is perhaps most bleakly summarised by Rob: 'how are Labour functioning in the more far flung parts of the county? They're not!'. Part of this weakness is top-down, in that the Labour Party cannot afford to allocate resources to constituencies in south Lincolnshire that are not considered remotely winnable, as Jane explains: 'To get assistance from the main party, we've got to be a marginal. And as far as Labour is concerned, we are so far, we are just miles away from any conceivable victory [...] that they're not going to invest anything in us, are they?'. Instead, as Phil points out, in the run up to a General Election, activists are encouraged to campaign in more marginal seats in the region, such as Lincoln and Peterborough, weakening Labour's position locally even further:

> Because we are not a target area with key seats, you don't get the same backup that the party at a regional basis is able to provide to Lincoln for example which is a marginal seat. Or Peterborough even. And you also then get the culture says quite rightly that we in a General Election should go to Peterborough so it makes it even worse here.

In Merseyside, the seats in the urban core of Liverpool are perceived as so 'safe' that Labour will send activists to the suburbs to campaign. Lincoln– the only seat Labour hold outside of the far north of the county - is extremely marginal, meaning few activists would ever leave to campaign in the more rural areas. Tom explains that 'we [the Conservatives] can cover the area in a way that I think Labour would struggle to [...] I suppose Labour could bus its people out of Louth and Lincoln but if it's going to contest seats it is going to concentrate on Louth and Lincoln where it can make a difference'. The shortage of activists in the rural areas also leads to a shortage of Labour candidates, as Kelham notes: 'If I think about this area first, I think for us in the most brutal way we haven't really got opposition. So, in previous elections it is rare that we will get a full contingent of opposition parties'. For Rob, the shortage of Labour candidates is exacerbated by low levels of education: 'the more urban it is, the more likely it is you are going to have relatively educated people to provide leadership'.

9.4.10 Conclusion: place matters

Whereas in Merseyside there have been some clear events that have fuelled a dominant anti-Conservative narrative, on the surface at least, the causes of Lincolnshire's unusual politics are less clear. Some of the explanation appears to lie in the fact that the statistical models cannot account for the precise and especially unique composition of the area – particularly in Boston and Skegness and South Holland and the Deepings. For example, there are large numbers of recently arrived migrants from Eastern Europe, who are largely employed in routine occupations with seemingly low levels of union membership and significant disenfranchisement. These factors - combined with the ageing, white, working class British population with low levels of education living in a relatively declining area where the rapid increase in immigration has been blamed on the previous Labour government – create a challenging situation for the Labour Party. Although sad, it is no surprise that the animosity towards Labour in the area is strong, as Jane explains: 'I honestly wouldn't even do a jumble sale in Boston in aid of the Labour Party. You'd have to disguise it somehow'. In contrast, the Conservatives have benefited from the collapse of UKIPs widespread local support and their pro-Brexit stance in an area of the country that registered the most convincing vote to leave the European Union. On top of all of these factors, many of the interviewees identified the

broader cultural phenomenon of a longstanding deference to farming and landowners in part because of their status and wealth and in part because they are the key employers in the local area. While the short-term story in the media has often been one of UKIPs gains and the Brexit vote in Lincolnshire, the long-term narrative should be the strength of the Conservative support here, in an area that in many respects, might be considered somewhat 'left behind'.

Chapter 10. Discussion and conclusion

10.1 Introduction

The direction of British politics has rarely felt so uncertain. Following the recession that peaked in the UK in 2008-9, we have witnessed the collapse of the Liberal Democrats, the rise and fall of UKIP, the Scottish independence referendum, the leftward shift of the Labour Party, the vote to leave the EU, two widely unexpected General Election results (2015 and 2017) and a seemingly endless state of political drama as parliament appears as divided as the population on Brexit. In this context, voting appears to be more volatile than ever and relationships between voters and political parties seem to be increasingly strained (Green and Prosser, 2016; Sanders, 2017; British Election Study, 2019). Yet as the minds of the political commentariat become fixated on the changes from one political poll to the next, it is the right moment to widen the lens to understand the long-term changes in the electoral geography of England and Wales with detailed, evidence-based academic research. The effect on Britain's electoral geography of long-term socioeconomic and demographic changes remain too often overlooked. On the whole, areas of the country have, at different speeds, become less dependent on industrial, 'working-class' occupations, more reliant on insecure forms of labour, more ethnically diverse, more educated and increasingly aged. It is widely thought that these changes have contributed to the fragmentation of the social class structure, the decline in the class cleavage and the emergence of a new political division between 'cosmopolitan' and 'left behind' people and places.

While there has been significant research examining the declining class cleavage, there is uncertainty about the characteristics and extent of a simultaneous emergence of a 'cosmopolitan-left behind' divide. Even when research has addressed the political manifestations of this division, the focus has often been restricted to the rise of UKIP (Ford and Goodwin, 2014; Goodwin and Milazzo, 2015; Mellon and Evans, 2015), the Brexit vote (Goodwin and Heath, 2016; M. J. Goodwin, 2016; Watson, 2018) or in the US, Donald Trump's electoral success (McQuarrie, 2017; Norris and Inglehart, 2019). Studies that have interpreted changes in the vote shares of Labour and the Conservatives through the lens of 'two Englands' (Jennings and Stoker, 2016b) or a 'tilting towards the cosmopolitan axis' (Jennings and Stoker, 2017, p. 359) have, due to

the difficulties presented by boundary changes, restricted their analyses to a more recent and shorter time frame. What's more, the growing body of political research – even at the aggregate-level - that assesses this 'cosmopolitan-left behind' division is largely aspatial, ignoring the effects of spatial clustering and overlooking unique place-based factors that drive some of the key features of the electoral geography of England and Wales.

Based on these shortcomings, this research has provided a detailed analysis of the long-term (1979-2017) trends in the electoral geography of Labour and Conservative support in England and Wales. To do so, following my critique of the inadequate 'left behind' definition employed by Ford and Goodwin (2014), I utilise a multifaceted conceptualisation. In Chapter 6, the changing associations between different constituency-level characteristics of 'left-behindedness' and vote shares for Labour and the Conservatives were examined across every election from 1979 to 2017. Chapter 7 began from the notion that places are always in the process of becoming more or less 'left behind' relative to where they were once positioned in relation to other areas. From this perspective, the relationships between changing place characteristics and changing support for Labour and the Conservatives were explored across various time points between 1979 and 2017. In Chapter 8, spatial analytical methods were used to identify clusters of constituencies where, given their composition, the vote shares for Labour and the Conservatives are incongruent with trends seen elsewhere in England and Wales. Finally, after identifying two particularly unusual regions – Merseyside and Lincolnshire – Chapter 9 extends the geographical approach, employing qualitative methods to uncover the unique historical, cultural and political contextual factors that have shaped their political trajectories.

This concluding chapter firstly summarises the research design and outlines the methodological approach used to address each of the key research questions. At the end of Section 10.2, Table 10.1 provides a concise summary of the key findings from the thesis in relation to the research questions and gaps in the literature. A discussion of the key conclusions in relation to both the research questions and previous research follows in Section 10.3. Section 10.4 then considers the implications of this research for understandings of the changing electoral geography of England and Wales and the challenges that are facing Labour and the Conservatives. The strengths and limitations of the research are summarised in Section 10.5, some of which inform the

recommendations for further research outlined in Section 10.6. The chapter finishes with some concluding remarks in Section 10.7.

10.2 Overview of the research design

At its broadest level, the aim of this research was to generate a clearer understanding of the changing relationships between the socioeconomic and demographic characteristics of constituencies and support for Labour and the Conservatives in England and Wales. The first research question is addressed in relation to three different conceptualisations of 'left behind' places – conventional, economic deprivation and precarious employment:

- To what extent have 'left behind' places become more positively associated with Conservative support and negatively associated with Labour support between 1979 and 2017?

The second research question applied an understanding of 'left-behindedness' as a process to ask:

- How has electoral support changed for Labour and the Conservatives in places that have become increasingly 'left behind'?

In the same way as the first research question, this question has been considered with three competing definitions of 'left behind' as well as broader measures of socioeconomic decline. As a result, both questions lead to the following sub-question:

- How do the relationships between 'left behind' places or increasingly 'left behind' places and Labour/Conservative support or changes in Labour/Conservative depend on a particular definition of 'left behind'?

To answer these three questions, a quantitative approach has been taken, generally relying on the use of publicly available constituency-level census data merged with constituency-level election results from 1979 to 2017. Additional data sources are outlined in Table 10.1 alongside Table 5.1 in Chapter 5.2. The variable selection in all models has been based on various – albeit often vague - conceptualisations of what

might constitute 'left-behindedness' in the academic literature. For the conventional definition, the variable selection is based on the 'left behind' concept employed by Ford and Goodwin (2014) and at the aggregate level by Jennings and Stoker (2017) and Flinders (2018), who employs a similar 'backwater' concept. The variables used in the economic deprivation conceptualisation come from my own critique of Ford and Goodwin's (2014) approach, which overlooked ethnically diverse areas of large cities with some of the highest rates of poverty. The final definition – precarious employment (or a broader 'precarious situation' in Chapter 7) – is based largely on Standing's (2011) theory of the 'precariat' and the variable selection comes as a result of occupational classifications that the ONS (2018c) found were more strongly associated with zero-hour contracts. These variables have been used in OLS models (and SUR/GLM models in Chapter 6) to estimate constituency-level vote shares.

After analysing the residuals from the OLS models produced in Chapter 6, clusters of constituencies in England and Wales were identified where Labour or the Conservatives under- or out-performed the estimated vote shares. Spatial error and spatial lag models were executed and compared to the OLS models in order to address the final research question:

- To what extent were spatial processes important in explaining 2015 and 2017 vote shares above and beyond the demographic and socioeconomic makeup of constituencies?

From the OLS and spatial models, it was possible to identify precisely where – given the sociodemographic and economic makeup associated with the different 'left behind' definitions - consistently unusual electoral results were recorded. However, the statistical models could not explain why these differences occurred. Chapter 9 employs a qualitative approach to understand the historical, cultural and political factors that have contributed to the unusual vote outcomes in two distinct areas – Merseyside and Lincolnshire.

Table 10.1 Summary of the key findings from the thesis in relation to the research questions and gaps in the literature (1)

Research Questions	Gaps in knowledge	Analytical methods	Key research findings
To what extent have 'left behind' places become more positively associated with Conservative support and negatively associated with Labour support between 1979 and 2017? How do the relationships between 'left behind' places and Labour/Conservative support depend on a particular definition of 'left behind'?	Most research has been limited to short time frames because of the difficulties of accounting for boundary changes and the lack of sociodemographic data notional to different boundaries. Not enough is known about long-term aggregate-level trends. The 'left behind' concept has generally been restricted to explaining support for UKIP and leaving the EU. Very little research has considered support for Labour and the Conservatives. The 'left behind' concept has not been extended to account for the most economically deprived areas or areas with high levels of precarious employment. Differences in voting behaviour between places that are 'left behind' and those that are most rapidly becoming 'left behind' have not been properly explored. 'left-behindedness' has rarely been conceptualised as a process.	Multiple linear regression models at each General Election between 1979 and 2017 estimating constituency-level Labour and Conservative vote shares. Each model with an identical set of explanatory variables to allow comparisons of changing effects. Seemingly Unrelated Regression and Generalised Linear Regression models on the same data to account for the bounded (0-100) nature of the dependent variable. Fixed effects model of pooled data to assess which elections present atypical cases.	Conventionally 'left behind' places are increasingly positively associated with Conservative support and negatively associated with Labour's support. Labour have been losing support to the Conservatives in conventionally 'left behind' areas for a long time. Economically deprived 'left behind' places have not moved at all from Labour to the Conservatives. 'Left behind' places characterised by precarious employment are not moving away from Labour towards the Conservatives.
How has electoral support changed for Labour and the Conservatives in places that have become increasingly 'left behind'? How do the relationships between increasingly 'left behind' places and changes in Labour/Conservative support depend on a particular definition of 'left behind'?		Multiple linear regression models estimating the change in Labour and Conservative vote shares between different time points: 1979-2017, 1979-1992, 1992-2005 and 2005-2017. All explanatory variables are also change variables.	Labour's relative support has decreased and the Conservatives relative support has increased in areas that are becoming more conventionally 'left behind'. Increasing relative 'economic deprivation' is associated with increasing relative Conservative support and decreasing relative Labour support between 2005 and 2017. While Labour remain stronger in areas that are economically deprived, they have recently begun losing support in areas that are *becoming* more deprived. 'Left behind' areas with increasing precariousness of housing and employment are increasingly positive for Labour and negative for the Conservatives. Broader relative socioeconomic decline is associated with decreasing relative support for Labour but this is mostly because of changes occurring in areas that have seen the most positive socioeconomic changes.

Table 10.2 Summary of the key findings from the thesis in relation to the research questions and gaps in the literature (2)

Research Questions	Gaps in knowledge	Analytical methods	Key research findings
To what extent were spatial processes important in explaining 2015 and 2017 vote shares above and beyond the demographic and socioeconomic makeup of constituencies?	The presence and impact of statistically significant spatial clustering on British electoral geography is poorly understood. Very little research has considered the specific place-based historical, cultural and social factors that lie behind the spatial clustering of over- or under-performance for Labour and the Conservatives.	Exploration of the presence of global spatial autocorrrelation (Moran's *I*) and local spatial autocorrelation (LISA plots) of both vote shares and residual values at each General Election between 1979 and 2017 Spatial lag and spatial error models to incorporate spatial dependency in vote shares and residual values into regression models for the 2015 and 2017 General Elections. Interviews with local political actors in two areas where there is spatial clustering of Labour over-performance (Merseyside) and Conservative over-performance (Lincolnshire)	Spatial dependence operating across neighbouring constituencies impacts on the vote shares for Labour and the Conservatives and the ability of any model to estimate them. Many of the causes of spatial clustering of Labour or Conservative over- or under-performance can only be understood by examining place-specific contextual effects

10.3 Key conclusions of the research

10.3.1 Chapter 6: Labour/Conservative support and varieties of 'left-behindedness'

Key conclusion 1: Conventionally 'left behind' places are increasingly positively associated with Conservative support and negatively associated with Labour's support

Research has shown that the Labour Party has become increasingly popular amongst younger people (Curtice, 2017c; Bell and Gardiner, 2019), university graduates (Surridge, 2016; Hobolt, 2018) and ethnic minorities (Andrews, 2017; Katwala and Ballinger, 2017) typically at the expense of the Conservatives. At the same time, the Conservatives appear to hold greater appeal amongst older people (Bell and Gardiner, 2019) and those without educational qualifications (Skinner and Mortimore, 2017). The former are often crudely lumped together as 'cosmopolitan'; the latter as the 'left

behind'. This division has geographical manifestations with Labour losing ground to the Conservatives in 'left behind' areas and 'backwaters' (Stoker and Jennings, 2015), where the population is older, whiter and in possession of fewer educational qualifications than 'cosmopolitan' inner city areas. Chapter 6 has offered some evidence that Labour are losing support and the Conservatives gaining support in these conventionally-defined 'left behind' areas. Clear evidence emerged of a long-term trend in which relative to other areas, support for the Conservatives has become stronger in areas with significant manufacturing industries rather than 'cosmopolitan' service-sector jobs, older people rather than younger people and generally less transient, less ethnically diverse populations. For Labour, the opposite is the case: the association with conventionally 'left behind' compositional characteristics has been decreasing over time.

Key conclusion 2: Labour have been losing support to the Conservatives in conventionally 'left behind' areas for a long time

These conclusions do not only offer support for the greater Labour appeal in 'cosmopolitan' areas (Jennings and Stoker, 2017), but also, at least at the aggregate-level, for the declining influence of class-based voting (Franklin, 1985; Sanders, 1998; Tonge, 2000; Clarke *et al.*, 2004; Johnston and Pattie, 2006; Denver, 2007, 2017), as areas with large proportions of typically working-class occupations are generally no longer more supportive of Labour than the Conservatives. This is a long-term process, for there is no evidence presented to suggest that a point has been reached where the Conservatives have become dominant in conventionally 'left behind' areas, nor are Labour dominant in all 'cosmopolitan' areas. For example, despite Labour becoming weaker and the Conservatives stronger in areas with low proportions of degree-holders, neither party is currently more dominant.

While the EU referendum and the 2017 General Election have potentially accelerated the process, evidence has been presented to show that Labour have been losing support for some time in predominantly white, working-class areas with low levels of educational qualifications. In fact, some of the most significant changes, such as the decline in the bivariate positive correlation between routine/semi-routine occupations and Labour's vote share, occurred at the 1997 General Election. Rather than a sudden change in electoral geography, 2017 represents – much like 1997 - a moderate

acceleration in this long-term process in which the Conservatives are gradually acquiring support in areas with many routine/semi-routine occupations or manufacturing jobs. Whilst this might offer some support for the idea that class voting declined significantly in the 1990s with New Labour's more moderate politics (Dorey, 2017; Evans and Tilley, 2017), it also challenges any assertion that on a more radical platform, Labour have managed to put the brakes on their declining support in largely white working-class areas. In spite of rather different ideological positions, Jeremy Corbyn and Tony Blair have both led Labour through a period of accelerated relative decline in these more conventionally 'left behind' areas of England and Wales.

Key conclusion 3: Economically deprived 'left behind' places are not more positively associated with the Conservatives support nor more negatively associated with Labour support

While there is evidence that the Labour Party hold increasing appeal in 'cosmopolitan' areas characterised by a large proportion of ethnic minorities, younger people and graduates, it would be premature to refer to them as the party of middle-class areas, since the Conservatives remain ascendant in areas characterised by home ownership and managerial/professional workers. What's more, if the economic deprivation definition of 'left behind' places is adopted, there is no evidence presented in Chapter 6 to indicate that support for Labour has fallen. In line with the findings of Ashcroft (2017) and Jennings and Stoker (2017), the most economically deprived areas of England and Wales are as likely to register support for Labour in 2017 as they were in 1979. In fact, the poor health proxy for poverty has become – relative to other variables – an even more important positive predictor of Labour's vote share. It is possible to conclude that 'left behind' areas remain strongly oriented towards Labour, providing we are willing to recognise the deprivation of ethnically diverse urban areas as a form of 'left-behindedness', rather than base the concept on the demographics behind UKIP's support (Ford and Goodwin, 2014).

Key conclusion 4: 'Left behind' places characterised by precarious employment are not moving away from Labour towards the Conservatives.

Much like the poverty associated with cities, areas with large proportions of 'precariats' have been overlooked in definitions of 'left-behindedness', presumably because aside from the low-skilled older working class, most 'precariat' factions have not embraced far-right politics (Standing, 2011). The evidence in Chapter 6 provides a longer-term context to support the findings of Jennings and Stoker (2017): while Labour's relative support has increased in more 'cosmopolitan' areas, it has also 'shored up' in areas characterised by insecure employment. These are certainly not necessarily distinct places: 'If you are older, less educated or live beyond thriving cities then securing well-paid or long-term employment is increasingly difficult. However, even if you are young, educated and live in the sunlit cosmopolitan uplands of Cambridge, Oxford, Bristol or Exeter then work is still likely to be a fairly precarious endeavour'. (Flinders, 2018, p. 223). For Labour, holding together these different 'precariat' factions might be critical to their future electoral success.

10.3.2 Chapter 7: 'left behind' as a process

Key conclusion 5: In areas that are becoming more conventionally 'left behind', Labour's relative support has decreased and the Conservatives relative support has increased

For Savage (1987), data often obscured the distinctive trajectories of different areas: while two areas might have a similar sociodemographic composition at the point in time of a particular election, one may be on an upwards economic trajectory, the other a downwards trajectory. This points to the idea that electors might interpret how 'left behind' their area is based on the direction of change (Chapter 7) rather than conditions at one particular point in time (Chapter 6). Areas that have become more conventionally 'left behind' are those that Cliffe (2014, 2015) would identify as moving most slowly towards cosmopolitanism. In these areas - characterised by increasingly low-skilled employment and a slower increase in degree-holders than most areas - it is clear that relative support for the Conservatives has increased at Labour's expense. This phenomenon – particularly strong between 2005 and 2017 and in areas that have rapidly deindustrialised – lends support to the idea that the class-based model is continuing to decrease in salience. In fact, were the positive association between increasingly working-class places and Conservative vote shares to strengthen, the 'two-class, two-party model'

identified by Butler and Stokes (1969) may soon operate in reverse. This is a certainly a logical conclusion given the evidence that the association between places characterised by typically 'working-class' employment and Labour vote shares has diminished (Chapter 6) whilst at the same time increasingly working-class places are shifting from Labour to the Conservatives.

Key conclusion 6: Increasing relative 'economic deprivation' is associated with increasing relative Conservative support and decreasing relative Labour support between 2005 and 2017

For areas that have become increasingly 'left behind' in terms of economic deprivation, Chapter 7 offered little to suggest any long term relative decline in Labour support or relative increase in Conservative support. However, a different trend emerged between 2005 and 2017, as changes in poor health and unemployment became positive predictors of Conservative vote share change and negative predictors of Labour vote share change. While Jennings and Stoker (2017) showed that areas with high levels of deprivation (proportion of people living below the minimum wage) was negatively associated with Labour vote share change, this chapter extends this to show that the change in economic deprivation is also negatively associated with changing support for Labour.

Key conclusion 7: 'Left behind' areas characterised by increasing precariousness of housing and employment are increasingly positive for Labour and negative for the Conservatives

Unlike the conventional and economic deprivation conceptualisations of 'left-behindedness', places that have become characterised by greater precariousness in housing and employment have become, relatively speaking, more positive for Labour and more negative for the Conservatives. Areas where home owners are being replaced by less secure private renters – particularly in London and the North West – have seen remarkable increases in Labour support and decreases in Conservative support. Similar findings across a shorter, more recent time frame (2015-2017) are revealed by Denver (2018). The same pattern holds true for areas where both housing unaffordability and employment insecurity has risen most substantially.

Key conclusion 8: Broader relative socioeconomic decline is associated with decreasing relative support for Labour but this is a reflection of changes occurring in areas that have seen the most positive socioeconomic changes.

In addition to estimating vote share changes according to different conceptualisations of increasing 'left-behindedness', Chapter 7 also ranked constituencies on a broader measure of socioeconomic decline, encompassing measures including changing population size, number of businesses and median weekly income. Perhaps unsurprisingly, given Key conclusion 5 and Key conclusion 6, the greater the relative decline in an area, the worse the change in vote share for Labour, and the better the change in vote share for the Conservatives.

On the one hand, the positive association between measures of 'left-behindedness' – increasing relative decline, increasing low-skilled employment and increasing economic deprivation – and Conservative vote shares is suggestive of a rightward political shift in areas that are becoming more 'left behind'. Just as feelings of individual-level nostalgic economic deprivation have been associated with a rise in support for UKIP (Gest, Reny and Mayer, 2017), people's nostalgia related to the economic decline of their wider area may also have, perhaps counterintuitively, made them somewhat more likely to move towards voting for the less extreme Conservative Party. However, at the same time, this research has shown that the most significant political changes that might lead to such conclusions are actually taking place in areas that have seen the most significant economic growth. Labour's association with areas in decline is itself declining mostly as a result of a significant shift towards them in areas that have seen the most improvement in their socioeconomic conditions.

10.3.3 Chapter 8: Space matters

Key conclusion 9: Spatial dependence operating across neighbouring constituencies impacts on the vote shares for Labour and the Conservatives and the ability of any model to estimate them

Research in Chapter 8 has confirmed that, at least at the level of the parliamentary constituency, spatial and place-based effects on voting are not in retreat. Any increasing

spatial homogenisation of 'neighbourhood effects' – as part of what Agnew (1990) terms the 'nationalisation-modernisation' perspective – appears to be unproven. Instead, this thesis has shown that areas such as Merseyside and Lincolnshire have in fact become more politically unique over time. At the same time, the examination of the global Moran's I statistic across all elections confirmed that, rather than being a period of declining spatial autocorrelation, between 1979 and 2017 there were simply fluctuations in the extent to which vote shares were spatially structured. Furthermore, while the composition of parliamentary constituencies can 'explain' their voting outcomes to some degree, the improvements in predictions that spatial lag and spatial error models show the importance of taking into account spatial processes – even if they are unspecified – that operate across constituency boundaries. This offers support across a longer time frame to earlier findings by Cutts and Webber (2010) that incorporating spatial weights into models improved their accuracy and reduced any over-estimation in the coefficients of aspatial variables. Multiple linear regression models presuppose that the same relationships exist between independent and dependent variables across space (Mansley and Demšar, 2015) – in doing so ignoring the likely diffusion of political behaviour across neighbouring constituencies (Darmofal, 2007).

10.3.4 Chapter 9: Place matters

Key conclusion 10: Many of the causes of spatial clustering of Labour or Conservative over- or under-performance can only be understood by examining place-specific contextual effects

In Chapter 8, two politically unique regions were identified by the presence of spatial clustering of Labour over-achievement and Conservative under-achievement (Merseyside) and vice versa (Lincolnshire). In Chapter 9, semi-structured interviews with local political actors then uncovered the local cultural, political and historical causes of this diffusion of voting behaviour across constituencies within these regions. In this way, it moves beyond electoral geographical research in the UK that has used rigorous quantitative approaches to identify the presence of contextual effects (MacAllister *et al.*, 2001; Johnston *et al.*, 2005) but have rarely gone further to examine how or why these operate. In Merseyside, for example, interviewees noted the

mechanisms behind three of the four types of contextual effect described by Books and Prysby (1991): 'personal observations' of the regional level economic decline in the 1980s and the regeneration since; 'organisationally-based interaction' in the form of the interlinked nature of football clubs, foodbanks, Catholicism and the Labour council; and the 'mass media' as the dominant regional newspaper tends towards the left. These factors have contributed to a unique regional-level political culture that has resulted in Labour dominance that cannot be explained by socioeconomic or demographic composition. As such, the findings emphasise the ever-present need – as identified almost thirty years ago by Agnew (1990) and Reynolds (1990) – for place-context approaches that understand not just the importance of spatial location but the way in which political attitudes and actions are moderated through place (Massey and Thrift, 2003).

While Agnew (2002) has generally privileged the local scale for research into contextual effects, there is some evidence here to suggest that regional-level research into voting behaviour and outcomes could be as fruitful. In Merseyside, it is not simply the case that Labour's vote shares are higher than one would expect in more economically disadvantaged, urban areas of Liverpool. Rather, they are unusually high across the entire region – even in the most well-to-do suburban areas that have a history of electing Conservative MPs in line with the rest of the country (Walks, 2005). A strong regional identity combined with a regional-level narrative of economic decline and regeneration appears to have impacted heavily on the voting behaviour of those living in the area. This offers support to Johnston and Pattie's (2001) calls for more political research into the ways in which people interpret regional economic conditions. While the precise scale at which political information is transmitted within Merseyside or Lincolnshire is unclear, it is likely that, given the findings from interviews, there are shared cultural, historical and political factors that operating at a regional level and are perhaps mediated locally.

10.4 Implications of this research: the challenges facing Labour and the Conservatives

At the time of writing, the possibility of either the Conservatives or Labour securing an electoral majority in any forthcoming General Election is uncertain. For both parties, an

in-depth understanding of some of the long-term changes in the electoral geography of England and Wales would be beneficial. In this section, I use the findings that have been highlighted in Chapter 10.3 to identify some of the key challenges that both parties face to achieving electoral success.

10.4.1 Labour's challenges

1. Most constituencies are ageing

One of the key challenges for Labour is to increase their support in areas with ageing populations – in particular largely white, suburban or small-town environments. As the proportion of the population aged over 65 grows, Labour's unpopularity with this group could be an obstacle to achieving power. The challenge is greatest in overwhelmingly white British areas at some distance from 'cosmopolitan' cities where the population is not only ageing rapidly but also low in educational qualifications. Labour-held marginal constituencies such as Workington, Vale of Clwyd, Delyn, Bishop Auckland, Rother Valley and Don Valley all have these characteristics that could leave them increasingly at threat from the Conservatives in future elections.

2. Their vote is inefficiently distributed

Labour's relative vote share has increased significantly in areas that have become – relative to other areas – younger, more educated and more ethnically diverse and where home ownership has declined. On the one hand, some demographic changes in the population might benefit Labour over the Conservatives, as the proportion of university graduates and private renters continues to grow across an increasingly ethnically diverse Britain. In particular, as ethnic diversity spreads from inner city Labour strongholds into the suburbs of cities and smaller towns, the evidence from Chapter 7 suggests that the likelihood of these areas also electing a Labour MP increases. On the other hand, as Labour's support declines in conventionally 'left behind' areas, they are increasingly reliant on strong levels of support in areas with high levels of economic deprivation as well as more typically 'cosmopolitan' areas with high numbers of university graduates, many of whom may be privately renting. Their issue is that these are increasingly the same areas– Labour's 'cosmopolitan' support often live in cities that are also home to

their economically deprived support. They risk increasing their appeal in cities where they are already particularly strong, "wasting' more votes in piling up yet larger majorities in existing bastions of support' but failing to make inroads elsewhere (Curtice, 2017b, p. 16). In the US, the exact same problem makes it much simpler for the Democrats to win the national popular vote yet no easier to acquire legislative majorities (Rodden, 2019).

3. Conventionally 'left behind' areas: how to hang on

Labour have – relative to other areas – been losing support in some of their conventionally 'left behind' heartlands for some time. This may reflect the gradually declining political importance of left-right economic divisions that aligned to the social class structure, now supposedly being superseded by a liberal-authoritarian divide based around social values – a process that has perhaps accelerated post-Brexit (Wheatley, 2016; Bale, 2017). Labour's working-class base may be moving away not because they are abandoning their left-wing economic beliefs, but because they are increasingly voting on the basis of authoritarian ideals that are more closely aligned with the Conservative Party or even UKIP/The Brexit Party. However, while social or cultural attitudes might hold increasing relevance, attitudinally-speaking, left-right economic position was still the primary driver of vote choice in 2017 (Hobolt, 2018). Indeed, Labour's continued economic appeal to sections of the conventionally 'left behind' may have contributed to their unexpected ability to hold on to key seats in their post-industrial heartlands in 2017. In the current political climate, a key challenge for the party now is whether their economic message and policies will remain sufficient enough to hold on to some of their more socially conservative, Leave voters in areas where there are few socially liberal voters who do not already vote for them. If traditional Labour Leave voters do desert the party at the next election, how easy would it be for a future Labour party to get them back? The narrative of Liverpool suggests that events can cause changes in voting behaviour that are not easily reversed.

4. A volatile 'cosmopolitan' support

The 2019 Local Election and the European Election have pre-empted a possible crisis for Labour: the strongly Remain, socially liberal generally university-educated side of

their support might not remain loyal to the party in part because of a long-held ambiguous position in the inexorable Brexit debate. This chimes with Dalton's (2007) idea that voters with higher levels of education and political knowledge are less likely to rely on party loyalty when making their vote choice. While compared to conventionally 'left behind' constituencies, the threat to Labour might be lower in the most 'cosmopolitan' constituencies where their majorities are substantial, there are plenty of constituencies that fall down the middle where Labour rely on the votes of this more socially liberal support. Even small losses to the Greens and Liberal Democrats could see Labour lose a substantial number of seats if they are simultaneously not retaining support in more conventionally 'left behind' areas.

10.4.2 The Conservatives' challenges

1. Most constituencies are becoming more ethnically diverse and educated

Just as the changing demographics of the country could negatively affect Labour unless they can improve their appeal amongst the growing number of older people, the Conservatives face a similar problem in areas that are becoming more ethnically diverse and those that are becoming more educated. On the surface, one might think, due to ethnic segregation, that the Conservatives' lack of appeal amongst ethnic minorities would only restrict their appeal in areas that are already Labour strongholds. However, the whole country is on a clear trajectory to becoming more ethnically diverse and population projections suggest that ethnic minority groups will grow most rapidly outside of the largest cities over the next forty years (Rees *et al.*, 2017). As ethnic diversity spreads out from core inner city areas to more politically marginal suburbs and smaller towns and cities, there is a distinct threat to Conservative held seats. In the South East of England, there is evidence of a similar process occurring with younger, university-educated middle classes moving out of London. As they struggle to afford the space to bring up a family in the capital, large numbers are moving out to commutable locations across the South East taking with them their socially liberal values that make them more Labour-inclined (Warren, 2018). While there is a clear need for research to establish the extent to which this is the case, it seems that the combination of increasing proportions of university graduates and growing ethnic

diversity is likely – unless trends change – to cause the Conservatives significant problems in areas such as Surrey where they have been fairly dominant.

2. The growing number of private renters

After the 2015 General Election results, private renting was described as 'the Conservatives' electoral Achilles' heel, especially in London' (Lund, 2015, p. 503). This does not appear to have changed: while relative support for the Conservatives has grown in areas where home ownership has increased, they have lost ground in areas where private renting has become more commonplace. At the same time, there has been a significant increase in the proportion of households that are privately renting from 2.8 million in 2007 to 4.5 million in 2017 (Office for National Statistics, 2019). This presents a conundrum for the Conservatives: the party has strong ties to home owners and arguably prioritises their concerns to increase their house value. In doing so, they become the party that are contributing to a housing affordability crisis in some areas pushing increasing proportions of constituency populations into the private rental market – a change that analysis in Chapter 7 has shown to be positively associated with changes in Labour's vote share. The possible election-defining impact of the growing number of private renters has become well documented and should be of concern to the Conservatives given current trends in their support (Craw, 2014; Akehurst, 2017; Singh, 2018).

3. Most constituencies are becoming less conventionally 'left behind'

In 2017 the threshold appears to have been reached when conventionally 'left behind' areas have become as likely to vote Conservative as Labour. If areas that are becoming more conventionally 'left behind' continue to be positively associated with changes in Conservative support, soon enough the Conservatives will have more support than Labour in conventionally 'left behind' areas. However, are the Conservatives courting the support of a demographic that is in decline? Indeed, my own data reveals that the mean change in manufacturing occupations across constituencies between 1979 and 2017 is -18 percentage points. This is likely one reason why both Tony Blair knew that 'power could only be won with the votes of a substantial segment of the middle class' living in largely middle-class areas (Johnston, 2017). If the Conservatives are to continue

seeing increasing support in areas with high proportions of the conventionally 'left behind', it is crucial that they do not alienate their traditional, largely middle-class base in the process.

10.5 Strengths and limitations of this research

By producing and analysing substantial datasets with linked census and voting data for each of ten General Elections, this research has been able to capture long-term trends that are changing the electoral geography of England and Wales. The use of innovative methods, such as areal weighting, has allowed sociodemographic and economic data to be harmonised across elections where boundary changes have taken place. Combined with the careful coding of variables across different censuses, this made it possible to produce almost identical statistical models at every election between 1979 and 2017 and to analyse the long-term trends in the changing coefficients. The research is the first of its kind to model the effects of constituency-level sociodemographic changes on Labour and Conservative vote share change across such a time frame, extending the work of Jennings and Stoker (2017). As such, it is an antidote to the fast-paced, reactionary nature of political commentary and a reminder of the evidence-based long-term trends that have been gradually changing electoral politics in the UK.

In a similar fashion, this research is a response to the original conceptualisation of 'left behind' people and places and the subsequent way in which it has been somewhat blithely used in academia and the media alike. It offers a robust dismissal of Ford and Goodwin's (2014) conventional conceptualisation, by revealing how they overlook urban, ethnically diverse areas with the most pronounced economic problems because they are not prone to electing UKIP or registering high levels of support for Brexit. A multifaceted conceptualisation of 'left-behindedness' applied not simply to support for UKIP and Brexit provides an understanding of how the concept relates to Labour and Conservative support and has given greater nuance to a debate that is often framed in crude dichotomies (Jennings and Stoker, 2016b). It also answers the longstanding need for more social theory in electoral geography (Agnew, 1990), in particular by rooting variables such as geographical mobility (gross migration) in Bauman's (2000) ideas about what might constitute being 'left behind' in a period of 'liquid modernity'. By incorporating measures such as distance from the closest university and 'cosmopolitan'

local authority into multiple conceptualisations of 'left behind' places, geography is treated as 'intrinsic rather than epiphenomenal' to explaining Britain's electoral results (Agnew, 1990, p. 15) – the key benefits of which are well documented (Cutts & Webber, 2010; Johnston & Pattie, 1998, 2006; Johnston et al., 2001).

The spatial analytical methods used in Chapter 8 have answered calls for research in electoral geography to move beyond the arbitrary boundaries of parliamentary constituencies and assess processes that operate beyond them (Jensen, Lacombe and McIntyre, 2013). The presence of statistically significant regional clustering of Labour and Conservative under- and over-performance has been revealed alongside the improvements that can be made to model estimations by accounting for this spatial dependence. Aside from Cutts and Webber (2010), there is little research that has applied these methods to British General Elections.

Whilst any results might show the importance of spatial propinquity for the perpetuation of political attitudes, 'that still begs the question of how locally dominant political attitudes are produced in the first place' – a question that is rarely addressed in electoral geography research (Reynolds 1990, p. 30). For regional or neighbourhood effects to have any plausibility, research must link it to a place-based history of political development. That is precisely the strength of Chapter 9 of this research: semi-structured interviews with political actors has revealed the historical, geographical and cultural factors that have contributed to dominant political cultures and election results in Merseyside and Lincolnshire that cannot be easily accounted for sociodemographic composition. This approach is a response to still pertinent calls for electoral geography to incorporate more social theory and shift the focus from 'the psychology of individual voters and their census attributes to the history of places and parties' (Agnew, 1987, p. 18). The intensive study of Merseyside and Lincolnshire successfully moved the focus from the attributes of political spaces to political places as 'historically constituted entities' (Pringle, 2003, p. 608). The research is unique in its combination of the two approaches that have revealed precisely how politically unusual areas are and then accounted for some of the reasons behind this. In Merseyside, it provides an empirical extension to the work of Wilks-Heeg (2018); in Lincolnshire it is the first study of its kind to focus on Conservative support and not favourability towards UKIP and leaving the EU.

There are nonetheless several weaknesses in the research that should be considered and may be resolved in future research. The first is that the conclusions that can be made from the quantitative analysis are restricted by the ecological approach. As parliamentary constituencies are the unit of study, it would have been an ecological fallacy to make conclusions about the behaviour or individuals in any particular area. For example, finding a statistically significant between ethnic diversity and Labour's vote share does not reveal whether this is the result of a high propensity to vote Labour amongst ethnic minority groups in an area or the favourability of white British voters living in ethnically diverse areas towards Labour. Similarly, it was not possible to understand the changing nature of contextual effects and understand whether the voting behaviour of different types of 'left behind' electors differs according to the characteristics of the area in which they live. This also meant that contextual effects were not separable from effects associated with self-selection into areas – a solution for which would be to combine longitudinal survey data with aggregate-level census data.

With more time, this research could have not only been extended by using multi-level methodological approaches but also by giving more attention to the changing association between 'left behind' areas and turnout. It may be the case, for example, that the economically deprived 'left behind' conceptualisation has been increasingly politically excluded (Evans and Tilley, 2017). Similarly, while Labour and the Conservatives were chosen as the political parties of study because they are under-studied in relation to the 'left behind' concept, this research has not provided any evidence of how the concept related to other parties.

To some extent, the approach that I have taken might be accused by Reynolds (1990) of relying on 'fixing accounts' – that is, when constituencies do not 'fit' expectations, the model errors are explained through spatial or place-based factors. This is perhaps a legitimate criticism, though it would ignore the way in which this thesis has foregrounded geography throughout. Even in Chapter 6 and 7, the statistical models included several geographical variables, in doing so moving beyond previous research that has tended towards including only a regional variable.

10.6 Recommendations for future research

The main focus of this research has been on the changing relationship between sociodemographic characteristics and support for Labour and the Conservatives across constituencies. In this sense, the geographical manifestation of fundamental sociological conflicts are examined in detail. Employing a sociological approach begins from the basis that 'Voters have durable social characteristics, above all class, gender, education, and occupational status, that lead them to identify with certain political parties and not with others' (De Vries and Marks, 2012, p. 187). There is significant value to this kind of research if the linkage between voters, or in this case, the places where voters live and the parties is at least somewhat stable. In this thesis, that assumption holds true, as the vast majority of the changes in the relationships between place-based characteristics and voting outcomes have occurred slowly. Nonetheless, the research could be extended by combining this sociological approach with a strategic approach that serves to explain dimensionality by reference to the nature of political competition and the strategies and policy positioning of political parties therein. Further research might examine, for example, the effects on British electoral geography of changing Labour and Conservative positions on a libertarian-authoritarian or left-right axes over this time frame.

The approach that this research has taken to building a multifaceted understanding of 'left-behindedness' should encourage further discussion around how to move beyond simply categorising the declining, white working class as *the* 'left behind'. There is also a need to consider being 'left behind' as a subjective rather than objective concept. Further research could examine the link between people's perceptions of their own or their area's economic situation and their voting behaviour for mainstream parties. This could build upon Gest's (2017) research into the extent to which perceptions of increasing or decreasing deprivation are associated with support for the radical right. Innovative research could also identify whether discrepancies between subjective perception and objective reality lead to particular political tendencies.

In terms of methodology, future research could extend on this aggregate-level analysis by nesting individuals within constituencies or individuals within wards within constituencies in a multi-level approach. This could not only illuminate the extent to which aggregate-level findings are replicated at the individual level, but also give some

indication as to whether effects vary for different types of 'left behind' electors living in different kinds of areas. In addition, the extent of inequality within each constituency could be captured by measuring the economic segregation across wards. This would enable the identification of a kind of 'left-behindedness' unique to highly unequal urban constituencies with relatively well-off young professionals and some of the most economic deprived social housing estates in the country. Not only would it be possible to measure the effect of inequality on constituency-level General Election results but one could also identify whether economically deprived wards within highly unequal constituencies have particular tendencies in Local Elections.

10.7 Concluding remarks

Before the 2017 General Election, the expectation was that the political map of the UK was about to be redrawn, as the Conservatives were expected to make significant inroads into Labour's support in so-called 'left behind' areas of England and Wales. Declining areas and conventionally 'left behind' areas – older, largely white, low in educational qualifications and far removed from large 'cosmopolitan' cities – are gradually moving from Labour to the Conservatives, but this is only part of the story. This has been a gradual process, such that the 2017 General Election was largely a continuation of changes that had come before. At the same time, the most economically deprived areas of England and Wales – those that, at least objectively speaking, might be more legitimately referred to as 'left behind' have remained solidly Labour. It is premature to argue that 'left behind' places are moving from Labour to the Conservatives, providing that 'left behind' is re-conceptualised to refer to the most disadvantaged areas rather than older, white, 'traditional working-class' populations.

Appendix A. Correlation matrices from OLS models (Chapter 6)

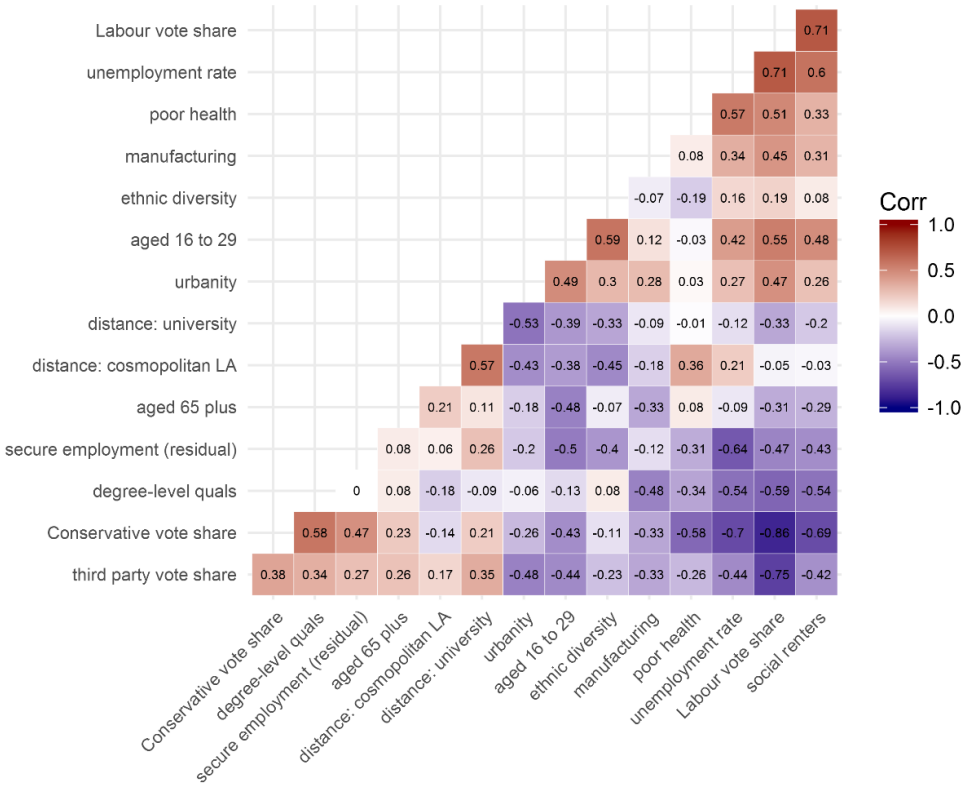

Figure A.1. Correlation coefficients for independent and dependent variables used in the 1979 models

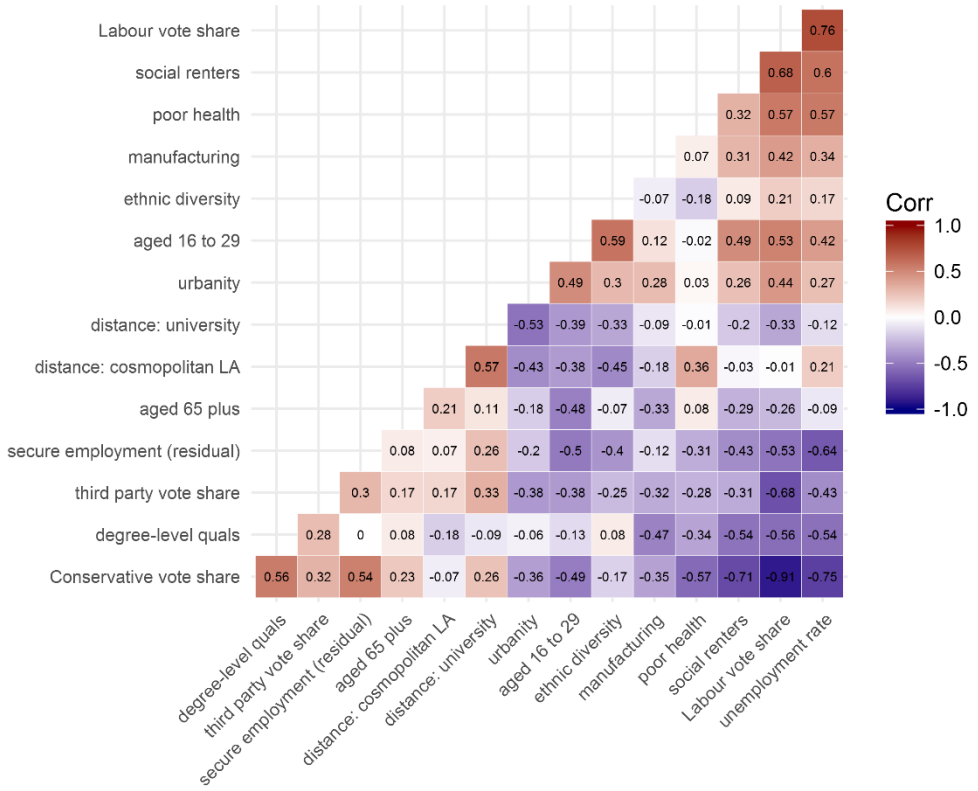

Figure A.2. Correlation coefficients for independent and dependent variables used in the 1983 models

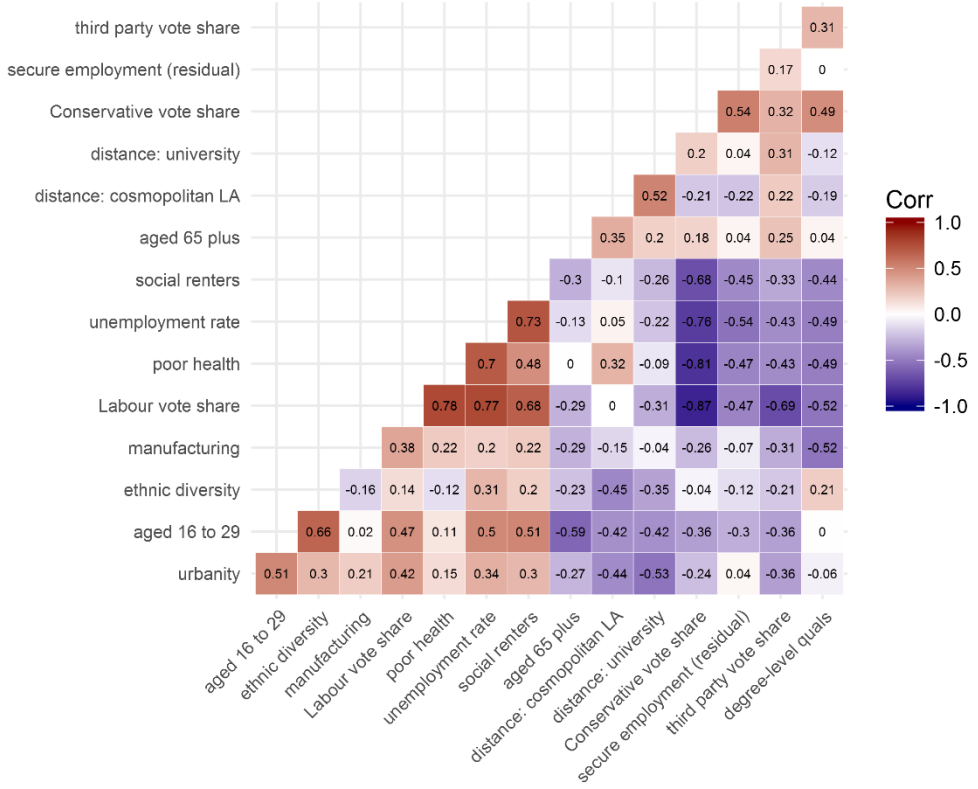

Figure A.3. Correlation coefficients for independent and dependent variables used in the 1987 models

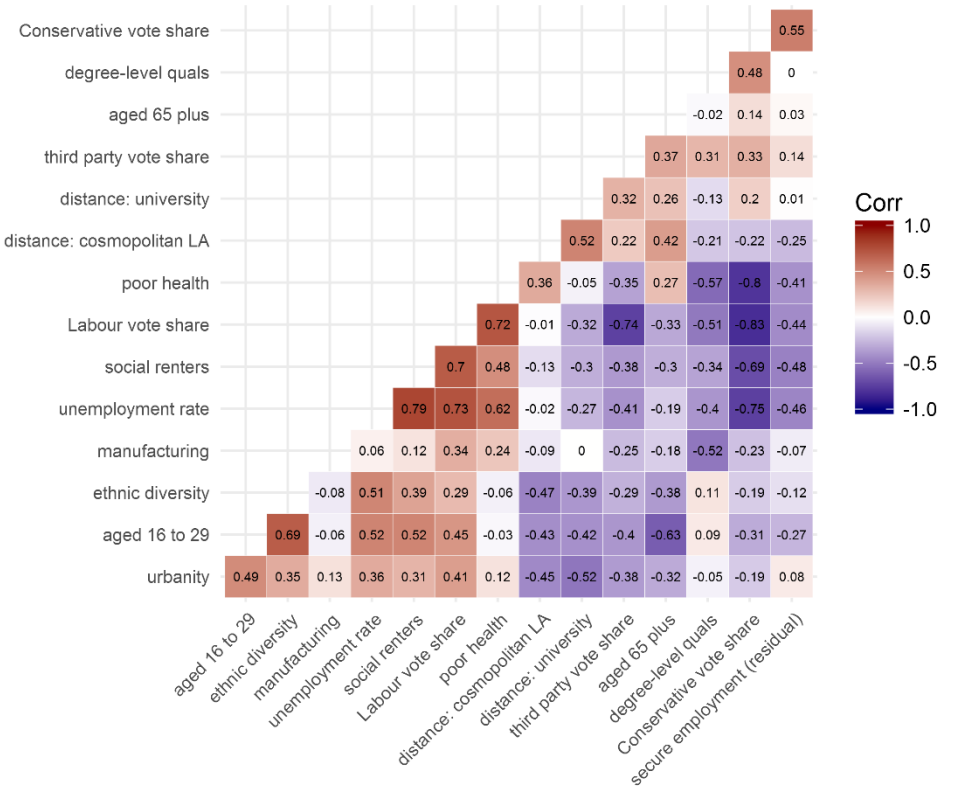

Figure A.4. Correlation coefficients for independent and dependent variables used in the 1992 models

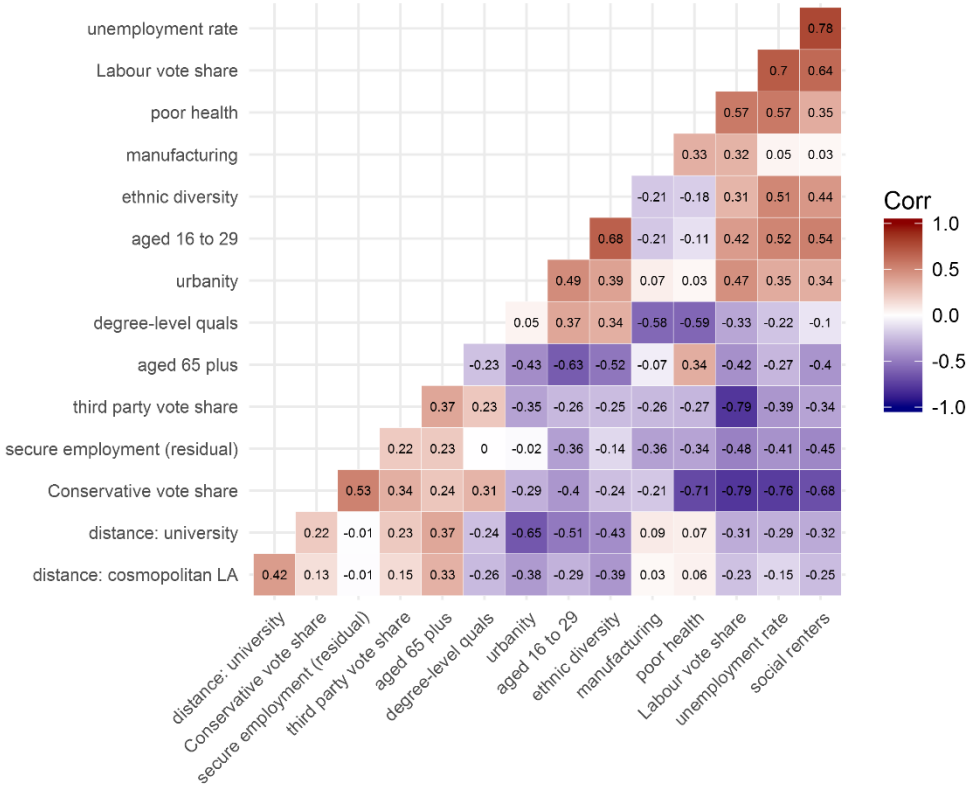

Figure A.5. Correlation coefficients for independent and dependent variables used in the 1997 models

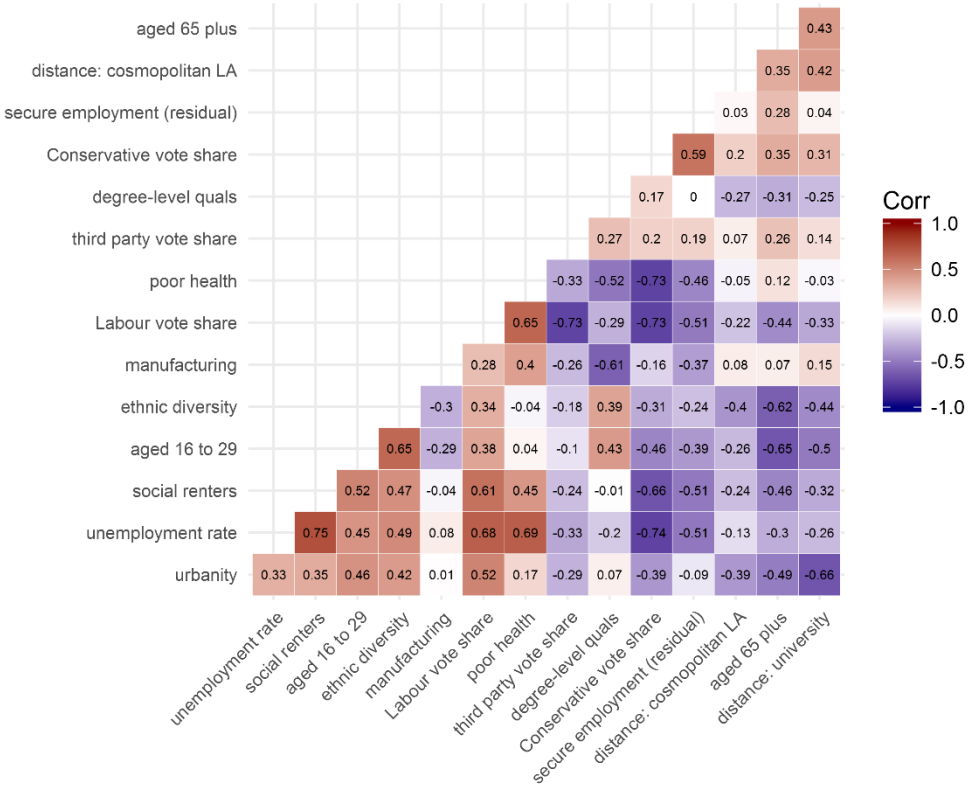

Figure A.6. Correlation coefficients for independent and dependent variables used in the 2001 models

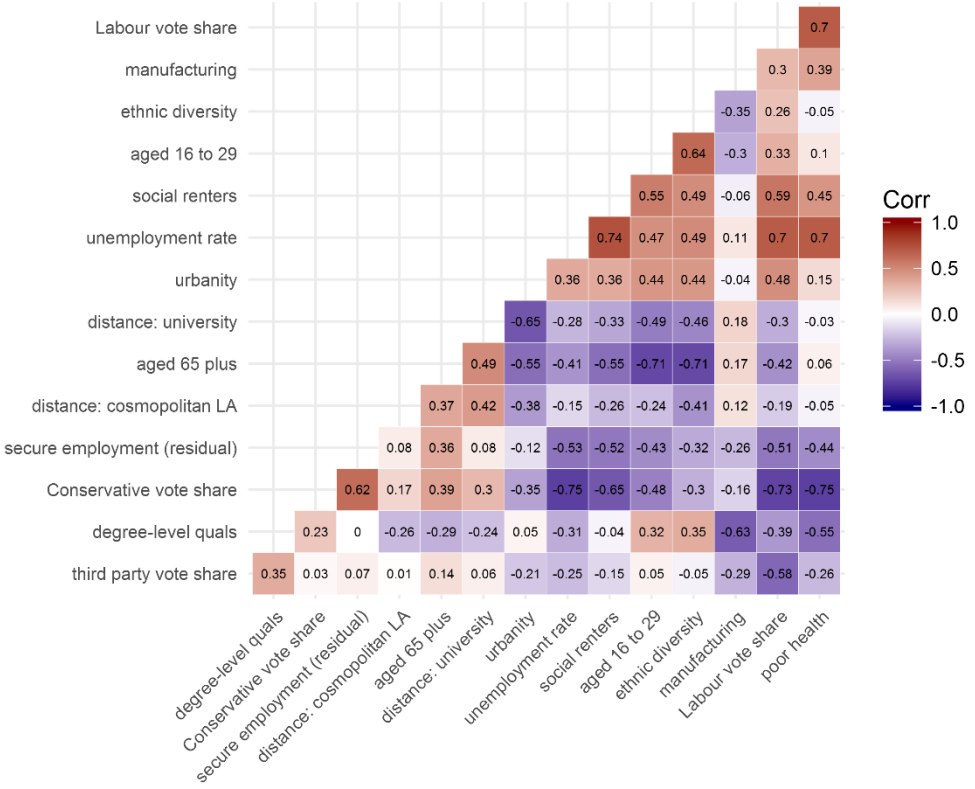

Figure A.7. Correlation coefficients for independent and dependent variables used in the 2005 models

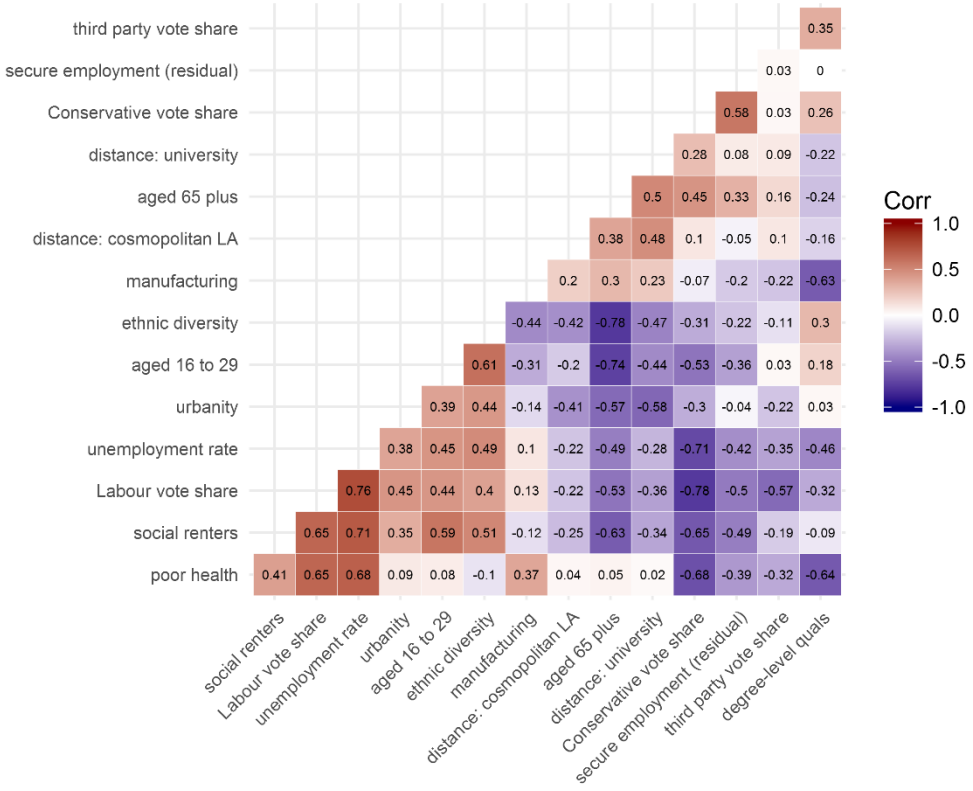

Figure A.8. Correlation coefficients for independent and dependent variables used in the 2010 models

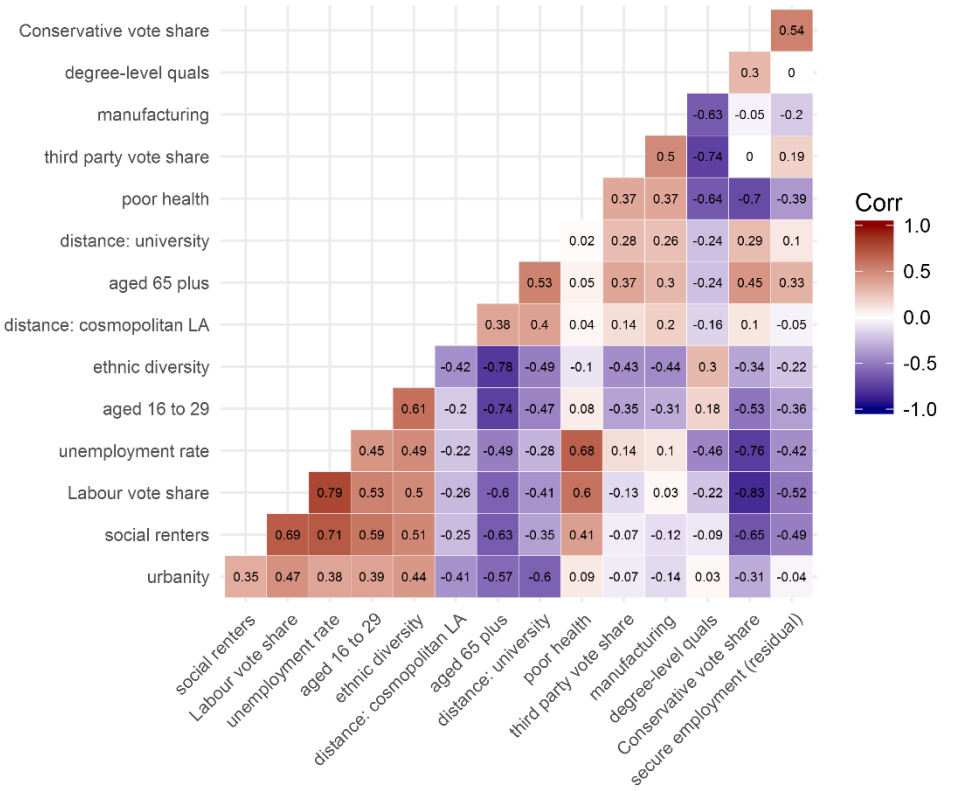

Figure A.9. Correlation coefficients for independent and dependent variables used in the 2015 models

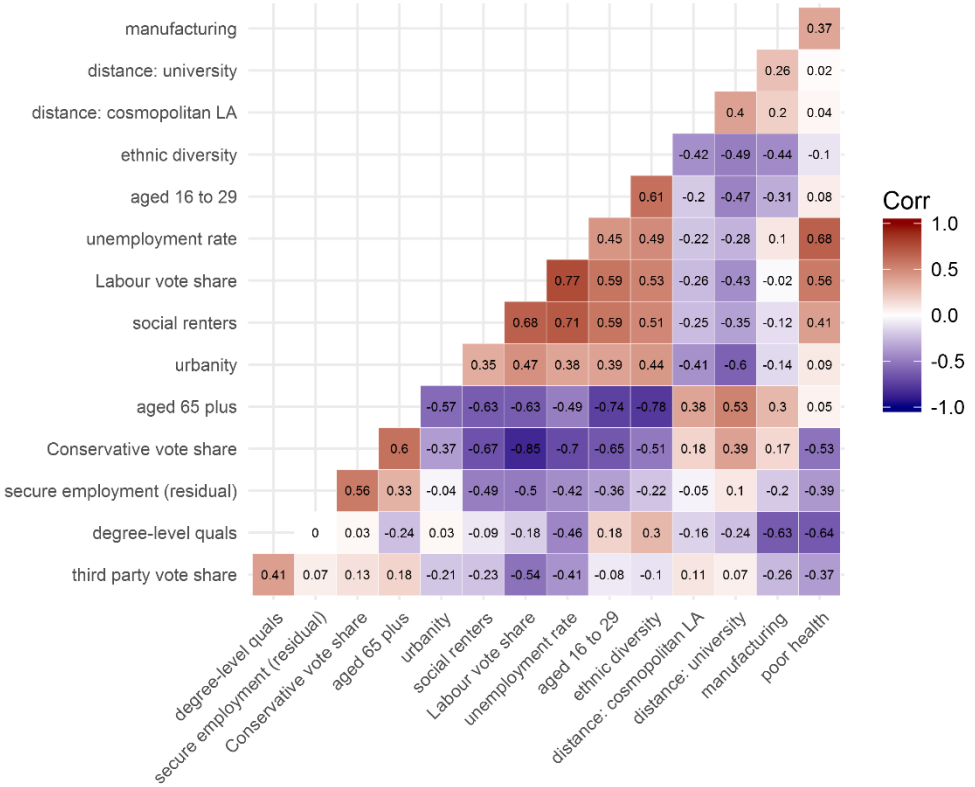

Figure A.10. Correlation coefficients for independent and dependent variables used in the 2017 models

Appendix B. Additional correlation changes over time (Chapter 6)

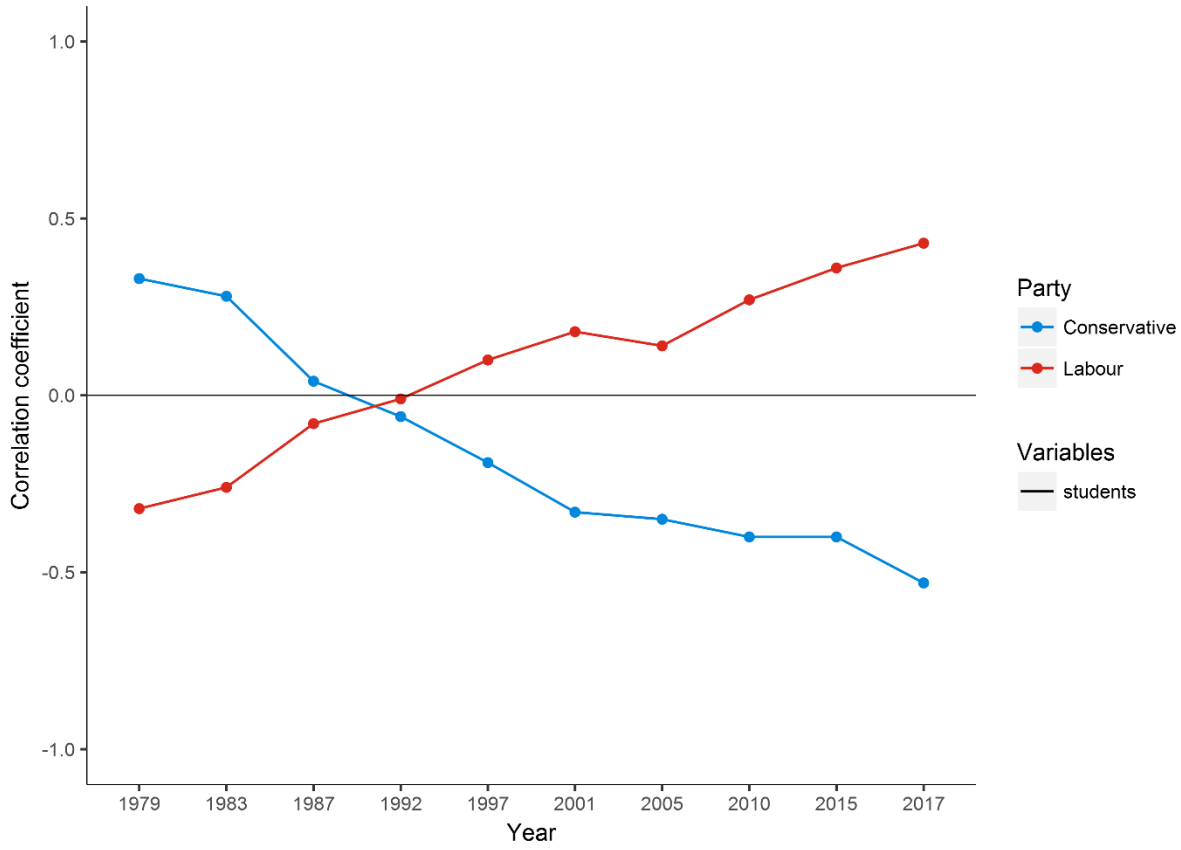

Figure B.1. The changing correlation between proportion of students and Labour and Conservative vote shares across each General Election (1979-2017) by constituency

Appendix C. Output from OLS models that include interaction effects (Chapter 6)

Table C.1. The regression output from OLS models with three additional interaction effects predicting the Labour vote share across constituencies (1979-2017)

	Labour vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	-0.270**	0.075	0.051	-0.082	-0.437**	-0.166	-0.209	-0.145	0.743**	0.409
	(0.121)	(0.127)	(0.142)	(0.114)	(0.182)	(0.226)	(0.274)	(0.291)	(0.356)	(0.324)
manufacturing industry	0.099***	0.088**	0.131***	0.083*	-0.263***	-0.442***	-0.369***	-0.099	0.047	-0.315***
	(0.036)	(0.038)	(0.048)	(0.042)	(0.061)	(0.070)	(0.083)	(0.101)	(0.122)	(0.112)
social housing	0.185***	0.167***	0.231***	0.198***	0.198***	0.119***	0.075	0.104*	0.163**	-0.012
	(0.025)	(0.026)	(0.033)	(0.031)	(0.038)	(0.043)	(0.051)	(0.057)	(0.071)	(0.064)
level 4 qualifications	-1.260***	-1.220***	-0.729**	-0.691***	-0.468**	-0.467***	-0.363**	-0.399***	-0.467***	-0.468***
	(0.289)	(0.305)	(0.327)	(0.267)	(0.209)	(0.163)	(0.160)	(0.127)	(0.156)	(0.141)
secure employment (residual)	-2.495***	-2.614***	-1.733***	-1.580***	-2.711***	-3.574***	-3.546***	-2.880***	-1.667***	-2.623***
	(0.412)	(0.434)	(0.392)	(0.308)	(0.346)	(0.384)	(0.394)	(0.370)	(0.453)	(0.411)
aged 16-29	0.465**	0.236	0.740***	0.361**	0.189	-0.010	-0.180*	0.128	-0.114	0.423***
	(0.208)	(0.220)	(0.221)	(0.158)	(0.122)	(0.098)	(0.100)	(0.084)	(0.101)	(0.091)
aged 65 plus	-0.609*	-0.745**	-0.427	-1.622***	-1.511***	-1.200***	-1.303***	-1.727***	-1.610***	-2.391***
	(0.329)	(0.348)	(0.339)	(0.270)	(0.301)	(0.307)	(0.341)	(0.304)	(0.387)	(0.341)
distance: closest 'cosmopolitan' LA	14.929***	15.985***	4.820**	3.995*	8.160**	5.653	3.640	-13.880***	-7.590	-21.873***
	(3.143)	(3.307)	(2.406)	(2.173)	(3.819)	(4.236)	(4.500)	(5.055)	(6.196)	(5.631)
ethnic diversity	0.075*	0.148***	0.040	0.060**	0.063**	-0.006	-0.065**	0.017	0.060*	0.082***
	(0.042)	(0.044)	(0.044)	(0.026)	(0.025)	(0.026)	(0.029)	(0.027)	(0.034)	(0.030)
poor health	4.447***	5.318***	4.715***	3.327***	2.579***	2.660***	2.943***	4.726***	5.128***	5.397***
	(0.391)	(0.415)	(0.317)	(0.155)	(0.150)	(0.203)	(0.222)	(0.328)	(0.406)	(0.365)
distance: closest university	-6.786***	-8.450***	-4.389***	-3.814***	-1.701	-2.833	-5.679***	-8.990***	-7.332**	-8.080***
	(1.472)	(1.557)	(1.576)	(1.298)	(1.809)	(1.958)	(2.195)	(2.148)	(2.983)	(2.713)
urbanity	0.589***	0.628***	0.698***	0.639***	1.104***	1.660***	1.435***	0.841***	1.248***	0.662**
	(0.095)	(0.098)	(0.129)	(0.122)	(0.156)	(0.196)	(0.238)	(0.264)	(0.334)	(0.301)
third party vote share	-0.658***	-0.634***	-0.602***	-0.606***	-0.749***	-0.690***	-0.522***	-0.535***	-0.734***	-0.668***
	(0.038)	(0.042)	(0.037)	(0.027)	(0.025)	(0.024)	(0.028)	(0.029)	(0.095)	(0.038)
age 65 plus x level 4 qualifications	0.029	0.035*	0.021	0.028	0.015	0.012	0.005	0.018**	0.009	0.037***
	(0.018)	(0.019)	(0.020)	(0.017)	(0.014)	(0.012)	(0.012)	(0.009)	(0.011)	(0.010)
age 65 plus x distance: closest 'cosmopolitan' LA	-0.497***	-0.522***	-0.198	-0.195*	-0.442**	-0.370*	-0.238	0.369*	0.147	0.510**
	(0.179)	(0.188)	(0.134)	(0.115)	(0.204)	(0.223)	(0.226)	(0.210)	(0.255)	(0.231)
level 4 qualifications x distance: closest university	-0.300**	-0.281*	0.016	0.087	-0.155	-0.047	-0.011	0.277**	0.140	0.502***
	(0.141)	(0.148)	(0.090)	(0.073)	(0.101)	(0.094)	(0.101)	(0.119)	(0.146)	(0.133)
Constant	-15.014	-20.871*	-51.484***	-40.561***	-62.944***	-100.068***	-81.888***	-37.252	-78.997**	-19.231
	(10.708)	(11.072)	(13.017)	(12.022)	(15.945)	(20.062)	(24.594)	(27.259)	(34.209)	(31.033)
N	560	560	560	561	567	569	569	572	572	572
Adjusted R^2	0.886	0.880	0.893	0.932	0.925	0.901	0.852	0.856	0.818	0.863

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table C.2. The regression output from OLS models with three additional interaction effects predicting the Labour vote share across constituencies (1979-2017)

	Labour vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	-0.380***	-0.071	0.075	0.038	-0.077	0.311	0.304	0.516*	1.396***	1.081***
	(0.122)	(0.126)	(0.151)	(0.114)	(0.187)	(0.227)	(0.275)	(0.298)	(0.366)	(0.343)
manufacturing industry	0.143***	0.139***	0.147***	0.131***	-0.177***	-0.318***	-0.231***	-0.033	0.145	-0.290**
	(0.034)	(0.035)	(0.047)	(0.041)	(0.063)	(0.070)	(0.084)	(0.101)	(0.123)	(0.116)
social housing	0.201***	0.185***	0.237***	0.204***	0.193***	0.119***	0.071	0.062	0.144**	-0.105
	(0.025)	(0.025)	(0.032)	(0.030)	(0.038)	(0.042)	(0.051)	(0.058)	(0.073)	(0.067)
level 4 qualifications	-0.453***	-0.241*	-0.411***	-0.646***	-1.116***	-0.919***	-0.990***	-0.753***	-0.925***	-0.545***
	(0.138)	(0.140)	(0.146)	(0.194)	(0.181)	(0.133)	(0.141)	(0.121)	(0.147)	(0.143)
secure employment (residual)	-2.534***	-2.820***	-1.731***	-1.591***	-2.919***	-3.600***	-3.507***	-2.895***	-1.697***	-2.688***
	(0.409)	(0.420)	(0.393)	(0.295)	(0.339)	(0.376)	(0.395)	(0.369)	(0.453)	(0.422)
aged 16-29	0.795***	0.545***	0.586**	0.006	0.089	-0.034	-0.232**	-0.016	-0.206**	0.261***
	(0.187)	(0.193)	(0.227)	(0.152)	(0.120)	(0.095)	(0.098)	(0.082)	(0.097)	(0.092)
aged 65 plus	-0.273***	-0.334***	-0.387***	-1.657***	-1.525***	-1.168***	-1.330***	-1.066***	-1.258***	-1.201***
	(0.078)	(0.080)	(0.114)	(0.103)	(0.124)	(0.120)	(0.139)	(0.138)	(0.168)	(0.158)
poor health	8.502***	10.070***	6.074***	3.988***	1.962***	1.753***	1.645***	1.588**	2.050**	2.184***
	(1.035)	(1.066)	(0.718)	(0.296)	(0.244)	(0.343)	(0.412)	(0.678)	(0.831)	(0.788)
ethnic diversity	0.411***	0.643***	0.364***	0.733***	0.628***	0.524***	0.339***	0.213***	0.299***	0.170*
	(0.121)	(0.124)	(0.122)	(0.124)	(0.119)	(0.094)	(0.094)	(0.077)	(0.094)	(0.088)
distance: closest 'cosmopolitan' LA	4.890**	3.631*	5.315***	12.746***	2.253	0.070	1.069	3.773	-0.878	8.927**
	(2.140)	(2.197)	(1.274)	(1.872)	(3.416)	(2.877)	(3.217)	(3.516)	(4.310)	(4.033)
distance: closest university	-6.186***	-7.663***	-4.781***	-4.458***	-3.273*	-5.262***	-7.945***	-10.802***	-9.497***	-11.901***
	(1.443)	(1.487)	(1.523)	(1.203)	(1.751)	(1.865)	(2.097)	(2.063)	(2.889)	(2.698)
urbanity	0.535***	0.562***	0.739***	0.745***	1.185***	1.621***	1.423***	0.927***	1.290***	0.705**
	(0.093)	(0.094)	(0.128)	(0.115)	(0.154)	(0.191)	(0.233)	(0.256)	(0.322)	(0.300)
third party vote share	-0.668***	-0.638***	-0.600***	-0.581***	-0.725***	-0.658***	-0.484***	-0.497***	-0.707***	-0.590***
	(0.038)	(0.040)	(0.037)	(0.027)	(0.024)	(0.024)	(0.028)	(0.029)	(0.090)	(0.039)
poor health x ethnic diversity	-0.194***	-0.278***	-0.101***	-0.057***	-0.040***	-0.060***	-0.046***	-0.039***	-0.048***	-0.021
	(0.060)	(0.062)	(0.035)	(0.010)	(0.008)	(0.010)	(0.010)	(0.013)	(0.015)	(0.014)
poor health x distance: closest 'cosmopolitan' LA	-0.694	0.173	-1.053***	-0.877***	-0.243	-0.184	-0.204	-0.591	-0.031	-1.438**
	(0.848)	(0.869)	(0.309)	(0.136)	(0.205)	(0.296)	(0.329)	(0.582)	(0.710)	(0.665)
level 4 qualifications x poor health	-0.219***	-0.280***	0.020	0.047***	0.055***	0.065***	0.081***	0.150***	0.139***	0.156***
	(0.059)	(0.061)	(0.042)	(0.016)	(0.012)	(0.015)	(0.016)	(0.022)	(0.028)	(0.026)
Constant	-29.376***	-35.644***	-58.648***	-54.873***	-61.505***	-90.779***	-72.162***	-44.689*	-77.666**	-28.824
	(9.089)	(9.222)	(12.090)	(11.348)	(15.307)	(19.210)	(23.857)	(26.434)	(33.097)	(30.965)
N	560	560	560	561	567	569	569	572	572	572
Adjusted R^2	0.888	0.887	0.895	0.939	0.929	0.908	0.861	0.863	0.826	0.861

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table C.3. The regression output from OLS models with two additional interaction effects predicting the Labour vote share across constituencies (1979-2017)

	Labour vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	-0.202	0.139	0.049	-0.003	-0.352*	-0.066	-0.186	-0.006	0.796**	0.619*
	(0.125)	(0.132)	(0.150)	(0.120)	(0.184)	(0.223)	(0.271)	(0.293)	(0.354)	(0.335)
manufacturing industry	0.111***	0.104***	0.139***	0.107**	-0.245***	-0.398***	-0.355***	-0.096	0.055	-0.303***
	(0.036)	(0.038)	(0.048)	(0.043)	(0.061)	(0.069)	(0.082)	(0.100)	(0.120)	(0.115)
social housing	0.195***	0.180***	0.235***	0.204***	0.196***	0.132***	0.067	0.082	0.147**	-0.030
	(0.025)	(0.026)	(0.033)	(0.031)	(0.038)	(0.043)	(0.051)	(0.058)	(0.071)	(0.067)
level 4 qualifications	-0.829***	-0.696***	-0.385***	-0.204***	-0.315***	-0.305***	-0.308***	-0.039	-0.323***	0.206***
	(0.081)	(0.085)	(0.086)	(0.064)	(0.061)	(0.051)	(0.056)	(0.062)	(0.087)	(0.071)
secure employment (residual)	-8.716***	-9.028***	-1.647	-1.144	-1.486	-4.949***	-4.457***	-3.957***	-0.282	-3.637**
	(2.465)	(2.602)	(2.981)	(2.268)	(1.609)	(1.318)	(1.436)	(1.242)	(1.516)	(1.429)
aged 16-29	0.897***	0.699***	0.750***	0.247	0.118	-0.007	-0.151	0.137	-0.130	0.411***
	(0.190)	(0.201)	(0.222)	(0.158)	(0.127)	(0.101)	(0.104)	(0.085)	(0.100)	(0.094)
aged 65 plus	-0.223***	-0.279***	-0.296***	-1.426***	-1.585***	-1.171***	-1.338***	-1.013***	-1.267***	-1.071***
	(0.081)	(0.085)	(0.114)	(0.105)	(0.127)	(0.124)	(0.142)	(0.140)	(0.166)	(0.159)
ethnic diversity	0.017	0.089*	0.031	0.053**	0.055**	0.002	-0.082***	0.007	0.049	0.082**
	(0.048)	(0.050)	(0.044)	(0.025)	(0.025)	(0.025)	(0.029)	(0.028)	(0.034)	(0.032)
poor health	4.374***	5.236***	4.743***	3.238***	2.491***	2.495***	2.879***	4.516***	5.036***	4.848***
	(0.399)	(0.424)	(0.317)	(0.155)	(0.151)	(0.200)	(0.219)	(0.322)	(0.386)	(0.368)
distance: closest 'cosmopolitan' LA	3.029***	3.923***	1.593***	1.544***	-1.491**	-1.261*	-0.757	-0.146	-1.410	0.397
	(0.793)	(0.835)	(0.536)	(0.445)	(0.634)	(0.675)	(0.748)	(0.902)	(1.061)	(1.004)
distance: closest university	-6.378***	-8.026***	-4.620***	-4.417***	-2.485	-4.076**	-6.182***	-9.354***	-7.871***	-10.760***
	(1.471)	(1.554)	(1.542)	(1.271)	(1.769)	(1.889)	(2.146)	(2.125)	(2.941)	(2.780)
urbanity	0.553***	0.589***	0.700***	0.627***	1.113***	1.643***	1.477***	0.800***	1.211***	0.493
	(0.095)	(0.098)	(0.128)	(0.121)	(0.155)	(0.193)	(0.237)	(0.263)	(0.327)	(0.308)
third party vote share	-0.670***	-0.651***	-0.599***	-0.599***	-0.747***	-0.685***	-0.519***	-0.522***	-0.790***	-0.645***
	(0.039)	(0.042)	(0.037)	(0.027)	(0.025)	(0.024)	(0.028)	(0.029)	(0.091)	(0.039)
secure employment (residual) x aged 16-29	0.316***	0.326**	-0.018	-0.048	-0.101	0.037	0.066	0.117	-0.043	0.078
	(0.121)	(0.128)	(0.151)	(0.114)	(0.093)	(0.082)	(0.088)	(0.074)	(0.091)	(0.086)
secure employment (residual) x ethnic diversity	-0.028	-0.028	0.029	0.044**	0.047**	0.057***	-0.014	-0.042**	-0.023	-0.010
	(0.030)	(0.032)	(0.033)	(0.019)	(0.020)	(0.020)	(0.020)	(0.018)	(0.022)	(0.021)
Constant	-26.219***	-33.510***	-54.342***	-40.739***	-59.243***	-98.261***	-84.668***	-46.218*	-79.033**	-24.070
	(9.213)	(9.559)	(12.046)	(11.540)	(15.617)	(19.596)	(24.645)	(27.454)	(33.968)	(32.145)
N	560	560	560	561	567	569	569	572	572	572
Adjusted R^2	0.883	0.876	0.892	0.931	0.925	0.903	0.852	0.853	0.818	0.852

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table C.4. The regression output from OLS models with three additional interaction effects predicting the Conservative vote share across constituencies (1979-2017)

	Conservative vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	0.168	-0.045	-0.161	-0.103	0.382**	0.192	-0.030	0.335	-0.432	-0.537*
	(0.134)	(0.125)	(0.141)	(0.115)	(0.167)	(0.217)	(0.251)	(0.285)	(0.340)	(0.304)
manufacturing industry	-0.057	-0.067*	-0.095**	-0.025	0.295***	0.408***	0.250***	0.152	0.426***	0.567***
	(0.040)	(0.038)	(0.047)	(0.043)	(0.056)	(0.067)	(0.076)	(0.099)	(0.117)	(0.105)
social housing	-0.203***	-0.168***	-0.220***	-0.156***	-0.198***	-0.072*	-0.065	-0.074	-0.057	0.085
	(0.027)	(0.026)	(0.033)	(0.031)	(0.035)	(0.041)	(0.047)	(0.056)	(0.068)	(0.060)
level 4 qualifications	1.533***	1.259***	0.695**	0.937***	0.708***	0.472***	0.360**	0.445***	0.540***	0.473***
	(0.320)	(0.301)	(0.325)	(0.270)	(0.191)	(0.156)	(0.147)	(0.124)	(0.149)	(0.133)
secure employment (residual)	1.996***	2.815***	1.299***	1.314***	1.777***	2.927***	2.955***	2.324***	2.364***	2.505***
	(0.457)	(0.428)	(0.390)	(0.311)	(0.317)	(0.369)	(0.361)	(0.362)	(0.433)	(0.385)
aged 16-29	-0.302	-0.363*	-0.792***	-0.467***	-0.328***	-0.126	-0.010	-0.244***	-0.535***	-0.531***
	(0.231)	(0.217)	(0.220)	(0.160)	(0.112)	(0.095)	(0.092)	(0.082)	(0.096)	(0.086)
aged 65 plus	1.070***	0.674**	0.551	2.074***	2.340***	1.994***	1.888***	1.845***	1.319***	2.500***
	(0.364)	(0.343)	(0.338)	(0.274)	(0.275)	(0.295)	(0.312)	(0.298)	(0.370)	(0.320)
distance: closest 'cosmopolitan' LA	-12.990***	-14.737***	-4.231*	-0.710	4.288	10.039**	11.404***	25.788***	30.164***	28.937***
	(3.482)	(3.263)	(2.393)	(2.199)	(3.496)	(4.070)	(4.121)	(4.956)	(5.925)	(5.282)
ethnic diversity	-0.172***	-0.174***	-0.020	-0.049*	-0.060***	0.008	0.052**	0.010	0.017	-0.027
	(0.046)	(0.044)	(0.044)	(0.026)	(0.023)	(0.025)	(0.026)	(0.027)	(0.032)	(0.028)
poor health	-4.984***	-5.346***	-5.092***	-3.530***	-3.054***	-3.849***	-3.848***	-6.124***	-5.830***	-6.356***
	(0.433)	(0.409)	(0.315)	(0.157)	(0.138)	(0.195)	(0.203)	(0.321)	(0.388)	(0.342)
distance: closest university	10.623***	8.206***	7.515***	8.054***	4.613***	6.263***	9.374***	8.106***	3.882	3.118
	(1.631)	(1.537)	(1.567)	(1.314)	(1.656)	(1.882)	(2.010)	(2.106)	(2.853)	(2.545)
urbanity	-0.307***	-0.636***	-0.124	0.246**	-0.081	-0.516***	-0.175	-0.188	-0.171	-0.058
	(0.105)	(0.097)	(0.129)	(0.124)	(0.143)	(0.189)	(0.218)	(0.258)	(0.319)	(0.283)
third party vote share	-0.218***	-0.352***	-0.246***	-0.251***	-0.158***	-0.212***	-0.316***	-0.341***	0.086	-0.185***
	(0.042)	(0.041)	(0.036)	(0.028)	(0.022)	(0.023)	(0.026)	(0.029)	(0.091)	(0.035)
age 65 plus x level 4 qualifications	-0.052***	-0.035*	-0.028	-0.051***	-0.036***	-0.018	-0.007	-0.009	-0.009	-0.034***
	(0.020)	(0.019)	(0.020)	(0.017)	(0.013)	(0.011)	(0.011)	(0.009)	(0.011)	(0.009)
age 65 plus x distance: closest 'cosmopolitan' LA	0.267	0.490***	0.109	-0.062	-0.295	-0.450**	-0.501**	-0.714***	-0.533**	-0.583***
	(0.199)	(0.186)	(0.134)	(0.116)	(0.187)	(0.214)	(0.207)	(0.206)	(0.243)	(0.217)
level 4 qualifications x distance: closest 'cosmopolitan' LA	0.233	0.243*	-0.026	-0.065	-0.011	-0.182**	-0.198**	-0.572***	-0.853***	-0.776***
	(0.156)	(0.146)	(0.090)	(0.074)	(0.092)	(0.091)	(0.093)	(0.117)	(0.140)	(0.125)
Constant	76.808***	123.056***	92.745***	46.981***	54.382***	83.332***	53.618**	62.012**	64.412**	54.760*
	(11.863)	(10.925)	(12.947)	(12.164)	(14.591)	(19.278)	(22.526)	(26.723)	(32.717)	(29.107)
N	560	560	560	561	568	569	569	572	572	572
Adjusted R^2	0.754	0.808	0.816	0.866	0.847	0.829	0.839	0.819	0.791	0.832

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table C.5. The regression output from OLS models with three additional interaction effects predicting the Conservative vote share across constituencies (1979-2017)

	Conservative vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	0.333**	0.120	-0.266*	-0.291**	0.132	-0.135	-0.323	-0.228	-0.630*	-1.017***
	(0.133)	(0.124)	(0.151)	(0.119)	(0.172)	(0.221)	(0.255)	(0.304)	(0.370)	(0.336)
manufacturing industry	-0.109***	-0.117***	-0.113**	-0.080*	0.186***	0.283***	0.119	0.133	0.478***	0.584***
	(0.037)	(0.035)	(0.047)	(0.043)	(0.058)	(0.068)	(0.078)	(0.103)	(0.124)	(0.114)
social housing	-0.213***	-0.183***	-0.225***	-0.165***	-0.201***	-0.090**	-0.093*	-0.057	-0.054	0.144**
	(0.027)	(0.025)	(0.032)	(0.031)	(0.035)	(0.041)	(0.047)	(0.059)	(0.074)	(0.065)
level 4 qualifications	0.324**	0.225	0.411***	0.822***	0.863***	0.589***	0.664***	0.562***	0.236	0.101
	(0.149)	(0.139)	(0.147)	(0.203)	(0.166)	(0.130)	(0.131)	(0.123)	(0.149)	(0.140)
secure employment (residual)	2.190***	2.973***	1.445***	1.444***	1.648***	2.634***	2.552***	2.197***	2.132***	2.359***
	(0.444)	(0.416)	(0.394)	(0.310)	(0.312)	(0.367)	(0.366)	(0.376)	(0.458)	(0.413)
aged 16-29	-0.624***	-0.685***	-0.668***	-0.161	-0.264**	-0.146	-0.001	-0.160*	-0.533***	-0.450***
	(0.203)	(0.191)	(0.227)	(0.159)	(0.110)	(0.093)	(0.091)	(0.084)	(0.098)	(0.090)
aged 65 plus	0.305***	0.254***	0.294**	1.501***	1.614***	1.295***	1.375***	1.179***	0.677***	1.232***
	(0.084)	(0.079)	(0.114)	(0.108)	(0.114)	(0.117)	(0.129)	(0.141)	(0.170)	(0.155)
distance: closest 'cosmopolitan' LA	-7.963***	-10.038***	-4.771***	-3.219***	-2.248***	-3.223***	-2.849***	-4.702***	-6.504***	-5.686***
	(1.123)	(1.056)	(0.720)	(0.311)	(0.224)	(0.334)	(0.382)	(0.692)	(0.841)	(0.771)
ethnic diversity	-0.378***	-0.537***	-0.252**	-0.576***	-0.470***	-0.498***	-0.339***	-0.219***	-0.069	-0.154*
	(0.132)	(0.123)	(0.123)	(0.130)	(0.109)	(0.091)	(0.087)	(0.079)	(0.095)	(0.086)
poor health	0.126	-2.883	-2.763**	-5.819***	5.249*	-0.670	1.870	-10.576***	-15.874***	-17.626***
	(2.321)	(2.177)	(1.278)	(1.965)	(3.138)	(2.804)	(2.987)	(3.585)	(4.359)	(3.949)
distance: closest university	9.567***	7.467***	7.787***	8.570***	6.224***	7.739***	10.727***	8.868***	5.827**	6.852***
	(1.565)	(1.473)	(1.528)	(1.262)	(1.609)	(1.817)	(1.947)	(2.104)	(2.922)	(2.641)
urbanity	-0.235**	-0.566***	-0.120	0.223*	-0.067	-0.343*	0.025	-0.100	-0.005	0.087
	(0.101)	(0.093)	(0.128)	(0.121)	(0.141)	(0.186)	(0.216)	(0.261)	(0.326)	(0.294)
third party vote share	-0.221***	-0.346***	-0.263***	-0.289***	-0.192***	-0.246***	-0.353***	-0.369***	0.191**	-0.236***
	(0.042)	(0.040)	(0.038)	(0.028)	(0.022)	(0.023)	(0.026)	(0.029)	(0.091)	(0.038)
poor health x ethnic diversity	0.123*	0.206***	0.075**	0.045***	0.029***	0.054***	0.041***	0.041***	0.015	0.023*
	(0.065)	(0.061)	(0.035)	(0.011)	(0.007)	(0.009)	(0.009)	(0.013)	(0.016)	(0.014)
poor health x distance: closest 'cosmopolitan' LA	-2.561***	-0.450	0.094	0.280*	-0.362*	0.020	-0.320	1.442**	2.446***	2.692***
	(0.920)	(0.861)	(0.310)	(0.143)	(0.188)	(0.288)	(0.306)	(0.593)	(0.718)	(0.651)
level 4 qualifications x poor health	0.279***	0.304***	-0.057	-0.066***	-0.048***	-0.049***	-0.058***	-0.096***	-0.011	-0.071***
	(0.064)	(0.060)	(0.042)	(0.017)	(0.011)	(0.015)	(0.015)	(0.023)	(0.028)	(0.026)
Constant	92.667***	137.567***	94.598***	52.304***	54.160***	76.936***	39.444*	65.580**	67.537**	63.605**
	(9.859)	(9.136)	(12.128)	(11.910)	(14.062)	(18.723)	(22.151)	(26.949)	(33.474)	(30.320)
N	560	560	560	561	568	569	569	572	572	572
Adjusted R^2	0.767	0.818	0.816	0.871	0.854	0.836	0.845	0.815	0.776	0.815

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table C.6. The regression output from OLS models with two additional interaction effects predicting the Conservative vote share across constituencies (1979-2017)

	Conservative vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	0.078	-0.081	-0.228	-0.193	0.338**	0.216	0.068	0.193	-0.559	-0.764**
	(0.138)	(0.130)	(0.149)	(0.122)	(0.169)	(0.218)	(0.251)	(0.295)	(0.354)	(0.324)
manufacturing industry	-0.070*	-0.089**	-0.099**	-0.047	0.264***	0.376***	0.250***	0.169*	0.421***	0.548***
	(0.040)	(0.038)	(0.047)	(0.044)	(0.056)	(0.068)	(0.075)	(0.101)	(0.120)	(0.111)
social housing	-0.215***	-0.181***	-0.222***	-0.161***	-0.202***	-0.083**	-0.070	-0.064	-0.070	0.097
	(0.027)	(0.026)	(0.033)	(0.032)	(0.035)	(0.042)	(0.047)	(0.058)	(0.071)	(0.064)
level 4 qualifications	0.736***	0.723***	0.211**	0.085	0.145**	0.128**	0.168***	0.108*	0.203**	-0.248***
	(0.089)	(0.084)	(0.085)	(0.065)	(0.056)	(0.050)	(0.052)	(0.062)	(0.087)	(0.069)
secure employment (residual)	9.340***	7.449***	5.898**	4.050*	2.450*	3.411***	3.114**	1.793	1.142	3.041**
	(2.710)	(2.569)	(2.958)	(2.307)	(1.478)	(1.288)	(1.327)	(1.250)	(1.513)	(1.381)
aged 16-29	-0.747***	-0.819***	-0.822***	-0.376**	-0.318***	-0.151	-0.033	-0.237***	-0.543***	-0.529***
	(0.209)	(0.198)	(0.220)	(0.161)	(0.117)	(0.098)	(0.096)	(0.085)	(0.099)	(0.091)
aged 65 plus	0.247***	0.202**	0.229**	1.348***	1.572***	1.330***	1.396***	1.190***	0.697***	1.198***
	(0.089)	(0.084)	(0.113)	(0.107)	(0.117)	(0.121)	(0.131)	(0.141)	(0.166)	(0.154)
ethnic diversity	-0.104**	-0.097*	-0.006	-0.054**	-0.066***	-0.017	0.035	0.001	0.024	-0.031
	(0.052)	(0.050)	(0.043)	(0.025)	(0.023)	(0.025)	(0.027)	(0.028)	(0.034)	(0.031)
poor health	-4.875***	-5.321***	-5.045***	-3.415***	-3.018***	-3.846***	-3.944***	-5.921***	-5.347***	-5.703***
	(0.439)	(0.419)	(0.314)	(0.158)	(0.139)	(0.195)	(0.202)	(0.324)	(0.385)	(0.356)
distance: closest 'cosmopolitan' LA	-5.526***	-3.738***	-2.646***	-2.638***	-0.924	-0.737	-1.205*	-1.868**	-1.436	-1.762*
	(0.871)	(0.825)	(0.532)	(0.453)	(0.583)	(0.660)	(0.691)	(0.908)	(1.059)	(0.971)
distance: closest university	10.093***	7.833***	7.730***	8.396***	4.891***	6.491***	8.927***	8.141***	5.590*	6.237**
	(1.617)	(1.535)	(1.530)	(1.293)	(1.625)	(1.846)	(1.983)	(2.138)	(2.935)	(2.687)
urbanity	-0.263**	-0.603***	-0.132	0.254**	-0.051	-0.409**	-0.081	-0.007	-0.003	0.167
	(0.104)	(0.097)	(0.127)	(0.123)	(0.143)	(0.188)	(0.219)	(0.265)	(0.327)	(0.297)
third party vote share	-0.205***	-0.335***	-0.246***	-0.257***	-0.165***	-0.221***	-0.321***	-0.356***	0.226**	-0.217***
	(0.042)	(0.042)	(0.037)	(0.028)	(0.022)	(0.023)	(0.026)	(0.029)	(0.091)	(0.038)
secure employment (residual) x aged 16-29	-0.385***	-0.248**	-0.227	-0.126	-0.030	-0.020	-0.031	0.010	0.050	-0.039
	(0.133)	(0.126)	(0.150)	(0.116)	(0.085)	(0.080)	(0.081)	(0.075)	(0.090)	(0.083)
secure employment (residual) x ethnic diversity	0.059*	0.045	0.011	-0.010	-0.022	-0.028	0.011	0.008	0.001	-0.003
	(0.033)	(0.032)	(0.032)	(0.020)	(0.018)	(0.019)	(0.019)	(0.018)	(0.022)	(0.020)
Constant	94.593***	136.463***	99.978***	56.484***	63.946***	85.988***	55.318**	59.756**	59.519*	56.253*
	(10.129)	(9.438)	(11.953)	(11.737)	(14.346)	(19.147)	(22.778)	(27.623)	(33.902)	(31.071)
N	560	560	560	561	568	569	569	572	572	572
Adjusted R^2	0.750	0.802	0.816	0.864	0.846	0.827	0.836	0.806	0.772	0.807

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Appendix D. Output from GLM models (Chapter 6)

Table D.1. The regression output from GLM models predicting Labour vote shares across constituencies at General Elections, 1979-2017

	Labour vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	-0.017***	-0.012*	-0.007	-0.010*	-0.020**	-0.006	-0.007	0.001	0.027	0.028*
	(0.005)	(0.007)	(0.007)	(0.006)	(0.008)	(0.010)	(0.013)	(0.015)	(0.017)	(0.015)
manufacturing industry	0.006***	0.006***	0.005**	0.004	-0.012***	-0.019***	-0.016***	-0.003	0.002	-0.013**
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.005)	(0.006)	(0.005)
social housing	0.008***	0.008***	0.010***	0.008***	0.008***	0.004**	0.001	0.001	0.005	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
level 4 qualifications	-0.037***	-0.040***	-0.024***	-0.013***	-0.014***	-0.014***	-0.013***	-0.002	-0.017***	0.010***
	(0.004)	(0.005)	(0.005)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)
secure employment (residual)	-0.104***	-0.130***	-0.094***	-0.081***	-0.119***	-0.153***	-0.161***	-0.142***	-0.092***	-0.100***
	(0.019)	(0.023)	(0.021)	(0.016)	(0.016)	(0.017)	(0.019)	(0.020)	(0.023)	(0.019)
aged 16-29	0.042***	0.041***	0.051***	0.020**	0.008	0.001	-0.004	0.011**	-0.005	0.018***
	(0.009)	(0.012)	(0.012)	(0.008)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)
aged 65 plus	-0.014***	-0.026***	-0.016**	-0.068***	-0.072***	-0.054***	-0.062***	-0.055***	-0.066***	-0.050***
	(0.004)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.008)	(0.009)	(0.007)
ethnic diversity	-0.0004	0.003	0.0002	0.002	0.001	-0.002*	-0.004***	-0.0004	0.002	0.003**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
poor health	0.197***	0.272***	0.219***	0.147***	0.109***	0.107***	0.125***	0.207***	0.234***	0.205***
	(0.018)	(0.022)	(0.017)	(0.008)	(0.007)	(0.009)	(0.010)	(0.017)	(0.019)	(0.016)
distance: closest 'cosmopolitan' LA	0.150***	0.281***	0.090***	0.084***	-0.058**	-0.056*	-0.025	0.004	-0.050	0.033
	(0.036)	(0.046)	(0.030)	(0.024)	(0.029)	(0.031)	(0.036)	(0.050)	(0.055)	(0.045)
distance: closest university	-0.308***	-0.489***	-0.251***	-0.239***	-0.103	-0.158*	-0.259**	-0.489***	-0.354**	-0.473***
	(0.070)	(0.093)	(0.090)	(0.071)	(0.082)	(0.090)	(0.108)	(0.130)	(0.157)	(0.125)
urbanity	0.025***	0.041***	0.045***	0.033***	0.052***	0.083***	0.080***	0.062***	0.084***	0.024
	(0.005)	(0.006)	(0.008)	(0.007)	(0.008)	(0.010)	(0.013)	(0.018)	(0.019)	(0.015)
third party vote share	-0.038***	-0.041***	-0.033***	-0.034***	-0.037***	-0.035***	-0.027***	-0.033***	-0.037***	-0.034***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.005)	(0.002)
Constant	-3.177***	-4.788***	-6.033***	-4.436***	-5.032***	-7.400***	-7.301***	-6.659***	-8.441***	-3.350**
	(0.460)	(0.621)	(0.736)	(0.660)	(0.751)	(0.988)	(1.331)	(1.841)	(1.986)	(1.529)
N	560	560	560	561	567	569	569	572	572	572

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table D.2. The regression output from GLM models predicting Conservative vote shares across constituencies at General Elections, 1979-2017

	Conservative vote share (%)									
	1979	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
unemployment rate	0.005	-0.004	-0.009	-0.009	0.016*	0.011	-0.002	0.007	-0.035*	-0.036**
	(0.006)	(0.006)	(0.006)	(0.005)	(0.009)	(0.012)	(0.014)	(0.015)	(0.018)	(0.015)
manufacturing industry	-0.004**	-0.004**	-0.004**	-0.002	0.012***	0.017***	0.011***	0.006	0.018***	0.022***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)	(0.005)	(0.006)	(0.005)
social housing	-0.009***	-0.008***	-0.010***	-0.006***	-0.012***	-0.007***	-0.006**	-0.005*	-0.005	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
level 4 qualifications	0.031***	0.031***	0.009**	0.002	0.004	0.004*	0.006**	0.002	0.007*	-0.014***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)	(0.003)
secure employment (residual)	0.072***	0.112***	0.051***	0.052***	0.054***	0.097***	0.097***	0.078***	0.071***	0.080***
	(0.019)	(0.018)	(0.017)	(0.013)	(0.015)	(0.018)	(0.018)	(0.017)	(0.021)	(0.019)
aged 16-29	-0.028***	-0.031***	-0.030***	-0.011*	-0.011*	-0.006	-0.001	-0.011***	-0.025***	-0.025***
	(0.009)	(0.009)	(0.009)	(0.007)	(0.006)	(0.005)	(0.005)	(0.004)	(0.005)	(0.004)
aged 65 plus	0.013***	0.010***	0.013***	0.065***	0.087***	0.067***	0.070***	0.055***	0.032***	0.052***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.008)	(0.007)
ethnic diversity	-0.005***	-0.005***	-0.0002	-0.002*	-0.002*	0.0004	0.002	0.0005	0.002	-0.001
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
poor health	-0.211***	-0.230***	-0.237***	-0.161***	-0.163***	-0.200***	-0.205***	-0.283***	-0.249***	-0.251***
	(0.019)	(0.018)	(0.014)	(0.007)	(0.008)	(0.010)	(0.011)	(0.016)	(0.019)	(0.016)
distance: closest 'cosmopolitan' LA	-0.233***	-0.149***	-0.106***	-0.107***	-0.040	-0.031	-0.055*	-0.090**	-0.068	-0.080*
	(0.037)	(0.035)	(0.023)	(0.020)	(0.029)	(0.032)	(0.033)	(0.042)	(0.048)	(0.043)
distance: closest university	0.420***	0.330***	0.327***	0.363***	0.259***	0.325***	0.443***	0.390***	0.274**	0.240**
	(0.068)	(0.065)	(0.064)	(0.054)	(0.078)	(0.088)	(0.093)	(0.097)	(0.132)	(0.117)
urbanity	-0.011**	-0.025***	-0.005	0.011**	-0.001	-0.014	0.002	0.003	0.003	0.013
	(0.004)	(0.004)	(0.005)	(0.005)	(0.007)	(0.009)	(0.010)	(0.012)	(0.014)	(0.013)
third party vote share	-0.009***	-0.015***	-0.011***	-0.012***	-0.009***	-0.011***	-0.016***	-0.016***	0.013***	-0.009***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.002)
Constant	1.833***	3.550***	2.043***	0.237	0.747	1.349	-0.078	0.356	0.220	-0.121
	(0.422)	(0.396)	(0.500)	(0.487)	(0.674)	(0.887)	(1.046)	(1.240)	(1.499)	(1.350)
N	560	560	560	561	567	569	569	572	572	572

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Appendix E. Output from SUR models (Chapter 6)

Table E.1. The regression output from SUR models predicting Labour support compared to Conservative support across constituencies at General Elections, 1979-2017

	1979	1983	1987	1992	1997	2001	2005	2010	2015	2017
intercept	-4.81***	-7.29***	-6.31***	-3.51***	-3.75***	-6.14***	-4.21**	-4.91*	-4.98*	-1.48
	(0.53)	(0.65)	(0.81)	(0.78)	(1.01)	(1.29)	(1.51)	(2.04)	(1.99)	(1.71)
unemployment rate	-0.02*	-0.01	-0.01	-0.01	-0.03**	-0.01	0.01	0.00	0.06**	0.04*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
manufacturing	0.01***	0.01***	0.01**	0.00	-0.01**	-0.02***	-0.01*	0.01	-0.00	-0.01
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
social renters	0.01***	0.01***	0.01***	0.01***	0.01***	0.01*	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
degree-level qualifications	-0.04***	-0.05***	-0.03***	-0.02***	-0.01**	-0.01***	-0.01***	-0.00	0.01	0.01**
	(0.00)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
secure employment (residual)	-0.10***	-0.16***	-0.09**	-0.08***	-0.08***	-0.11***	-0.13***	-0.09***	-0.10***	-0.06*
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.02)
age 16 to 29	0.06***	0.07***	0.07***	0.03**	0.02	0.00	-0.00	0.01	0.02**	0.03***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
age 65+	-0.02***	-0.02***	-0.02**	-0.11***	-0.14***	-0.11***	-0.11***	-0.10***	-0.09***	-0.08***
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
ethnic diversity	0.00	0.01*	0.00	0.00**	0.00**	-0.00	-0.00*	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
poor health	0.29***	0.39***	0.35***	0.23***	0.21***	0.24***	0.24***	0.40***	0.37***	0.30***
	(0.02)	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
distance: 'cosmopolitan' LA	0.26***	0.33***	0.09*	0.08**	0.03	0.04	0.05	0.06	0.01	0.07
	(0.05)	(0.06)	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)	(0.07)	(0.06)	(0.05)
distance: university	-0.61***	-0.75***	-0.45***	-0.49***	-0.32**	-0.30*	-0.47***	-0.63***	-0.49**	-0.34*
	(0.09)	(0.11)	(0.11)	(0.09)	(0.12)	(0.13)	(0.13)	(0.16)	(0.17)	(0.15)
urban-ness	0.03***	0.05***	0.04***	0.02*	0.03**	0.06***	0.04**	0.04	0.03	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
R^2	0.80	0.82	0.83	0.87	0.86	0.84	0.84	0.81	0.83	0.81
Adj. R^2	0.79	0.82	0.83	0.87	0.86	0.83	0.84	0.81	0.82	0.81
Num. obs. (total)	1680	1680	1680	1683	1701	1707	1707	1716	1716	1716

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

Dependent variable: Labour-Conservative vote share log ratio

Appendix F. Fixed effect models (Chapter 6)

Table F.1. The regression output from fixed time effect models predicting Labour vote shares and Conservative vote shares across constituencies across the time period 1979-2017

	Labour vote share (%)	Conservative vote share (%)
unemployment rate	0.016	0.269***
	(0.063)	(0.054)
manufacturing industry	0.076***	-0.136***
	(0.028)	(0.024)
social housing	0.273***	-0.272***
	(0.023)	(0.020)
level 4 qualifications	-0.060*	0.149***
	(0.033)	(0.029)
secure employment (residual)	-0.589***	0.765***
	(0.152)	(0.131)
aged 16-29	-0.003	-0.241***
	(0.049)	(0.042)
aged 65 plus	-0.368***	0.390***
	(0.060)	(0.052)
ethnic diversity	0.171***	-0.146***
	(0.017)	(0.015)
poor health	0.369***	-0.370***
	(0.072)	(0.062)
distance: closest 'cosmopolitan' LA	1.310***	-0.695***
	(0.219)	(0.189)
distance: closest university	-0.320	-0.512
	(0.965)	(0.834)
urbanity	-0.265**	0.159*
	(0.108)	(0.094)
third party vote share	-0.427***	-0.203***
	(0.011)	(0.009)
year 1983 [1979]	-4.643***	1.586***
	(0.454)	(0.392)
year 1987	-1.650***	-0.461
	(0.558)	(0.482)
year 1992	-1.439	-0.909
	(0.990)	(0.855)
year 1997	7.110***	-12.309***
	(1.256)	(1.084)
year 2001	8.579***	-14.106***
	(1.056)	(0.912)
year 2005	4.693***	-13.875***
	(1.211)	(1.046)
year 2010	-0.314	-12.139***
	(1.274)	(1.100)
year 2015	-1.446	-12.645***
	(1.368)	(1.182)
year 2017	5.907***	-8.686***
	(1.461)	(1.261)
N	5,662	5,662
Adjusted R^2	0.532	0.471

Notes: ***Significant at the 1 percent level. ** 5 percent level. *10 percent level.

Appendix G. Variance Inflation Factor scores for OLS models (Chapter 6)

Table G.1. VIF scores for all OLS models (1979-2017) used in Chapter 6

	Model year									
Variables (% unless stated otherwise)	**1979**	**1983**	**1987**	**1992**	**1997**	**2001**	**2005**	**2010**	**2015**	**2017**
Unemployment rate	5.12	5.12	5.86	6.13	7.10	5.73	6.42	7.29	7.29	7.27
Manufacturing industry	2.10	2.13	2.16	1.98	2.84	3.05	2.64	2.56	2.53	2.57
Social renters	2.40	2.40	2.84	3.37	3.27	3.04	2.99	3.01	3.12	3.01
Level four qualifications	3.24	3.22	3.44	3.10	3.62	3.33	3.41	4.33	5.80	4.36
Secure employment (residual)	3.48	3.46	2.64	2.40	2.72	2.93	2.50	2.26	2.26	2.25
Aged 20 to 29	3.90	3.91	4.79	4.00	3.83	3.23	3.13	2.85	2.69	2.69
Aged 65 plus	1.84	1.83	2.19	2.58	3.26	2.98	3.95	5.59	5.41	5.50
Ethnic diversity	2.27	2.28	2.67	2.92	3.18	3.14	3.69	4.41	4.44	4.40
Poor health	1.95	1.97	3.44	4.43	5.54	4.62	4.42	4.27	4.18	4.22
Distance to 'cosmopolitan' LA (decimal degrees)	2.69	2.68	2.50	2.52	1.62	1.63	1.59	1.53	1.45	1.45
Distance to nearest university (decimal degrees)	2.00	2.01	1.85	1.84	2.11	2.12	2.14	1.93	1.95	1.94
Non-agriculture industry (urbanity)	2.09	2.01	2.11	2.00	2.21	2.27	2.24	2.07	2.19	2.15
Third party vote share	1.75	1.55	1.68	1.77	1.57	1.38	1.32	1.38	2.81	1.40

Appendix H. Large residuals and Cook's distance (Chapter 6)

Table H.1. Large residuals (>2 or <-2) for Conservative OLS models (1979-1987) used in Chapter 6

Conservative model 1979			Conservative model 1983			Conservative model 1987		
Constituency	Standardised residual	Cook's distance	Constituency	Standardised residual	Cook's distance	Constituency	Standardised residual	Cook's distance
Ribble Valley	4.22	0.19	Ribble Valley	4.88	0.25	South Shields	4.34	0.07
Epsom and Ewell	2.65	0.03	Epsom and Ewell	2.45	0.03	Ribble Valley	3.40	0.05
Knowsley North	2.35	0.03	Nottingham North	2.34	0.01	Southampton Itchen	3.12	0.01
Birmingham Hall Green	2.19	0.00	Ynys Mon	2.23	0.02	Manchester Central	2.48	0.02
Canterbury	2.08	0.01	Wigan	-2.10	0.01	Chelsea	2.10	0.01
Sheffield Hillsborough	-2.01	0.00	Ogmore	-2.12	0.01	Greenwich	-2.03	0.01
Rhondda	-2.04	0.03	St Helens North	-2.14	0.00	Barnsley West and Penistone	-2.07	0.00
Neath	-2.08	0.01	Sherwood	-2.18	0.01	Bolsover	-2.16	0.00
Sherwood	-2.11	0.00	Blaenau Gwent	-2.23	0.01	Chesterfield	-2.31	0.00
Richmond upon Thames and Barnes	-2.12	0.02	Makerfield	-2.25	0.00	Coventry North West	-2.33	0.01
Caerphilly	-2.20	0.01	Neath	-2.34	0.01	Carmarthen	-2.39	0.04
Barnsley West and Penistone	-2.22	0.00	Bassetlaw	-2.35	0.01	Woolwich	-2.40	0.02
Barnsley East	-2.25	0.01	Sheffield Hillsborough	-2.39	0.01	Liverpool Mossley Hill	-2.56	0.02
Wrexham	-2.35	0.01	Wentworth	-2.44	0.00	Blyth Valley	-2.57	0.02
Colne Valley	-2.36	0.01	Cynon Valley	-2.61	0.01	Hemsworth	-2.58	0.01
Bassetlaw	-2.42	0.00	Rother Valley	-2.79	0.00	Sheffield Attercliffe	-2.86	0.01
Rochdale	-2.44	0.03	Islwyn	-2.82	0.01	Southend West	-3.15	0.02
Rother Valley	-2.63	0.00	Barnsley West and Penistone	-2.85	0.00	Newcastle under Lyme	-3.20	0.02
Bolsover	-2.81	0.01	Carmarthen	-2.88	0.05	Ceredigion and Pembroke North	-3.25	0.07
Ceredigion and Pembroke North	-2.95	0.04	Ceredigion and Pembroke North	-2.90	0.05	Rother Valley	-3.60	0.01
Cynon Valley	-2.95	0.02	Windsor and Maidenhead	-2.96	0.62	Meirionnydd nant Conwy	-3.61	0.04
Islwyn	-2.98	0.01	Hemsworth	-3.22	0.01	Caernarfon	-3.81	0.05
Hemsworth	-3.05	0.01	Barnsley East	-3.33	0.02	Sheffield Hillsborough	-4.41	0.02
Windsor and Maidenhead	-3.27	0.77	Bolsover	-3.42	0.01	Southend East	-5.26	0.06
Blyth Valley	-3.36	0.02						
Caernarfon	-3.77	0.05						
Meirionnydd nant Conwy	-3.77	0.04						
Carmarthen	-4.33	0.11						

Table H.2. Large residuals (>2 or <-2) for Conservative OLS models (1992-2001) used in Chapter 6

Conservative model 1992			Conservative model 1997			Conservative model 2001		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Richmond	2.97	0.02	Cities of London & Westminster	3.49	0.03	Kensington & Chelsea	4.07	0.09
Fulham	2.58	0.04	Boston & Skegness	2.98	0.02	Cities of London & Westminster	3.64	0.04
The City of London & Westminster South	2.44	0.01	Kensington & Chelsea	2.97	0.05	Bradford West	3.20	0.04
Newham South	2.44	0.01	Blackpool South	2.83	0.02	Richmond	2.67	0.01
Battersea	2.38	0.02	Huntingdon	2.71	0.01	Blackpool South	2.66	0.02
Hackney South & Shoreditch	2.29	0.02	Battersea	2.61	0.02	North Thanet	2.65	0.01
Easington	2.28	0.02	Bradford West	2.57	0.02	Hammersmith & Fulham	2.62	0.02
Walsall North	2.18	0.01	Rochford & Southend East	2.50	0.01	Rochford & Southend East	2.52	0.01
Chelsea	2.11	0.02	Hammersmith & Fulham	2.50	0.02	Bethnal Green & Bow	2.05	0.02
Gosport	2.08	0.01	Aldridge - Brownhills	2.46	0.01	Battersea	2.03	0.01
Rochdale	-2.12	0.02	Middlesbrough South & East Clevel&	2.39	0.01	Folkestone & Hythe	2.01	0.01
Liverpool Walton	-2.16	0.02	Birmingham, Edgbaston	2.28	0.01	Meriden	2.01	0.00
Bootle	-2.27	0.02	Louth & Horncastle	2.19	0.01	Sheffield, Hillsborough	-2.09	0.00
Leyton	-2.29	0.01	Richmond (Yorks)	2.16	0.01	Ynys-Mon	-2.41	0.01
Workington	-2.54	0.01	Easington	2.06	0.01	Brentwood & Ongar	-2.80	0.02
Liverpool Broadgreen	-2.68	0.02	Alyn & Deeside	-2.02	0.00	Ceredigion	-2.83	0.05
Carmarthen	-2.96	0.08	Kingswood	-2.09	0.00	Carmarthen East & Dinefwr	-3.39	0.06
Blyth Valley	-3.11	0.02	Chesterfield	-2.13	0.01	Wyre Forest	-4.56	0.03
Ceredigion & Pembroke North	-3.23	0.09	Workington	-2.18	0.01	Caernarfon	-4.58	0.05
Chesterfield	-3.39	0.02	Wansdyke	-2.23	0.00	Meirionnydd Nant Conwy	-4.79	0.07
Liverpool Mossley Hill	-4.07	0.07	Coventry North West	-2.26	0.01			
Meirionnydd Nant Conwy	-4.33	0.08	Yeovil	-2.50	0.02			
Greenwich	-4.50	0.05	Carmarthen East & Dinefwr	-2.67	0.05			
Woolwich	-4.81	0.04	Sheffield, Hillsborough	-3.01	0.00			
Caernarfon	-5.36	0.08	Ceredigion	-4.01	0.12			
			Caernarfon	-4.55	0.06			
			Meirionnydd Nant Conwy	-4.56	0.07			

Table H.3. Large residuals (>2 or <-2) for Conservative OLS models (2005-2017) used in Chapter 6

Conservative model 2005			Conservative model 2010			Conservative model 2015			Conservative model 2017		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Kensington & Chelsea	3.54	0.06	Chelsea and Fulham	3.36	0.03	Chelsea and Fulham	3.33	0.02	Chelsea and Fulham	3.24	0.02
Folkestone & Hythe	3.43	0.02	Cities of London and Westminster	2.71	0.02	Blackpool North and Cleveleys	2.71	0.02	Cities of London and Westminster	3.00	0.02
Hammersmith & Fulham	2.80	0.02	North Thanet	2.69	0.01	Westminster North	2.65	0.02	Blackpool South	2.60	0.02
Cities of London & Westminster	2.66	0.02	Kensington	2.50	0.01	Cities of London and Westminster	2.54	0.02	Boston and Skegness	2.55	0.02
Bradford West	2.62	0.02	Blackpool South	2.46	0.02	Battersea	2.42	0.02	Walsall North	2.53	0.01
North Thanet	2.52	0.01	Clacton	2.39	0.03	Kensington	2.36	0.01	Battersea	2.52	0.02
Peterborough	2.29	0.01	Putney	2.33	0.01	Blackpool South	2.31	0.02	Clacton	2.51	0.03
Portsmouth South	2.25	0.01	Westminster North	2.31	0.02	Putney	2.25	0.01	Westminster North	2.42	0.02
Bournemouth East	2.24	0.01	Bournemouth East	2.29	0.00	Plymouth, Sutton and Devonport	2.01	0.01	Stoke-on-Trent Central	2.28	0.01
Merthyr Tydfil & Rhymney	2.18	0.02	Aldridge-Brownhills	2.29	0.01	Birmingham, Erdington	2.00	0.01	Kensington	2.26	0.01
Boston & Skegness	2.14	0.01	Birmingham, Erdington	2.27	0.01	Manchester, Withington	-2.06	0.01	Plymouth, Moor View	2.24	0.01
Lewisham, Deptford	-2.02	0.01	Boston and Skegness	2.07	0.01	Makerfield	-2.18	0.01	Torbay	2.21	0.01
Makerfield	-2.06	0.01	Bournemouth West	2.01	0.01	Sheffield South East	-2.18	0.01	Putney	2.20	0.01
Burnley	-2.20	0.01	Sheffield South East	-2.05	0.01	Burnley	-2.26	0.01	Birmingham, Erdington	2.19	0.01
Blaydon	-2.31	0.01	Castle Point	-2.07	0.01	Ynys Mon	-2.30	0.02	Stoke-on-Trent South	2.18	0.01
Morley & Rothwell	-2.50	0.01	Blyth Valley	-2.13	0.00	Cambridge	-2.43	0.02	Blackpool North and Cleveleys	2.04	0.01
Sheffield, Hillsborough	-2.91	0.00	Carmarthen East and Dinefwr	-2.22	0.02	Rother Valley	-2.49	0.01	Stroud	-2.00	0.00
Wyre Forest	-3.20	0.02	Mitcham and Morden	-2.23	0.01	Blaydon	-2.49	0.01	Brighton, Pavilion	-2.09	0.01
Carmarthen East & Dinefwr	-3.21	0.06	Brighton, Pavilion	-2.37	0.02	North Norfolk	-2.53	0.02	Alyn and Deeside	-2.10	0.01
Ceredigion	-3.50	0.08	Makerfield	-2.48	0.01	Sefton Central	-2.58	0.01	Carmarthen East and Dinefwr	-2.17	0.02
Ynys-Mon	-4.90	0.07	Blaydon	-2.56	0.01	Penistone and Stocksbridge	-2.64	0.01	Wirral South	-2.23	0.01
Caernarfon	-4.91	0.06	Sefton Central	-2.82	0.01	Westmorland and Lonsdale	-2.81	0.02	East Devon	-2.27	0.02
Meirionnydd Nant Conwy	-5.28	0.09	Ceredigion	-2.95	0.07	Leeds North West	-2.90	0.03	Denton and Reddish	-2.30	0.00
			Sheffield, Hallam	-3.20	0.02	Dwyfor Meirionnydd	-3.31	0.03	Blaydon	-2.38	0.01
			Ynys Mon	-3.72	0.07	Hornsey and Wood Green	-3.43	0.03	Leeds North West	-2.69	0.04
			Arfon	-5.14	0.27	Ceredigion	-3.63	0.09	Ynys Mon	-2.78	0.03
			Dwyfor Meirionnydd	-5.19	0.10	Arfon	-3.78	0.22	Ceredigion	-2.90	0.07
						Sheffield, Hallam	-5.52	0.04	Sefton Central	-3.61	0.02
									Sheffield, Hallam	-3.62	0.03
									Dwyfor Meirionnydd	-4.32	0.06
									Arfon	-4.81	0.34

Table H.4. Large residuals (>2 or <-2) for Labour OLS models (1979-1987) used in Chapter 6

Labour model 1979			Labour model 1983			Labour model 1987		
Constituency	Standardised residual	Cook's distance	Constituency	Standardised residual	Cook's distance	Constituency	Standardised residual	Cook's distance
Hemsworth	3.76	0.02	Bolsover	3.48	0.01	Southend East	5.30	0.06
Bolsover	3.49	0.01	Barnsley East	3.44	0.02	Sheffield Hillsborough	4.01	0.02
Rother Valley	3.20	0.01	Hemsworth	3.33	0.02	Rother Valley	3.69	0.01
Barnsley East	2.98	0.01	Barnsley West and Penistone	2.89	0.00	Southend West	3.17	0.02
Bassetlaw	2.90	0.01	Islwyn	2.85	0.01	Sheffield Attercliffe	2.89	0.01
Barnsley West and Penistone	2.75	0.00	Rother Valley	2.77	0.00	Hemsworth	2.81	0.01
Wentworth	2.63	0.00	Windsor and Maidenhead	2.74	0.53	Bolsover	2.43	0.00
North Durham	2.54	0.01	Ceredigion and Pembroke North	2.69	0.04	Liverpool Mossley Hill	2.40	0.02
Sherwood	2.50	0.01	Cynon Valley	2.67	0.01	Barnsley West and Penistone	2.39	0.00
North West Durham	2.50	0.02	Carmarthen	2.66	0.04	South Hams	2.36	0.02
Wrexham	2.46	0.01	Wentworth	2.49	0.00	Barnsley East	2.35	0.01
Windsor and Maidenhead	2.45	0.43	Bassetlaw	2.43	0.01	Coventry North West	2.34	0.01
Islwyn	2.28	0.01	Sheffield Hillsborough	2.37	0.01	Wentworth	2.27	0.00
Sheffield Hillsborough	2.24	0.00	Neath	2.33	0.01	Blyth Valley	2.26	0.01
Don Valley	2.22	0.00	Blaenau Gwent	2.32	0.01	Brecon and Radnor	2.15	0.02
Sheffield Attercliffe	2.15	0.01	Hampstead and Highgate	2.30	0.02	Chesterfield	2.10	0.00
Hampstead and Highgate	2.14	0.02	Makerfield	2.28	0.00	Gosport	-2.01	0.01
Normanton	2.13	0.00	Sherwood	2.24	0.01	Nottingham North	-2.01	0.01
Colne Valley	2.09	0.01	Wigan	2.20	0.01	Walsall North	-2.07	0.01
Ceredigion and Pembroke North	2.03	0.02	St Helens North	2.12	0.00	Meirionnydd nant Conwy	-2.08	0.01
Birmingham Edgbaston	-2.04	0.01	Workington	2.03	0.01	Havant	-2.10	0.00
Knowsley North	-2.18	0.02	Nottingham East	-2.09	0.00	Manchester Central	-2.13	0.02
Walsall North	-2.20	0.01	Ynys Mon	-2.15	0.02	Ribble Valley	-2.62	0.03
Birmingham Erdington	-2.21	0.01	Epsom and Ewell	-2.25	0.02	Southampton Itchen	-3.78	0.02
Birmingham Hall Green	-2.43	0.00	Hackney South and Shoreditch	-2.40	0.01	Ynys Mon	-4.64	0.07
Epsom and Ewell	-2.49	0.03	Nottingham North	-2.60	0.01	Caernarfon	-4.82	0.07
Blyth Valley	-2.78	0.02	Ribble Valley	-4.71	0.24	South Shields	-4.92	0.09
Caernarfon	-3.63	0.05						
Ribble Valley	-3.80	0.15						

Table H.5. Large residuals (>2 or <-2) for Labour OLS models (1992-1997) used in Chapter 6

Labour model 1992			Labour model 1997			Labour model 2001		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Liverpool Mossley Hill	4.00	0.06	Sheffield, Hillsborough	3.01	0.00	Sheffield, Hillsborough	2.47	0.00
Chesterfield	3.10	0.01	Workington	2.61	0.02	Blaydon	2.38	0.01
Blyth Valley	2.82	0.02	Brecon & Radnorshire	2.54	0.03	Liverpool, Wavertree	2.28	0.01
Workington	2.70	0.02	Chesterfield	2.54	0.01	Harrow East	2.20	0.01
Bootle	2.69	0.02	Liverpool, Wavertree	2.49	0.01	Sheffield, Attercliffe	2.19	0.01
Rother Valley	2.34	0.00	Montgomeryshire	2.48	0.04	Crosby	2.17	0.01
Coventry North West	2.34	0.01	Blyth Valley	2.20	0.01	Liverpool, Garston	2.17	0.01
Liverpool Walton	2.33	0.02	Kingswood	2.09	0.00	Workington	2.14	0.01
Brecon & Radnor	2.28	0.02	Wansdyke	2.02	0.00	Wirral South	2.13	0.00
Bolsover	2.22	0.00	Bootle	2.00	0.01	Brent North	2.11	0.01
Normanton	2.16	0.00	Torbay	-2.09	0.01	Montgomeryshire	2.09	0.03
Leyton	2.09	0.01	Hackney South & Shoreditch	-2.14	0.02	Kingswood	2.03	0.00
Birmingham Ladywood	2.03	0.02	Hampshire North East	-2.15	0.00	North Thanet	-2.05	0.01
Newham South	-2.05	0.01	Wolverhampton North East	-2.18	0.01	Torbay	-2.13	0.02
Wolverhampton North East	-2.21	0.01	Cardiff South & Penarth	-2.34	0.00	Rochford & Southend East	-2.15	0.01
Hackney South & Shoreditch	-2.26	0.02	Walsall North	-2.36	0.01	Ynys-Mon	-2.21	0.01
Merthyr Tydfil & Rhymney	-2.27	0.02	Llanelli	-2.51	0.02	Bethnal Green & Bow	-2.27	0.03
Huntingdon	-2.36	0.01	Kensington & Chelsea	-2.63	0.04	Caernarfon	-2.41	0.01
The City of London & Westminster South	-2.36	0.01	Cities of London & Westminster	-3.16	0.03	Ealing Southall	-2.45	0.02
Llanelli	-2.38	0.02	Bradford West	-3.33	0.04	Brentwood & Ongar	-2.65	0.02
Havant	-2.39	0.00	Huntingdon	-3.43	0.01	Meirionnydd Nant Conwy	-2.67	0.02
Gosport	-2.49	0.01	Meirionnydd Nant Conwy	-4.00	0.06	Llanelli	-2.95	0.02
Walsall North	-2.52	0.01	Caernarfon	-4.26	0.05	Cities of London & Westminster	-3.08	0.03
Woolwich	-2.82	0.01	Bethnal Green & Bow	-4.27	0.08	Bradford West	-3.15	0.04
Meirionnydd Nant Conwy	-2.97	0.04	Ynys-Mon	-4.37	0.05	Merthyr Tydfil & Rhymney	-3.34	0.04
Greenwich	-3.01	0.02				Kensington & Chelsea	-4.10	0.09
Rhondda	-3.22	0.08				Wyre Forest	-6.13	0.06
Coventry South East	-4.22	0.03						
Ynys Mon / Anglesey	-4.77	0.06						
Caernarfon	-5.17	0.07						

Table H.6. Large residuals (>2 or <-2) for Labour OLS models (2005-2017) used in Chapter 6

Labour model 2005			Labour model 2010			Labour model 2015			Labour model 2017		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Knowsley South	2.54	0.01	Sefton Central	3.71	0.02	Sefton Central	4.45	0.03	Sefton Central	4.32	0.03
Sheffield, Hillsborough	2.48	0.00	Blaydon	3.10	0.01	Penistone and Stocksbridge	2.76	0.01	Sheffield, Hallam	3.23	0.02
Blaydon	2.28	0.01	City of Durham	2.57	0.01	Wirral South	2.72	0.01	Bootle	2.90	0.02
Crosby	2.28	0.01	Mitcham and Morden	2.50	0.01	Rother Valley	2.64	0.01	Leeds North West	2.74	0.04
Knowsley North & Sefton East	2.12	0.01	Bootle	2.49	0.02	Sheffield, Hallam	2.55	0.01	Wirral South	2.74	0.01
Durham, City of	2.05	0.01	Stroud	2.44	0.01	Makerfield	2.31	0.01	Knowsley	2.43	0.01
Harrow West	2.01	0.01	Sheffield, Hallam	2.43	0.01	Mitcham and Morden	2.29	0.01	Halton	2.36	0.00
Cheltenham	-2.07	0.01	Copeland	2.35	0.02	Workington	2.11	0.01	Garston and Halewood	2.24	0.01
Carmarthen East & Dinefwr	-2.07	0.02	East Ham	2.28	0.01	Wirral West	2.10	0.01	Walthamstow	2.17	0.01
Cities of London & Westminster	-2.15	0.01	Liverpool, Wavertree	2.27	0.01	Copeland	2.10	0.01	Denton and Reddish	2.16	0.00
Bradford West	-2.18	0.02	Denton and Reddish	2.18	0.00	Stroud	2.08	0.01	Liverpool, Wavertree	2.14	0.01
Peterborough	-2.18	0.01	Wirral South	2.18	0.01	East Ham	2.06	0.01	Stroud	2.12	0.00
Torbay	-2.24	0.01	Croydon North	2.15	0.01	Tynemouth	2.03	0.00	Wirral West	2.12	0.01
Llanelli	-2.32	0.01	Walthamstow	2.09	0.01	Ilford South	2.01	0.01	Ellesmere Port and Neston	2.08	0.00
South Staffordshire	-2.40	0.01	Knowsley	2.09	0.01	Merthyr Tydfil and Rhymney	-2.01	0.01	Putney	-2.07	0.01
Merthyr Tydfil & Rhymney	-2.42	0.02	Sheffield South East	2.08	0.01	Bath	-2.08	0.01	Plymouth, Moor View	-2.07	0.01
Folkestone & Hythe	-2.78	0.01	Pudsey	2.04	0.00	Twickenham	-2.20	0.01	South West Surrey	-2.08	0.01
Poplar & Canning Town	-2.83	0.03	North East Somerset	2.04	0.00	Carshalton and Wallington	-2.23	0.01	Isle of Wight	-2.13	0.01
Kensington & Chelsea	-3.13	0.05	Putney	-2.02	0.01	Kingston and Surbiton	-2.24	0.00	Kensington	-2.17	0.01

Birmingham, Sparkbrook & Small Heath	-3.22	0.07	Boston and Skegness	-2.22	0.02	Colchester	-2.25	0.01	Stoke-on-Trent Central	-2.19	0.01
Bethnal Green & Bow	-3.64	0.06	Bournemouth East	-2.23	0.00	Chippenham	-2.25	0.00	Carmarthen East and Dinefwr	-2.29	0.02
Wyre Forest	-4.11	0.03	Merthyr Tydfil and Rhymney	-2.25	0.02	Walsall North	-2.26	0.01	Boston and Skegness	-2.39	0.02
Blaenau Gwent	-7.07	0.13	Northampton South	-2.27	0.01	Birmingham, Erdington	-2.27	0.01	Battersea	-2.42	0.02
			Poplar and Limehouse	-2.38	0.02	Portsmouth South	-2.36	0.02	East Devon	-2.62	0.02
			Kensington	-2.41	0.01	St Austell and Newquay	-2.39	0.01	Walsall North	-2.70	0.01
			Walsall North	-2.42	0.01	Wells	-2.42	0.01	Clacton	-2.76	0.04
			Cities of London and Westminster	-2.57	0.02	Rhondda	-2.62	0.03	Cities of London and Westminster	-2.82	0.02
			Wyre Forest	-3.07	0.01	Eastbourne	-2.73	0.02	Chelsea and Fulham	-2.97	0.02
			Chelsea and Fulham	-3.21	0.02	Cheltenham	-2.91	0.01	Brighton, Pavilion	-4.80	0.07
						Torbay	-3.77	0.03			

Appendix I. QQ plots and plots of fitted values against studentised residuals for OLS models (Chapter 6)

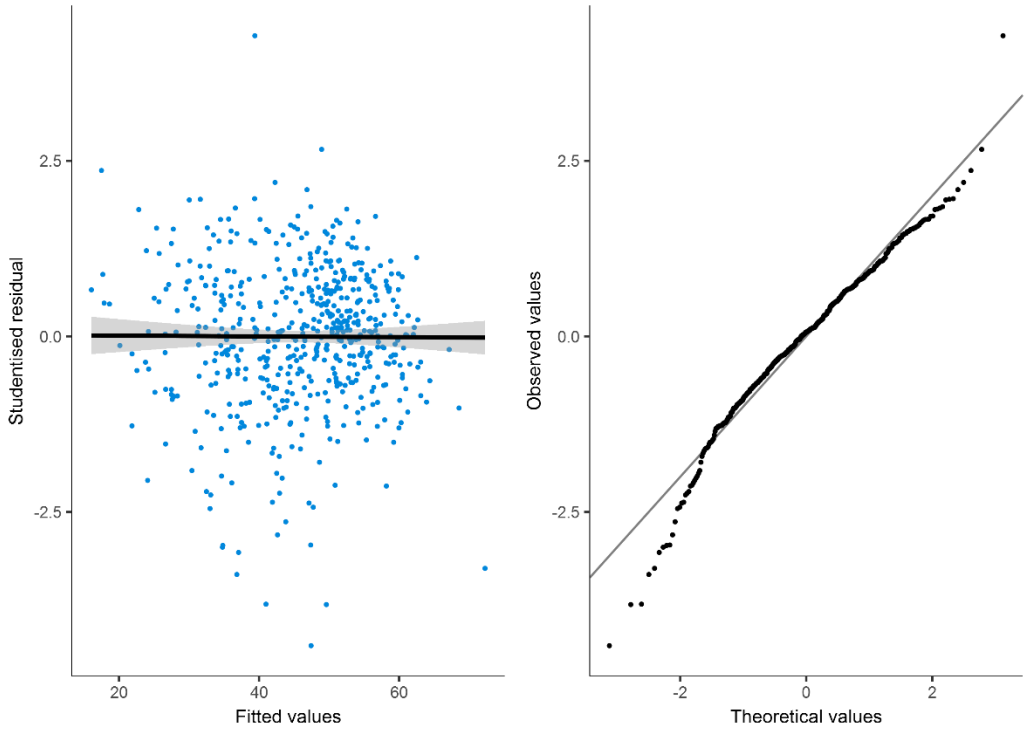

Figure I.1. Plots of fitted values against studentised residuals and QQ-plots for the 1979 model predicting Conservative vote shares for parliamentary constituencies

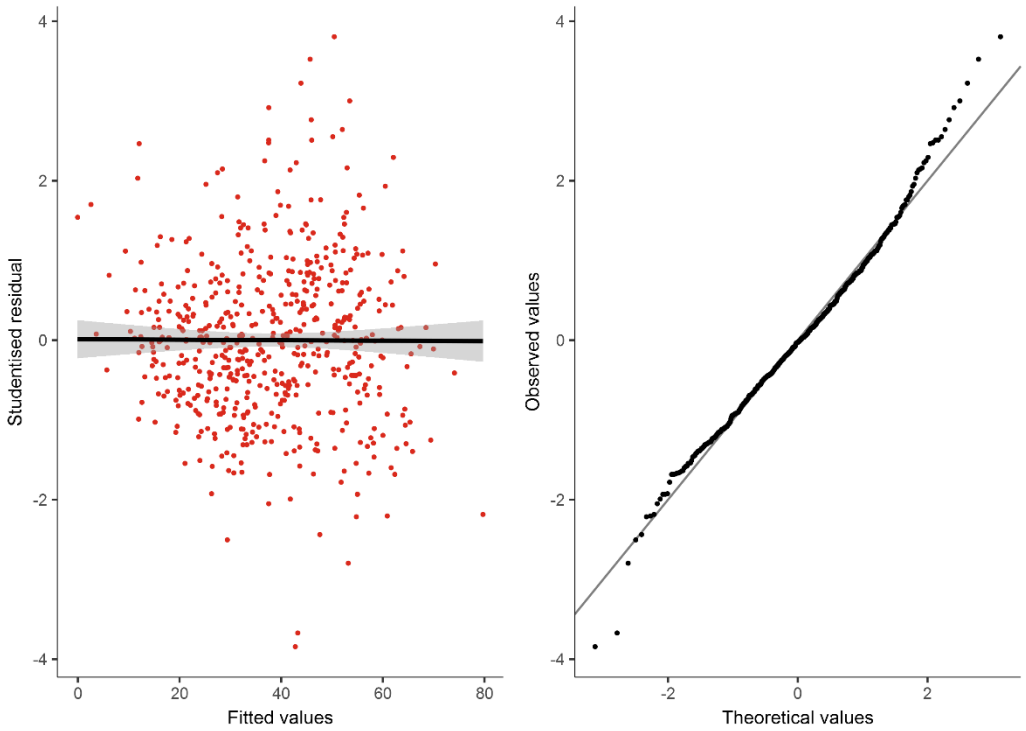

Figure I.2. Plots of fitted values against studentised residuals and QQ-plots for the 1979 model predicting Labour vote shares for parliamentary constituencies

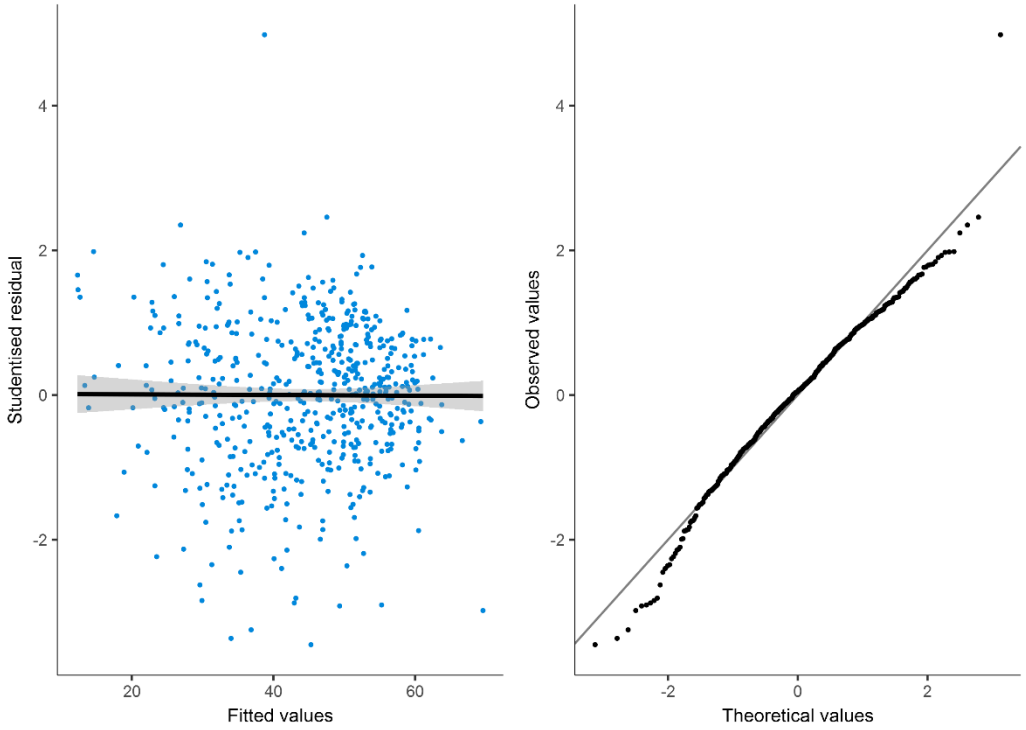

Figure I.3. Plots of fitted values against studentised residuals and QQ-plots for 1983 models predicting Conservative vote shares for parliamentary constituencies

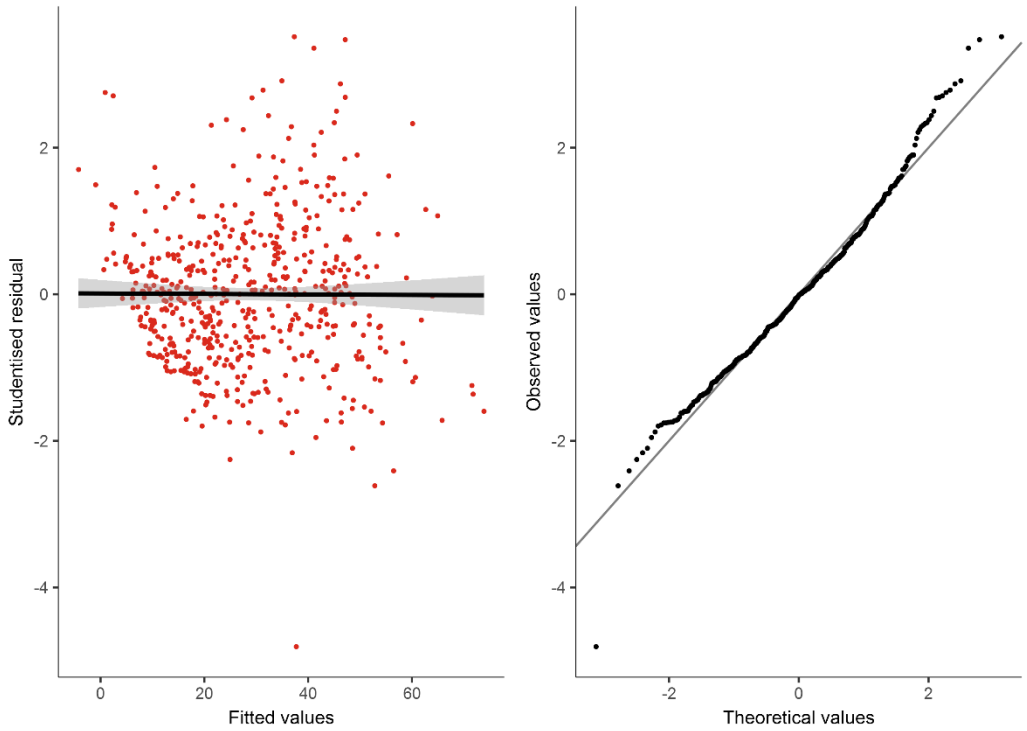

Figure I.4. Plots of fitted values against studentised residuals and QQ-plots for the 1983 model predicting Labour vote shares for parliamentary constituencies

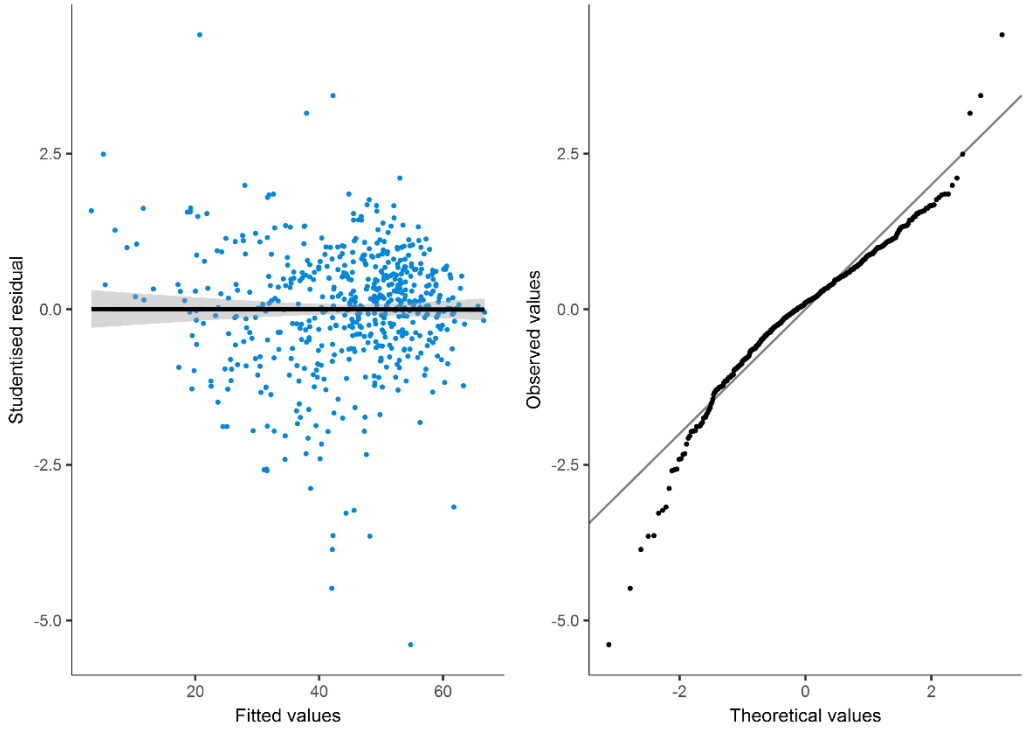

Figure I.5. Plots of fitted values against studentised residuals and QQ-plots for the 1987 model predicting Conservative vote shares for parliamentary constituencies

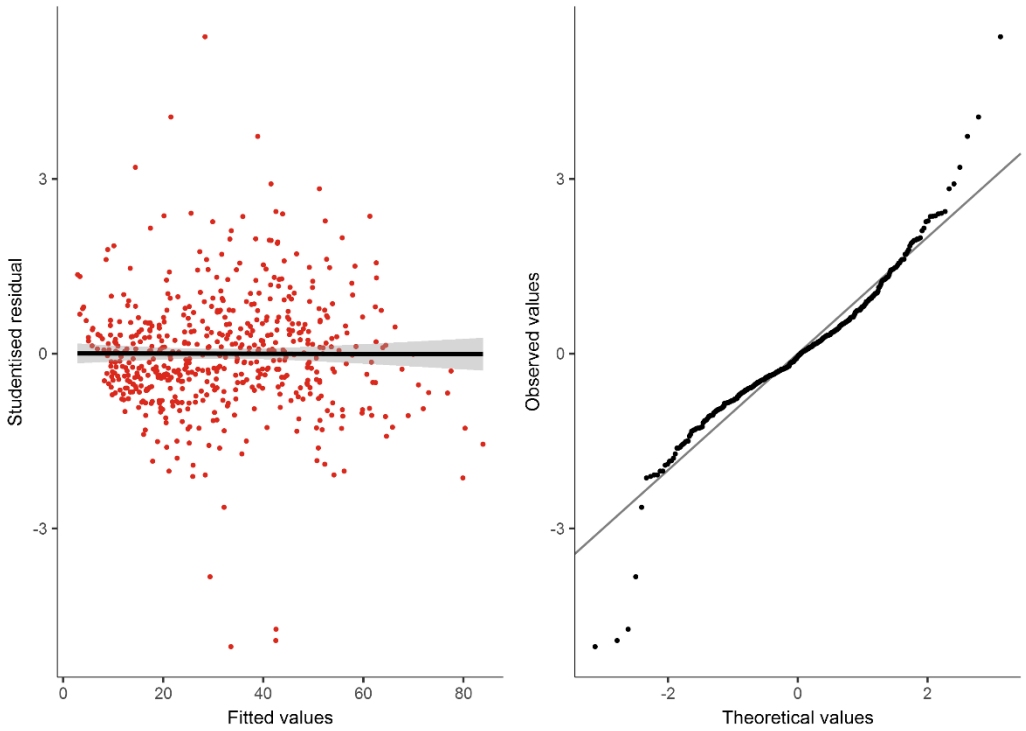

Figure I.6. Plots of fitted values against studentised residuals and QQ-plots for the 1987 model predicting Labour vote shares for parliamentary constituencies

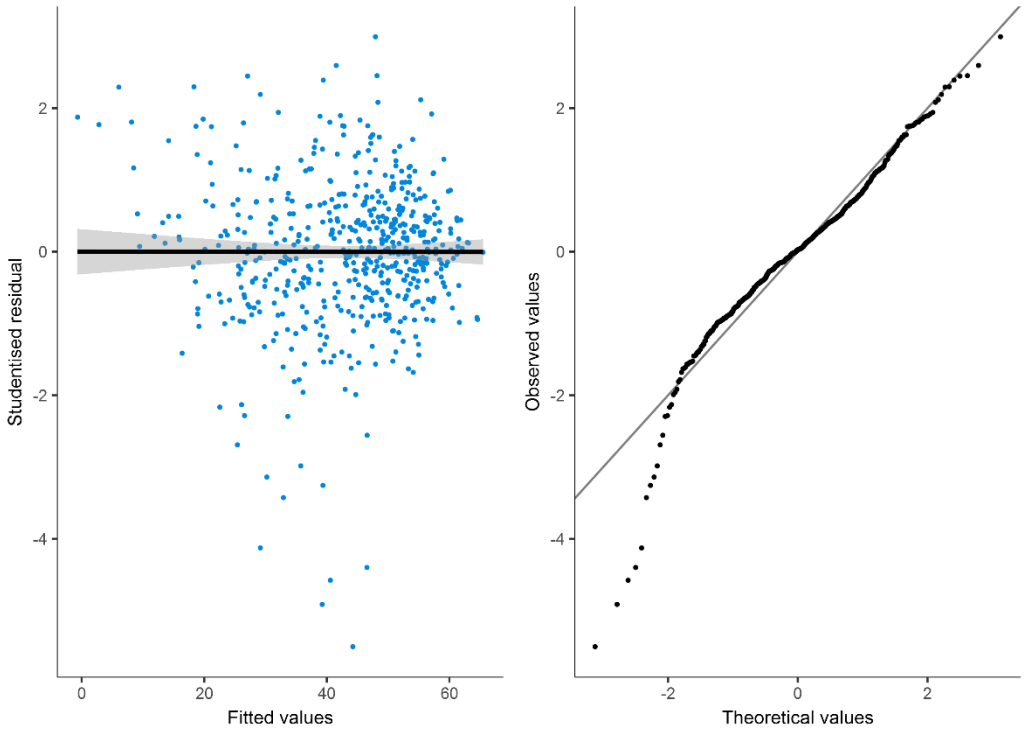

Figure I.7. Plots of fitted values against studentised residuals and QQ-plots for the 1992 model predicting Conservative vote shares for parliamentary constituencies

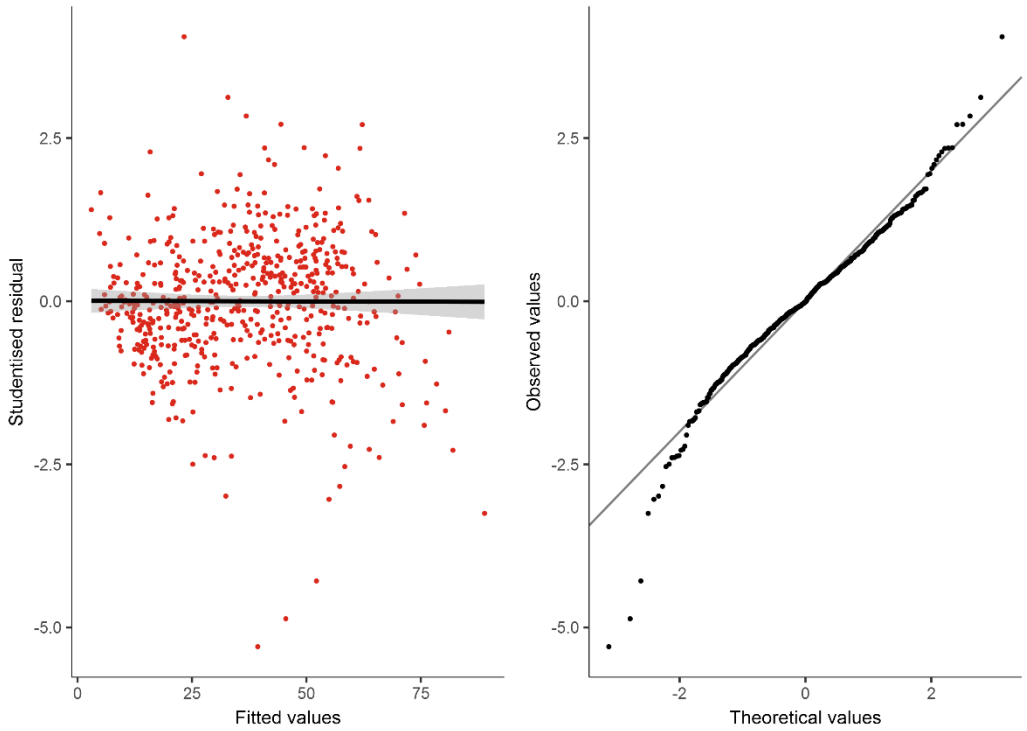

Figure I.8. Plots of fitted values against studentised residuals and QQ-plots for the 1992 model predicting Labour vote shares for parliamentary constituencies

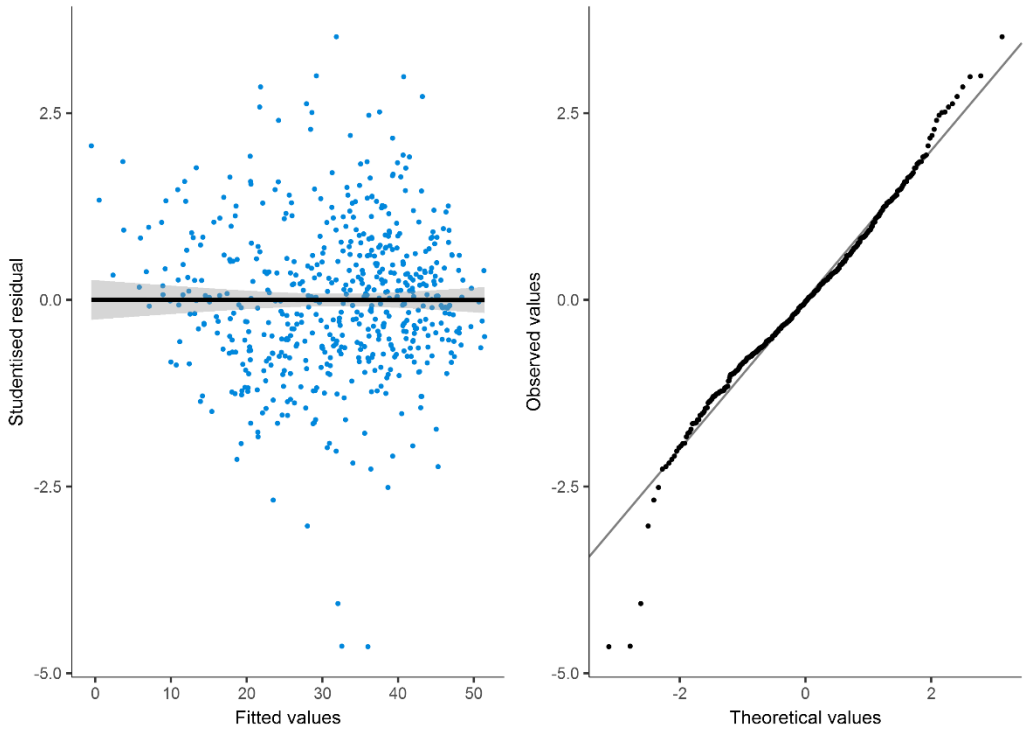

Figure I.9. Plots of fitted values against studentised residuals and QQ-plots for the 1997 model predicting Conservative vote shares for parliamentary constituencies

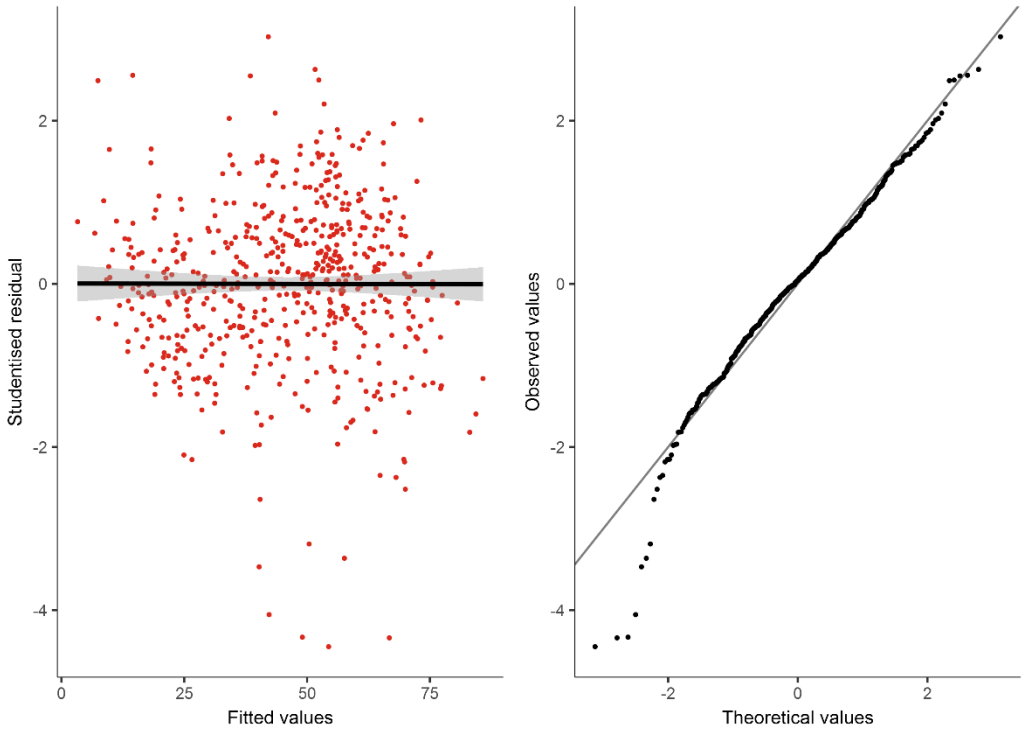

Figure I.10. Plots of fitted values against studentised residuals and QQ-plots for the 1997 model predicting Labour vote shares for parliamentary constituencies

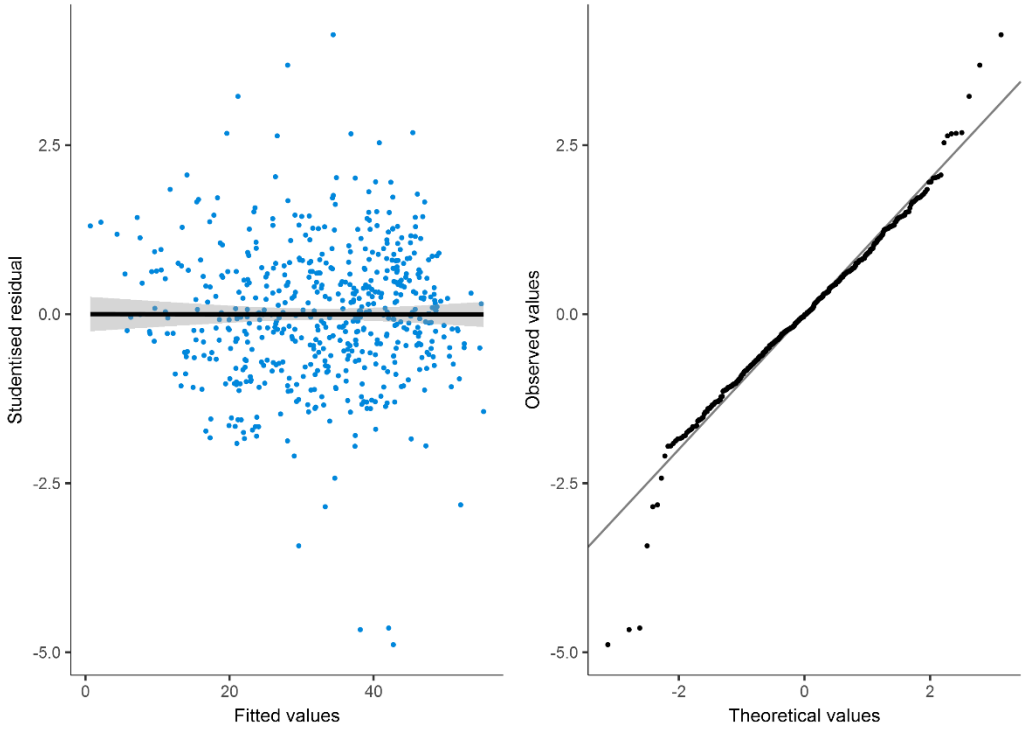

Figure I.11. Plots of fitted values against studentised residuals and QQ-plots for the 2001 model predicting Conservative vote shares for parliamentary constituencies

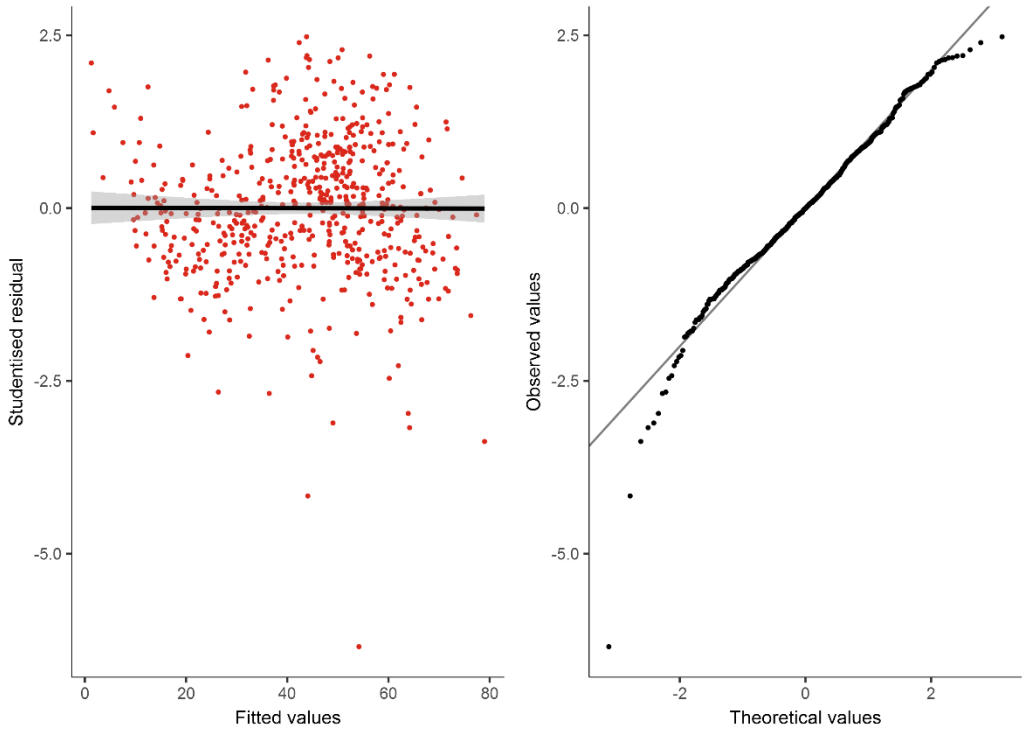

Figure I.12. Plots of fitted values against studentised residuals and QQ-plots for the 2001 model predicting Labour vote shares for parliamentary constituencies

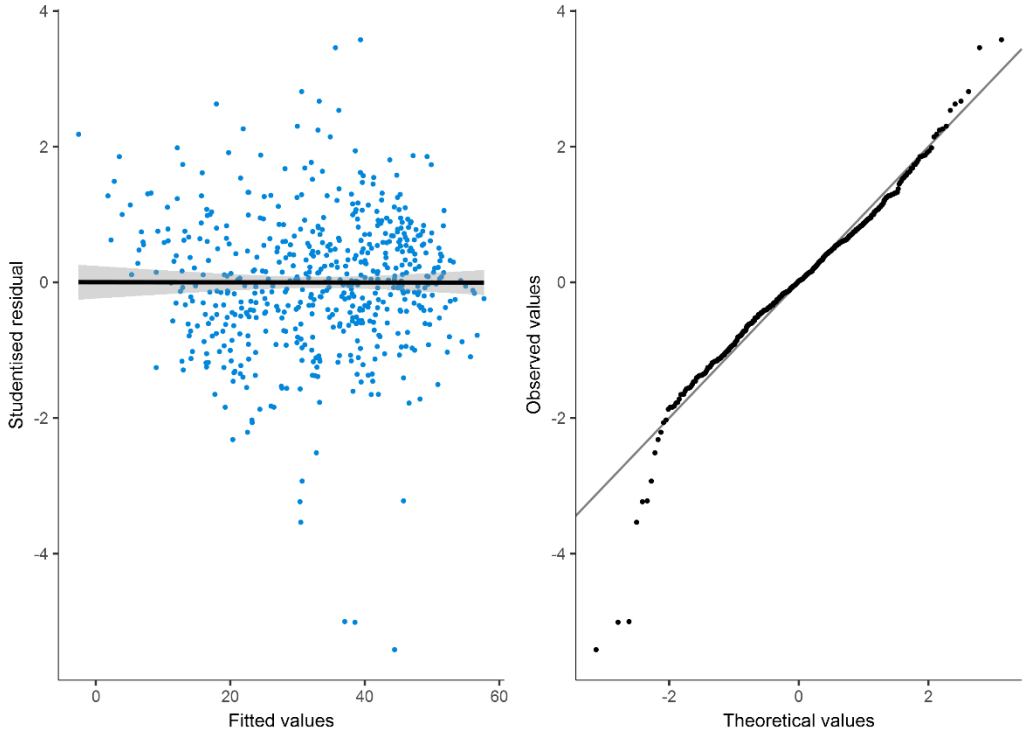

Figure I.13. Plots of fitted values against studentised residuals and QQ-plots for the 2005 model predicting Conservative vote shares for parliamentary constituencies

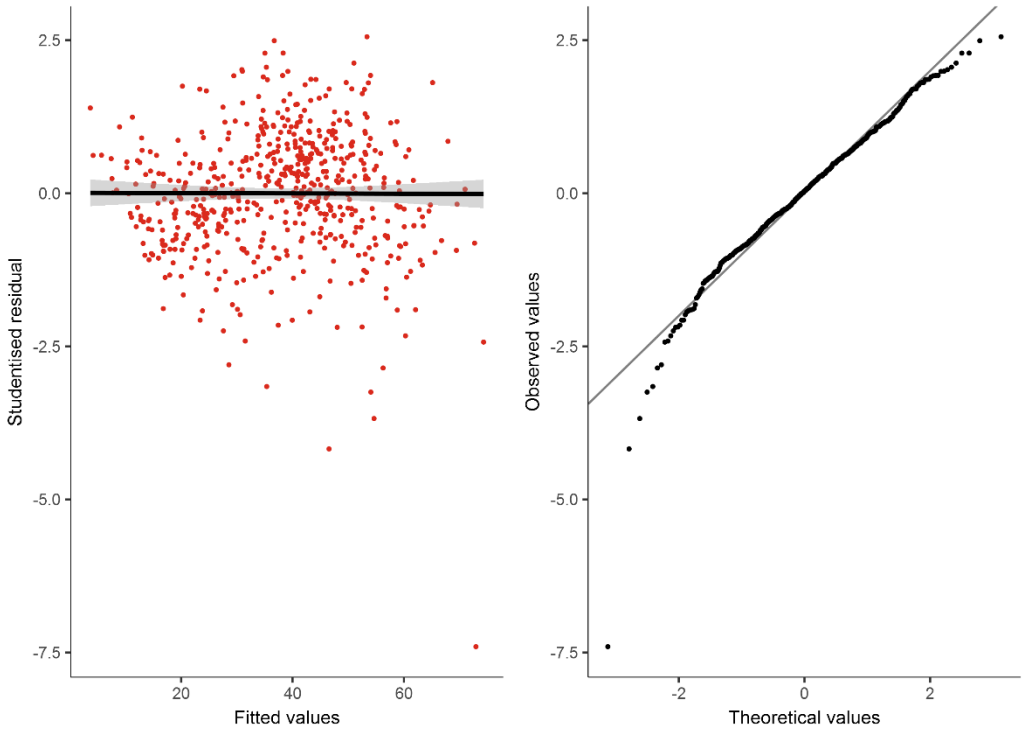

Figure I.14. Plots of fitted values against studentised residuals and QQ-plots for the 2005 model predicting Labour vote shares for parliamentary constituencies

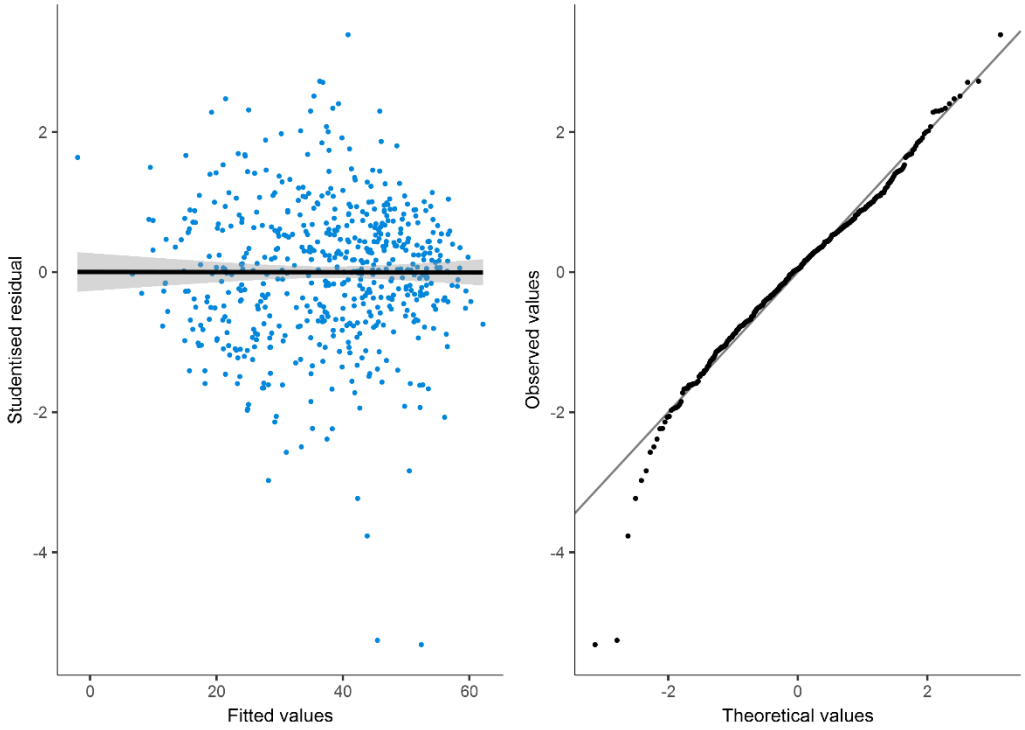

Figure I.15. Plots of fitted values against studentised residuals and QQ-plots for the 2010 model predicting Conservative vote shares for parliamentary constituencies

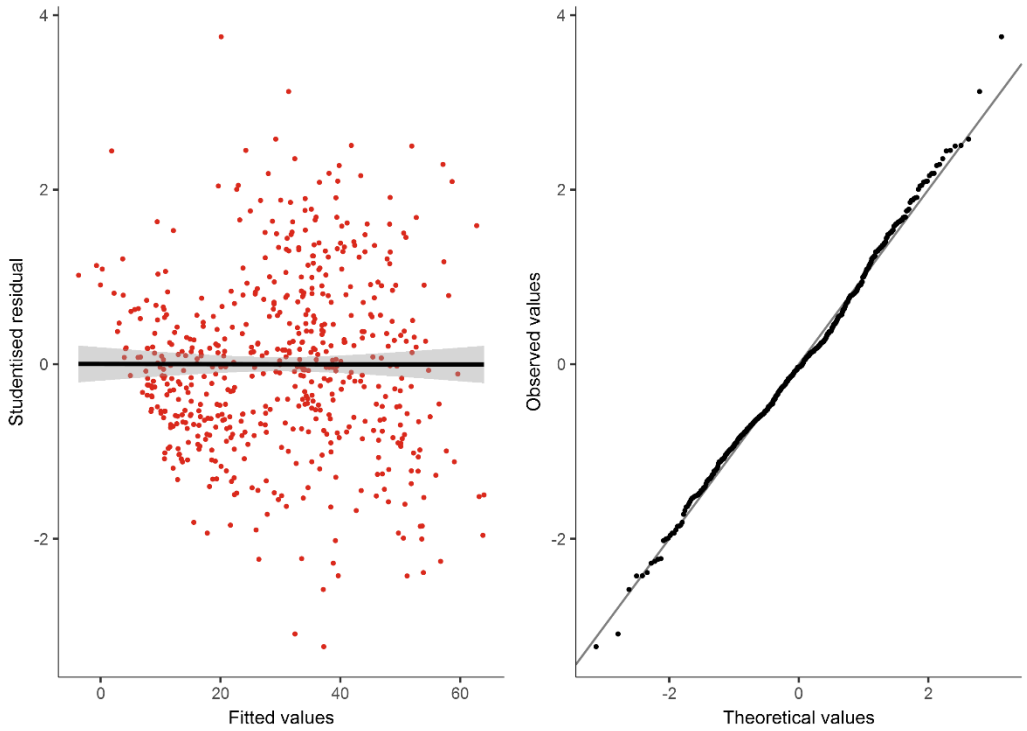

Figure I.16. Plots of fitted values against studentised residuals and QQ-plots for the 2010 model predicting Labour vote shares for parliamentary constituencies

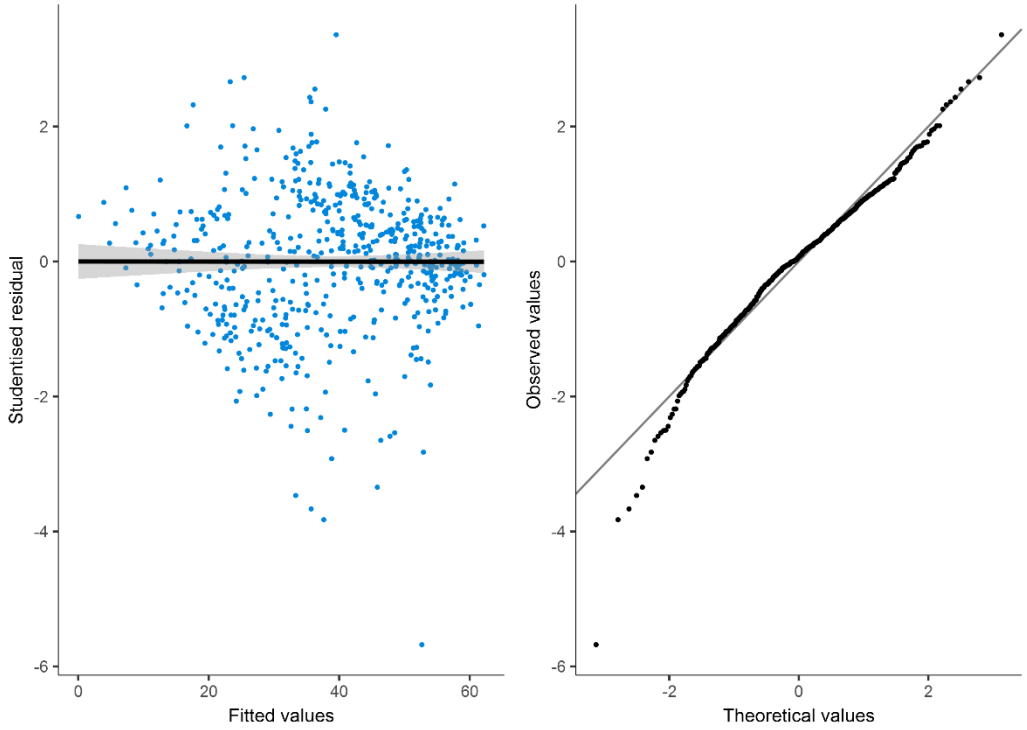

Figure I.17. Plots of fitted values against studentised residuals and QQ-plots for the 2015 model predicting Conservative vote shares for parliamentary constituencies

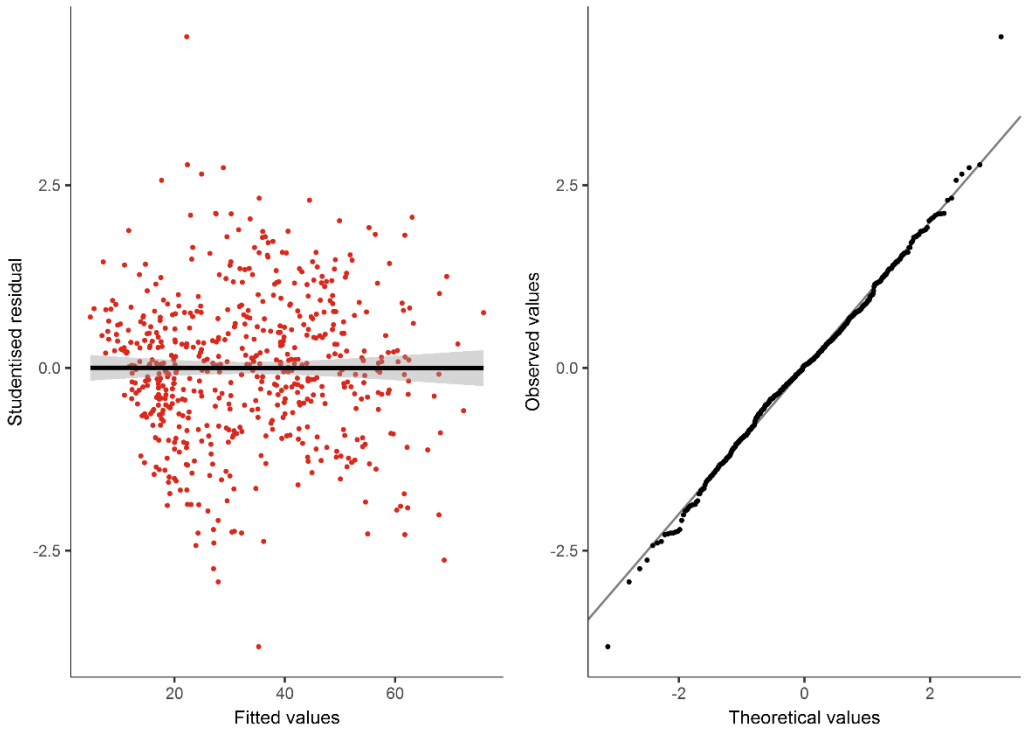

Figure I.18. Plots of fitted values against studentised residuals and QQ-plots for the 2015 model predicting Labour vote shares for parliamentary constituencies

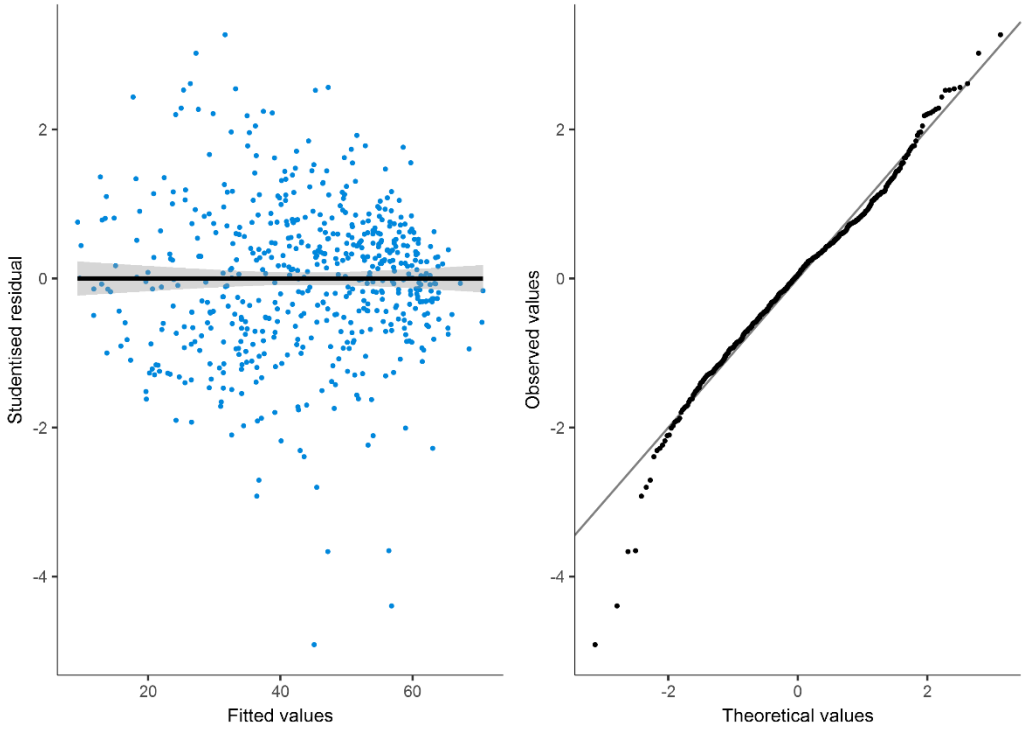

Figure I.19. Plots of fitted values against studentised residuals and QQ-plots for the 2017 model predicting Conservative vote shares for parliamentary constituencies

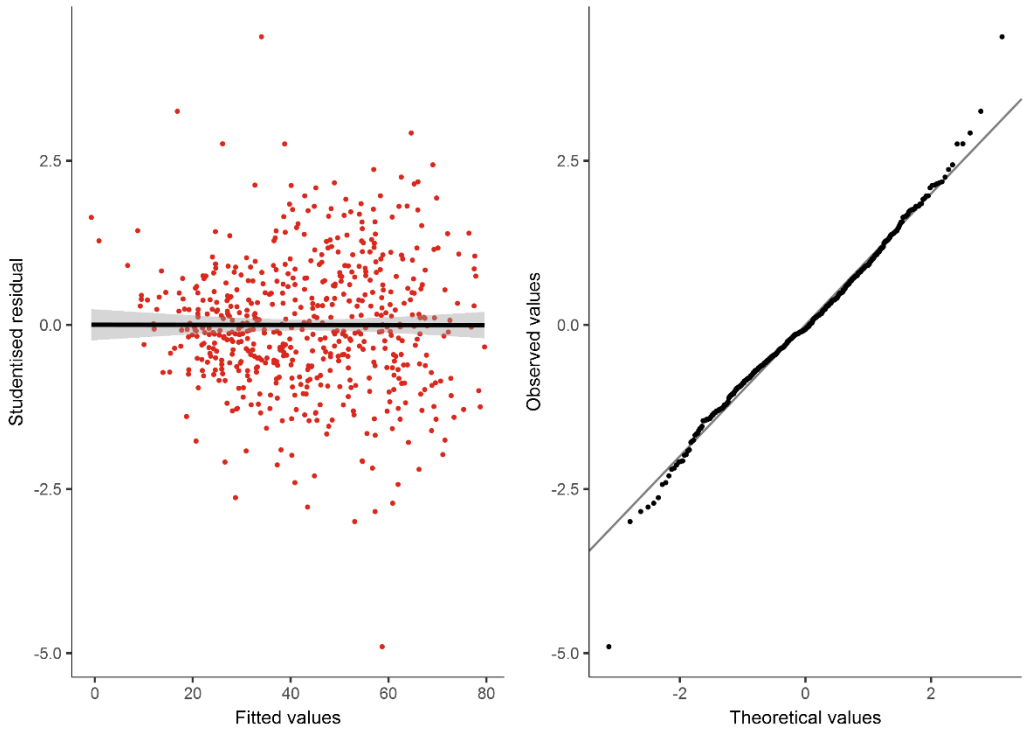

Figure I.20. Plots of fitted values against studentised residuals and QQ-plots for the 2015 model predicting Labour vote shares for parliamentary constituencies

Appendix J. Tables from BES wave 14

Respondents to BES Wave 14 Internet Panel were filtered so that only included were those belonging to three categories: poorer ethnic minorities in 'cosmopolitan' areas, white, (self-identified) working class in non-'cosmopolitan' areas and white, (occupational) working class in non-'cosmopolitan' areas. These groupings were created as follows:

Poorer ethnic minorities in 'cosmopolitan' areas: non-White British ethnicity whose respective constituency is lower than the mean distance from the closest 'cosmopolitan' local authority and whose gross household income is below £30,000 per year.

White, (self-identified) working class in non-'cosmopolitan' areas: White British ethnicity whose respective constituency is greater than the mean distance from the closest 'cosmopolitan' local authority and who self-identify as working class.

White, (occupational) working class in non-'cosmopolitan' areas: White British ethnicity whose respective constituency is greater than the mean distance from the closest 'cosmopolitan' local authority and whose occupation is classified as semi-routine or routine.

Table J.1. The counts and proportions of respondents belonging to different demographic groups who express different feelings towards the two major parties

		Labour		Conservatives	
Demographic group	**emotions**	**n**	**per cent**	**n**	**per cent**
poorer ethnic minorities in 'cosmopolitan' areas	**angry**	88	19.26	188	36.65
	hopeful	139	30.42	85	16.57
	afraid	64	14.00	142	27.68
	proud	77	16.85	45	8.77
	none of these	89	19.47	53	10.33
white, (self-identified) working class in non-'cosmopolitan' areas	**angry**	155	26.27	195	31.05
	hopeful	148	25.08	177	28.18
	afraid	95	16.10	133	21.18
	proud	69	11.69	69	10.99
	none of these	123	20.85	54	8.60
white, (occupational) working class in non-'cosmopolitan' areas	**angry**	281	24.06	392	30.89
	hopeful	308	26.37	373	29.39
	afraid	251	21.49	250	19.70
	proud	125	10.70	133	10.48
	none of these	203	17.38	121	9.54

Source: British Election Study data (Fieldhouse *et al.*, 2018), responses to *partyEmotions* question: 'Now we would like to know something about the feelings you have towards each of the parties. Which of these emotions do you feel about each of the parties?'

Table J.2. The counts and proportions of respondents according to their self-perceived likelihood of there being times when they do not have enough money in the next twelve months to cover day to day living costs

Demographic group	Likelihood	n	per cent
poorer ethnic minorities in 'cosmopolitan' areas	Very likely	31	11.03
	Fairly likely	46	16.37
	Neither likely nor unlikely	65	23.13
	Fairly unlikely	64	22.78
	Very unlikely	51	18.15
	Don't know	24	8.54
white, (self-identified) working class in non-'cosmopolitan' areas	Very likely	59	6.77
	Fairly likely	11 6	13.32
	Neither likely nor unlikely	16 5	18.94
	Fairly unlikely	25 1	28.82
	Very unlikely	24 0	27.55
	Don't know	40	4.59
white, (occupational) working class in non-'cosmopolitan' areas	Very likely	69	7.31
	Fairly likely	11 8	12.50
	Neither likely nor unlikely	19 5	20.66
	Fairly unlikely	26 9	28.50
	Very unlikely	25 9	27.44
	Don't know	34	3.60

Source: British Election Study data (Fieldhouse *et al.*, 2018), responses to *risksEcon* question: 'During the next 12 months, how likely or unlikely is it that there will be times when you don't have enough money to cover your day to day living costs?'

Appendix K. Models used to predict 1979 vote shares at 2017 boundaries

Table K.1. Comparing the regression output from model (A) – a basic model based on the 1979 model used in Chapter 6 – and model (B) – a model incorporating a Wales and mining term. Both models are here predicting Labour vote shares at the 1979 constituency boundaries.

	Labour vote share (%)	
Variables {ref}	**Model (A)**	**Model (B)**
constant	-96.719***	-92.550***
	(9.403)	(8.835)
unemployment rate	0.247**	0.197*
	(0.118)	(0.110)
manufacturing	0.196***	0.186***
	(0.042)	(0.039)
social renters	0.260***	0.237***
	(0.031)	(0.029)
degree-level qualifications	-0.691***	-0.721***
	(0.081)	(0.075)
aged 16 to 29	1.326***	1.545***
	(0.238)	(0.219)
aged 65 plus	-0.282***	-0.140
	(0.101)	(0.094)
ethnic diversity	0.107**	0.144***
	(0.049)	(0.045)
poor health	6.322***	4.272***
	(0.497)	(0.503)
urban-ness	0.938***	0.871***
	(0.105)	(0.098)
Wales {no} yes		5.686***
		(1.233)
mining {no} yes		7.380***
		(0.842)
N	560	560
Adjusted R^2	0.802	0.833

Notes: ****Significant at the 1 percent level.*
***Significant at the 5 percent level.*
**Significant at the 10 percent level.*

Table K.2. Comparing the regression output from model (A) – a basic model based on the 1979 model in Chapter 6 – and model (B) – a model incorporating a Wales and mining term. Both models are here predicting Conservative vote shares at the 1979 constituency boundaries

	Conservative vote share (%)	
Variables {ref}	**Model (A)**	**Model (B)**
constant	81.671***	82.003***
	(8.606)	(7.707)
unemployment rate	-0.343***	-0.246**
	(0.108)	(0.096)
manufacturing	-0.047	-0.050
	(0.038)	(0.034)
social renters	-0.239***	-0.227***
	(0.028)	(0.025)
degree-level qualifications	0.470***	0.516***
	(0.074)	(0.065)
aged 16 to 29	-0.704***	-0.947***
	(0.217)	(0.191)
aged 65 plus	0.181**	0.011
	(0.092)	(0.082)
ethnic diversity	-0.083*	-0.123***
	(0.044)	(0.039)
poor health	-5.323***	-2.932***
	(0.455)	(0.439)
urban-ness	-0.074	-0.049
	(0.096)	(0.085)
Wales {no} yes		-9.117***
		(1.076)
mining {no} yes		-6.837***
		(0.735)
N	560	560
Adjusted R^2	0.708	0.776
Notes:	****Significant at the 1 percent level.*	
	***Significant at the 5 percent level.*	
	**Significant at the 10 percent level.*	

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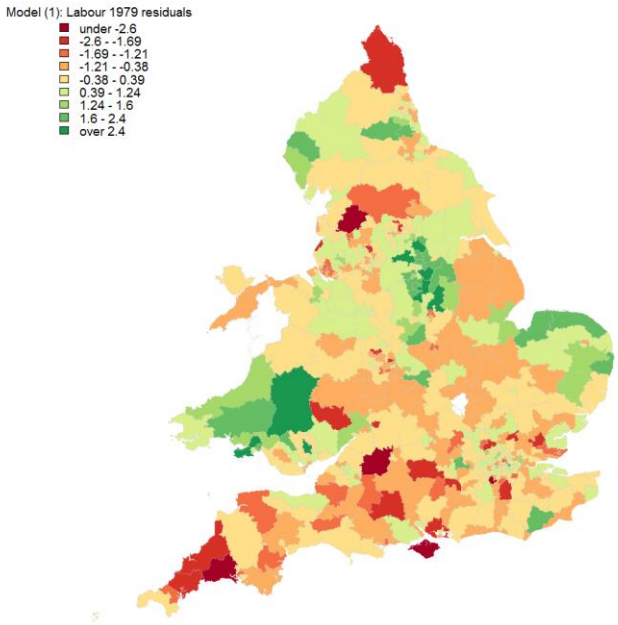

Figure K.1. Standardised residuals for Labour vote shares for model (A) in 1979

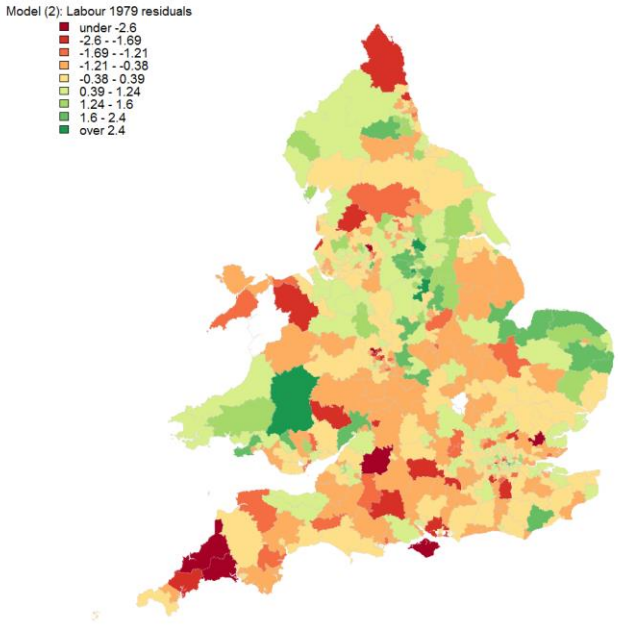

Figure K.2. Standardised residuals for Labour vote shares for model (B) in 1979

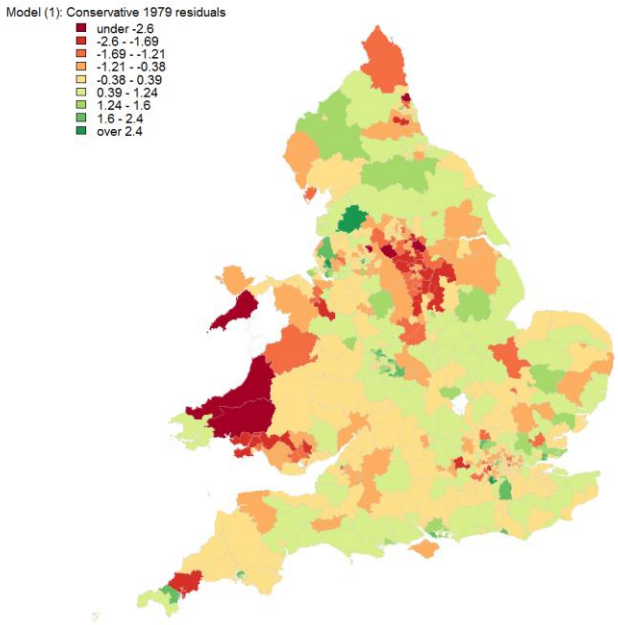

Figure K.3. Standardised residuals for Conservative vote shares for model (A) in 1979

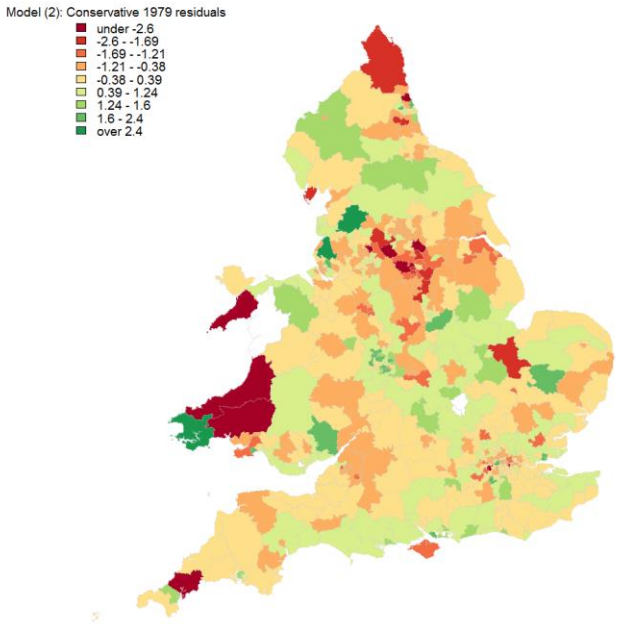

Figure K.4. Standardised residuals for Conservative vote shares for model (B) in 1979

Appendix L. Positive and negative change rankings of constituencies (Chapter 7)

Table L.1. Top 50 constituencies that have had the most positive relative socioeconomic change between 1979 and 2017. Standardised scores for each variable used in the calculation are also shown.

Constituency	Decline rank	Relative decline score	Zscore_degree	Zscore_unemploymentrate	Zscore_income	Zscore_deprived	Zscore_professionaljobs	Zscore_businesscount
Cities of London and Westminster	1	-3.4	-3.56	-0.03	-2	0.78	-1.2	-16.42
Poplar and Limehouse	2	-2.51	-3.93	-1.37	0.73	-0.13	-4.29	-2.38
Bermondsey and Old Southwark	3	-2.36	-4.73	-1.03	-0.96	0.36	-4.04	-2.38
Birmingham, Ladywood	4	-2.23	-1.33	-3.09	-1.57	-2.61	-2.07	-4.41
Bethnal Green and Bow	5	-2.05	-3.66	-0.87	-1.28	-0.38	-3.05	-2.39
Islington South and Finsbury	6	-2.01	-3.71	-0.52	-0.72	-0.19	-3.99	-3.66
Hackney South and Shoreditch	7	-1.94	-3.31	-0.54	-0.14	-0.48	-2.73	-4.85
Manchester Central	8	-1.9	-1.94	-3.81	0.74	-1.76	-1.58	-4.61
Battersea	9	-1.74	-4.82	-1.58	-0.57	0.5	-4.43	-0.57
Hackney North and Stoke Newington	10	-1.55	-2.81	-1.28	-0.58	-0.15	-2.82	-2
Holborn and St Pancras	11	-1.54	-2.12	-0.52	-0.88	0.24	-0.48	-5.37
Vauxhall	12	-1.34	-3.83	-1.69	1.23	0.36	-3.25	-1.4
West Ham	13	-1.21	-1.8	-0.34	-1.2	-0.68	0.12	-3.24
Islington North	14	-1.2	-2.99	-1.21	0.39	0.1	-3.39	-0.69
Milton Keynes South	15	-1.19	-0.87	-0.37	-0.22	1.13	-1.31	-0.81
Lewisham, Deptford	16	-1.16	-3.06	-0.48	-1.24	0.2	-1.89	-0.74
Chelsea and Fulham	17	-1.11	-3.51	-0.41	-0.37	0.28	-2.17	-0.9
Tooting	18	-1.09	-3.5	-0.59	-0.65	0.57	-2.7	-0.72
Wimbledon	19	-1.06	-3.02	0.64	-1.9	0.59	-2.67	-1.09
Hammersmith	20	-0.99	-3.23	-0.52	-0.07	0.25	-1.88	-0.92
Hampstead and Kilburn	21	-0.96	-2.86	-0.85	-0.37	0.78	-1.62	-1.18
Liverpool, Riverside	22	-0.83	-0.64	-4.89	2.32	-2.83	0.19	-0.11
Bristol West	23	-0.79	-1.28	-1.62	0.05	0.98	-0.7	-1.15
Knowsley	24	-0.79	0.86	-4.29	-0.78	-4.03	0.21	0.15
Oxford East	25	-0.77	-1.73	-0.31	-2.52	0.95	-0.3	0.2
Manchester, Withington	26	-0.77	-1.7	-1.22	-0.71	-0.27	-0.94	-0.19
South Northamptonshire	27	-0.76	-0.88	0.59	-0.41	0.94	-1.44	-0.41
Putney	28	-0.75	-3.42	-0.26	0.31	0.65	-1.84	-0.48
Camberwell and Peckham	29	-0.74	-2.61	-0.21	-0.36	0.13	-1.51	-0.51
Greenwich and Woolwich	30	-0.74	-2.01	0.15	0.16	0.14	-1.31	-1.18

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Constituency	Decline rank	Relative decline score	Zscore_degree	Zscore_unemploymentrate	Zscore_income	Zscore_deprived	Zscore_professionaljobs	Zscore_businesscount
Milton Keynes North	31	-0.73	-0.12	0.3	-0.38	0.98	0.09	-0.8
Cardiff South and Penarth	32	-0.72	-1.19	-1.85	0.76	-0.37	-1.1	-0.13
South East Cambridgeshire	33	-0.7	-1.21	0.59	-1.37	1.01	-1.56	0.08
Hornsey and Wood Green	34	-0.69	-2.21	0.21	-0.38	0.83	-1.43	-1.32
Streatham	35	-0.69	-2.82	-0.2	0.16	0.53	-1.51	-0.64
Brighton, Pavilion	36	-0.69	-2	-0.48	-0.32	0.5	-1.16	-0.6
Liverpool, West Derby	37	-0.65	0.61	-2.65	-0.52	-4	-0.01	0.33
Kenilworth and Southam	38	-0.65	-0.61	0.02	-4.54	0.9	-0.83	0.46
Truro and Falmouth	39	-0.59	-0.52	-1.76	-0.86	-1.04	0.38	0.27
Corby	40	-0.59	0.31	-3.52	-0.44	0.25	0.36	-0.31
Sheffield Central	41	-0.59	-0.61	-2.27	-0.11	-0.46	-0.45	-0.08
Brentford and Isleworth	42	-0.58	-2.06	0.65	-0.98	1.05	0.12	-1.58
Warrington South	43	-0.58	-0.47	-0.22	-0.8	-0.54	-1.4	-0.16
East Ham	44	-0.57	-1.81	1.03	0.01	-0.31	1.4	-1.45
Carmarthen East and Dinefwr	45	-0.56	0.09	-0.92	-1.65	-1.22	-0.85	0.67
Leeds Central	46	-0.56	-0.55	-1.02	0.75	-1.81	-0.44	-0.58
Hove	47	-0.56	-1.9	-0.17	-0.49	0.19	-1.2	-0.26
Pudsey	48	-0.55	-0.89	0.3	-1.38	-1.02	-2.02	0.19
Ealing Central and Acton	49	-0.54	-2.28	0.33	-0.78	1.11	0.25	-1.82
Salford and Eccles	50	-0.53	-0.67	-1.94	-0.33	-1.05	-0.74	-0.56

Table L.2. Top 50 constituencies that have had the most negative relative socioeconomic change between 1979 and 2017. Standardised scores for each variable used in the calculation are also shown.

Constituency	Decline rank	Relative decline score	Zscore_degree	Zscore_unemploymentrate	Zscore_income	Zscore_deprived	Zscore_professionaljobs	Zscore_businesscount
Cheadle	572	0.92	0.42	0.91	2.48	0.43	0.84	0.1
Aldershot	571	0.92	0.25	1.32	0.97	1.42	2.12	0.26
North East Hampshire	570	0.84	-0.26	0.99	3.35	1.3	1.1	0.21
Great Grimsby	569	0.81	1.26	0.84	1.04	-0.9	1.54	0.63
Gravesham	568	0.79	1.14	0.59	1.54	0.66	1.22	-0.24
Clacton	567	0.75	1.85	0.36	0.11	0.19	2.9	0.67
Hornchurch and Upminster	566	0.72	0.69	1.35	0.57	0.55	0.9	-0.28
Southend West	565	0.7	0.62	0.35	2.42	0.54	0.17	0.03
South Basildon and East Thurrock	564	0.69	1.2	0.42	0.74	0.98	0.79	-0.06
Crawley	563	0.67	0.63	1.28	1.64	1.65	0.52	-0.03
Lewes	562	0.67	0.07	0.96	2.09	0.92	0.83	0.19
Spelthorne	561	0.64	0.23	1.13	0.78	1.16	0.73	-0.21
Maidstone and The Weald	560	0.64	0.45	0.88	1.44	1.02	0.68	0.21
Croydon South	559	0.63	0.09	1.74	0.18	1.14	1.35	-0.52
Epsom and Ewell	558	0.63	0.24	1.35	0.21	1.2	1.21	-0.23
Gillingham and Rainham	557	0.62	1.08	0.81	0.08	0.42	1.19	0.26
Hemsworth	556	0.61	1.27	0.67	1.45	-1.14	0.62	0.37
Hayes and Harlington	555	0.61	-0.37	1.8	1.63	1.4	1.24	-0.82
Mole Valley	554	0.61	-0.43	1.07	1.65	1.23	0.12	0.14
Runnymede and Weybridge	553	0.61	-0.53	0.83	2.84	0.95	0.3	-0.18
Sevenoaks	552	0.61	0.15	0.72	1.49	0.93	0.17	0.15
Surrey Heath	551	0.6	0.08	0.96	0.62	1.39	0.82	0.13
Old Bexley and Sidcup	550	0.59	0.53	1.37	-0.87	0.68	1.48	-0.03
Maldon	549	0.59	1.21	0.79	0.65	1.03	1.06	0.29
Boston and Skegness	548	0.58	1.44	-0.35	0.77	-0.11	2.46	0.56
Orpington	547	0.58	0.55	1.38	-1.3	1.11	1.28	-0.17
Bexleyheath and Crayford	546	0.57	0.42	1.43	0.36	0.4	0.79	-0.07
Haltemprice and Howden	545	0.56	0.69	0.75	1.7	0.4	0.29	0.27
Bedford	544	0.56	0.57	1.1	0.48	0.89	0.66	0.02
Bognor Regis and Littlehampton	543	0.56	1.04	0.32	0.6	0.76	1.67	0.45
Chingford and Woodford Green	542	0.55	0.04	1.54	1.83	0.5	0.17	-0.51
Nottingham North	541	0.55	0.75	1.16	0.75	-0.07	-0.54	0.45
Chatham and Aylesford	540	0.54	0.94	0.31	1.07	0.59	0.76	0.25
Hazel Grove	539	0.53	1	0.37	-0.5	0.4	0.57	0.57
Gosport	538	0.53	0.46	0.74	-1.29	0.41	2.38	0.5

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Constituency	Decline rank	Relative decline score	Zscore_degree	Zscore_unemploymentrate	Zscore_income	Zscore_deprived	Zscore_professionaljobs	Zscore_businesscount
Ruislip, Northwood and Pinner	537	0.52	-0.62	1.43	0.85	1.21	1.1	-0.66
Eastbourne	536	0.52	0.23	0.8	1.71	0.54	0.96	0.49
Eltham	535	0.52	-0.23	1.2	0.76	0.16	0.95	-0.38
Plymouth, Moor View	534	0.52	0.91	-0.34	-0.29	-0.54	2.05	0.55
Romford	533	0.51	0.43	1.27	0.64	0.55	0.14	-0.33
Rochdale	532	0.51	1.25	-0.43	0.85	-0.04	1.22	0.24
Waveney	531	0.5	1.13	0.67	1.61	-0.36	0.03	0.63
Harrow East	530	0.5	-0.69	1.66	0.31	1.21	2.21	-0.92
Aldridge-Brownhills	529	0.5	0.85	0.19	1.87	-0.79	0.01	0.51
South Dorset	528	0.5	0.46	0.15	-0.77	0.1	2.96	0.71
Bexhill and Battle	527	0.49	0.82	0.61	0.97	0.87	0.8	0.34
Broxbourne	526	0.49	0.76	1.46	-0.72	1.09	0.8	0.07
Doncaster Central	525	0.49	1.13	-0.04	0.91	-0.51	1.2	0.05
Barnsley Central	524	0.48	0.97	0.29	1.68	-0.82	0.02	0.35
Heywood and Middleton	523	0.48	0.96	-0.19	1.13	-0.17	0.25	0.1

Appendix M. Two types of deindustrialising constituencies (Chapter 7)

Table M.1. Deindustrialising constituencies that have become increasingly middle-class

constituency (2017)	change in manufacturing (%)	change in managerial/professional employment (%)	change in semi-skilled/unskilled occupations (%)	change in Labour vote share (%)	change in Conservative vote share (%)
Basingstoke	-23.3	22.46	4.66	-8.43	9.22
Beaconsfield	-20.91	15.7	5.43	0.11	5.52
Bethnal Green and Bow	-23.35	25.42	-13.65	5.26	-10.67
Brentford and Isleworth	-19	19.53	2.23	19.2	-9.76
Bristol North West	-18.93	16.63	7.03	15.1	-6.54
Bristol South	-22.38	18.75	6.97	10.37	-7.75
Bromsgrove	-23.46	16.72	5.63	-0.3	4.3
Broxtowe	-26.57	17.2	5.85	10.8	-7.7
Calder Valley	-29.87	18.97	3.13	5.7	4.3
Chelmsford	-22.51	17.69	6.26	-1.54	0.44
Chippenham	-23.98	20.9	6.56	-12.33	3.51
Chorley	-24.56	17.15	4.66	19.33	-8.4
Colne Valley	-27.64	18.11	2.69	9.5	12.4
Congleton	-25.8	16.02	5.16	5.41	2.73
Copeland	-20.82	15.63	6.8	-2.37	11.89
Derby North	-23.83	15.36	6.39	7.94	-2.06
Derbyshire Dales	-20.31	18.12	4.97	11.95	2.05
Filton and Bradley Stoke	-24.73	16.81	6.69	3.32	1.26
Gateshead	-23.54	15.56	6.35	-1.22	-0.49
Hackney North and Stoke Newington	-19.71	24.99	-3.63	17.9	-19.24
Hackney South and Shoreditch	-19	25.85	-7.6	15.9	-14.98
Hertford and Stortford	-18.86	17.08	6.08	1.03	5.15
High Peak	-23.64	15.23	5.29	16.66	-6.12
Hitchin and Harpenden	-22.14	19.64	3.15	10.83	-6
Kenilworth and Southam	-18.59	18.11	3.51	5.58	1.88
Leeds West	-22.97	15.35	5.62	5.59	-4.56
Leigh	-24.25	14.99	6.83	4.79	-1.07
Macclesfield	-19.78	16.74	5.88	10.24	-2.87
Maidenhead	-21.21	19.17	3.8	-2.76	5.31
Mid Bedfordshire	-22.02	19.34	5.01	1.45	7.1
Mid Derbyshire	-26.45	19.52	5.51	8.44	1.33
Milton Keynes South	-25.18	20.16	6.77	-2.46	6.98

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constituency (2017)	change in manufacturing (%)	change in managerial/professional employment (%)	change in semi-skilled/unskilled occupations (%)	change in Labour vote share (%)	change in Conservative vote share (%)
North East Bedfordshire	-19.35	16.81	7	-1.57	9.75
North East Hertfordshire	-24.12	15.8	5.35	-1.7	7.27
North Swindon	-21.8	17.7	6.6	-4.81	9.3
Oxford East	-18.23	16.82	-1.43	22.19	-21.73
Poplar and Limehouse	-19.33	31.02	-13.56	-3.07	-0.58
Pudsey	-22.2	19.63	5.52	10.75	-2.35
Reading East	-19.09	19.71	1.85	16.93	-10.75
Rossendale and Darwen	-30.53	16.01	6.42	3.94	3.69
Runnymede and Weybridge	-19.25	15.83	3.32	-1.29	5.42
Salford and Eccles	-24.47	16	-1.27	9.31	-7.89
Sedgefield	-22.28	15.35	6.79	-11.38	13.8
Sheffield, Heeley	-24.5	15.51	6.71	13.98	-11.62
Shipley	-19.4	16.45	6.52	14.15	-3.32
South Northamptonshire	-18.26	22.37	4.4	-3.73	12.01
South Swindon	-18.36	17.11	6.89	-1.02	5.53
South West Hertfordshire	-18.24	16.6	4.68	2.59	0.2
St Albans	-20.19	24.77	3.82	-17.46	-3.54
Stockport	-20.89	16.3	5.81	21.56	-16.87
Stockton South	-19.86	15.13	6.86	10.74	-1.46
Stretford and Urmston	-23.52	16.08	6.03	23.12	-16.46
Sutton Coldfield	-19.32	15.48	6.91	18.8	-7.9
Walthamstow	-22.79	16.44	1.47	38.15	-29.87
Warrington South	-23.01	20.51	6.04	16.1	-8.02
Warwick and Leamington	-27.44	21.21	-0.57	7.77	-3.2
Watford	-22.06	18.02	5.99	1.65	-0.97
Wycombe	-28.96	14.99	5.97	2.47	-0.81
Wythenshawe and Sale East	-21.4	16.03	7.15	9.93	-5.61
York Central	-22.78	18.49	0.17	24.04	-15.07

Table M.2. Deindustrialising constituencies that have seen 'prolonged decline'

constituency (2017)	change in manufacturing (%)	change in managerial/professional employment (%)	change in semi-skilled/unskilled occupations (%)	change in Labour vote share (%)	change in Conservative vote share (%)
Aldridge-Brownhills	-27.71	11.63	9.99	-9.39	17.72
Amber Valley	-25.67	12.83	10.65	-8.82	15.7
Ashfield	-20.87	11.32	12.17	-9	0.8
Ashton-under-Lyne	-28.21	10.3	7.83	5.56	-2.81
Basildon and Billericay	-25.18	13.73	7.48	-11.6	16.26
Batley and Spen	-23.7	9.69	8	5.36	0.59
Bishop Auckland	-23.55	12.54	9.13	-3.54	12.73
Bradford South	-22.04	9.27	9.24	3.78	-0.95
Braintree	-21.8	14.79	9.07	-2.21	11.59
Broxbourne	-22.46	9.99	10.4	-2.82	10.28
Burton	-23.2	13.6	12.1	-1.47	11.03
Bury South	-21.27	14.12	8.8	14.61	-5.91
Cannock Chase	-18.25	12.46	9.74	-9.09	13.03
Castle Point	-18.52	8.28	10.88	-1.4	4.7
Charnwood	-26.27	14.15	8.79	2.29	4.24
Chatham and Aylesford	-22.71	11.44	11.44	-8.76	11.72
Corby	-22.61	14.72	10.35	0.4	5.7
Crawley	-26.53	13.47	9.59	-3.94	11.34
Darlington	-20.65	14.25	10.81	5.1	-0.1
Dartford	-19.52	14.03	10.23	-9.89	13.53
Denton and Reddish	-28.19	13.3	10	19.4	-16.28
Dudley North	-28.24	11.04	9.64	-10.03	13.74
Dudley South	-27.98	10.31	11.35	-14.57	18.74
Erewash	-27.17	14.14	8.73	1.09	5.69
Feltham and Heston	-20.53	10.23	7.58	14.3	-9.07
Forest of Dean	-23.74	13.33	9.31	6.89	3.3
Gillingham and Rainham	-19.45	12.03	11.82	2.17	3.9
Gravesham	-20.36	9.93	12.35	-3	4.2
Halesowen and Rowley Regis	-34.25	11.76	7.37	-0.19	5.15
Harborough	-25	13.69	7.82	1.07	-2.42
Harlow	-29.48	13.18	9.69	-16.69	19.11
Hartlepool	-23.49	11.97	8.51	-2.9	-3.7
Havant	-22.23	12.47	11.39	-15.11	14.21
Hayes and Harlington	-22.84	9.87	8.16	20.35	-13.61
Hazel Grove	-21.24	11.73	9.06	-6.08	-10.95
Hyndburn	-28.74	11.1	8.45	4.89	0.28
Jarrow	-23.71	14.47	11.77	-0.52	0.35
Leeds East	-18.19	10.54	8.89	-0.73	3.55

constituency (2017)	change in manufacturing (%)	change in managerial/professional employment (%)	change in semi-skilled/unskilled occupations (%)	change in Labour vote share (%)	change in Conservative vote share (%)
Leicester East	-28.72	7.22	8.67	9.8	-10.41
Leicester West	-30.53	11.48	8.37	3.06	-2.22
Llanelli	-23.72	13.97	9.82	-6.05	-0.22
Makerfield	-20.96	14.43	8.02	8.09	-5.38
Meriden	-20.63	14.44	7.91	-13.26	16.54
Merthyr Tydfil and Rhymney	-18.08	10.37	7.64	-2.5	3.4
Middlesbrough South and East Cleveland	-21.84	11.53	9.96	6.84	4.36
Newcastle-under-Lyme	-25.09	12.35	8.06	-0.57	9.55
Newport East	-20.04	11.41	9.84	5.7	-2
North East Somerset	-18.47	14.33	11.28	8.96	-1.44
North Warwickshire	-22.42	12.31	10.23	-0.5	10.48
Northampton North	-20.45	11.54	12.13	6.74	-0.33
Northampton South	-23.93	13.58	9.42	-1.7	4.75
Norwich North	-20.57	13.4	14.3	4.11	3.28
Nottingham North	-27.7	10.62	10.25	0.61	0.59
Nuneaton	-28.24	12.45	9.95	-0.18	5.39
Peterborough	-20.39	9.61	9.18	3.53	5.06
Rayleigh and Wickford	-18.46	14.27	7.95	-0.89	9.22
Redcar	-28.29	12.26	10.49	5.63	-5.93
Rochester and Strood	-21.38	14.1	9.31	-2.24	6.64
Romford	-18.96	12.89	8.15	-2	7.89
Rotherham	-25.36	9.3	12.04	-5.68	-1.58
Sheffield South East	-25.03	13.46	8.17	9.54	-7.64
Sittingbourne and Sheppey	-20.94	9.04	11.21	-3.08	10.54
Solihull	-22.54	14.69	7.64	-2.48	-0.44
South Basildon and East Thurrock	-20.75	11.1	10.99	-13.13	14.72
South Staffordshire	-22.18	12.94	8.36	-6.59	17.64
South West Bedfordshire	-30	12.64	7.66	-3.26	9.33
St Helens North	-25.06	13.79	11.96	11.46	-8.53
Staffordshire Moorlands	-23.2	14.25	10.37	-0.15	8.42
Stevenage	-30.56	13.76	8.97	-6.17	10.74
Stockton North	-25.51	11.3	9.69	1.74	1.49
Stoke-on-Trent Central	-30.81	10.05	12.15	-10.46	10.15
Stoke-on-Trent North	-31.66	10.26	15.01	-10.53	14.66
Stoke-on-Trent South	-32.75	10.95	15.48	-11.24	16.36
Stourbridge	-29.93	11.85	7.83	-0.89	6.51

constituency (2017)	change in manufacturing (%)	change in managerial/professional employment (%)	change in semi-skilled/unskilled occupations (%)	change in Labour vote share (%)	change in Conservative vote share (%)
Swansea East	-20.08	13.33	9.79	-6.3	2.8
Tamworth	-23.1	10.44	12.27	-8.35	16.84
Thornbury and Yate	-20.22	14.53	10.8	-12.26	-1.69
Torfaen	-25.18	13.53	7.73	-4.3	7.8
Wakefield	-18.35	12.76	10.27	-2.51	9.49
Walsall North	-32.89	8.66	11.67	-19.73	19.7
Walsall South	-30.67	7.66	8.77	5.41	-0.7
Waveney	-21.86	11.11	11.34	7.48	2.56
Wellingborough	-29.76	13.53	13.91	-6.96	11.35
Wells	-18.61	12.86	11.22	-8.3	-3
West Bromwich East	-31.23	8.02	11.45	-3.7	9.18
West Bromwich West	-35.73	8.98	10.26	-13.95	14.02
Wolverhampton North East	-32.6	9.91	11.76	-14.13	15.34
Wolverhampton South East	-34.24	8.94	9.24	-8.66	10.16
Wolverhampton South West	-21.16	10.64	7.68	14.4	-5.22
Workington	-19.51	13.24	11.35	4.03	4.87
Worsley and Eccles South	-24.77	13.51	7.58	9.81	-1.46
Wyre Forest	-22.03	10.73	13.94	-1.95	8.26

Appendix N. Alternative models: 'log' and additional variables (Chapter 7)

Table N.1. 'Log' Models predicting Labour and Conservative vote share change, 1979-1992

	Vote share change, 1979-1992 (%)	
	Labour	**Conservative**
intercept	-2.600	-8.130***
	(1.710)	(1.540)
degree-level qualifications	-0.170	-0.239
	(0.180)	(0.162)
managerial/professional occupations	-0.056	0.135
	(0.158)	(0.142)
manufacturing industry	0.159***	-0.199***
	(0.058)	(0.052)
population change (rate)	-0.168***	0.127***
	(0.051)	(0.046)
poor health	1.660***	-1.210***
	(0.226)	(0.204)
aged 16-29	-0.713***	0.578***
	(0.224)	(0.202)
aged 65 plus	-0.733***	0.381*
	(0.243)	(0.219)
ethnic diversity (square root)	0.416	1.220**
	(0.569)	(0.513)
unemployment rate	-0.402***	-0.080
	(0.147)	(0.132)
home owners	-0.099	0.271***
	(0.061)	(0.055)
'cosmopolitan' industries	0.170	-0.032
	(0.112)	(0.101)
'urban-ness' (log)	-0.268	-0.015
	(0.444)	(0.400)
N	558	558
Adjusted R^2	0.285	0.211

Notes:

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table N.2. 'Log' Models predicting Labour and Conservative vote share change, 1992-2005

	Vote share change, 1992-2005 (%)	
	Labour	**Conservative**
intercept	-2.650	-6.900**
	(4.490)	(3.180)
degree-level qualifications (log)	-0.290	-1.950**
	(1.290)	(0.916)
managerial/professional occupations	0.228*	0.158*
	(0.120)	(0.085)
manufacturing industry	-0.199**	0.042
	(0.091)	(0.065)
population change (rate)	0.074	0.040
	(0.053)	(0.037)
poor health	1.120***	-0.001
	(0.332)	(0.235)
aged 16-29	-0.437***	0.093
	(0.148)	(0.105)
aged 65 plus	-0.005	0.137
	(0.206)	(0.146)
ethnic diversity (log)	1.470**	-1.240***
	(0.573)	(0.406)
unemployment rate	1.010***	-0.131
	(0.161)	(0.114)
home owners	-0.366***	0.290***
	(0.092)	(0.065)
'cosmopolitan' industries	-0.509***	0.098
	(0.100)	(0.071)
'urban-ness' (log)	1.540	2.880***
	(1.180)	(0.832)
N	568	568
Adjusted R^2	0.258	0.237

Notes: ***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.

Table N.3. Alternative models predicting Labour and Conservative vote share change, 2005-2017

	Vote share change, 2005-2017 (%)	
	Labour	**Conservative**
intercept	3.370	7.750***
	(2.850)	(2.180)
population change (rate)	-0.002	0.057
	(0.076)	(0.058)
aged 16-29	0.094	0.042
	(0.400)	(0.306)
aged 65 plus	-2.480***	2.450***
	(0.502)	(0.384)
ethnic diversity	-0.168	0.024
	(0.131)	(0.101)
'cosmopolitan' industries	-1.080***	0.898***
	(0.281)	(0.215)
precarious occupations	3.250***	-1.860***
	(0.506)	(0.388)
managerial/professional occupations	1.640***	-0.989***
	(0.415)	(0.318)
routine/semi-routine occupations	-2.940***	1.410***
	(0.359)	(0.275)
deprivation	-2.700***	0.828***
	(0.325)	(0.249)
private renters	0.025	0.429*
	(0.334)	(0.256)
house price:income (ratio	-0.504	-0.170
	(0.367)	(0.281)
business count (number)	0.001**	-0.001***
	(0.0004)	(0.0003)
weekly income	0.006	0.013*
	(0.009)	(0.007)
university entry rates	0.081	-0.064
	(0.082)	(0.063)
N	572	572
Adjusted R^2	0.454	0.419

Notes: ****Significant at the 1 percent level.*
***Significant at the 5 percent level.*
**Significant at the 10 percent level.*

Table N.4. 'Log' Models predicting Labour and Conservative vote share change, 1979-2017

	Vote share change, 1979-2017 (%)	
	Labour	**Conservative**
intercept	-19.200***	23.600***
	(6.330)	(5.420)
degree-level qualifications (log)	7.850***	-9.590***
	(2.470)	(2.120)
managerial/professional occupations	-0.089	0.056
	(0.180)	(0.154)
manufacturing industry	0.330***	-0.236***
	(0.090)	(0.077)
population change (rate)	-0.140***	0.151***
	(0.033)	(0.028)
poor health	2.000***	-0.974**
	(0.522)	(0.447)
aged 16-29 (log)	0.171	-1.850**
	(1.060)	(0.909)
aged 65 plus	-0.223	0.492***
	(0.164)	(0.141)
ethnic diversity	0.255***	-0.116**
	(0.053)	(0.045)
unemployment rate	-0.267	0.461***
	(0.187)	(0.160)
home owners	-0.476***	0.355***
	(0.060)	(0.052)
'cosmopolitan' industries	0.334**	-0.053
	(0.138)	(0.118)
'urban-ness' (log)	1.400**	0.662
	(0.579)	(0.496)
N	572	572
Adjusted R^2	0.353	0.492

Notes: ****Significant at the 1 percent level.*
***Significant at the 5 percent level.*
**Significant at the 10 percent level.*

Appendix O. QQ plots and plots of fitted values against studentised residuals (Chapter 7)

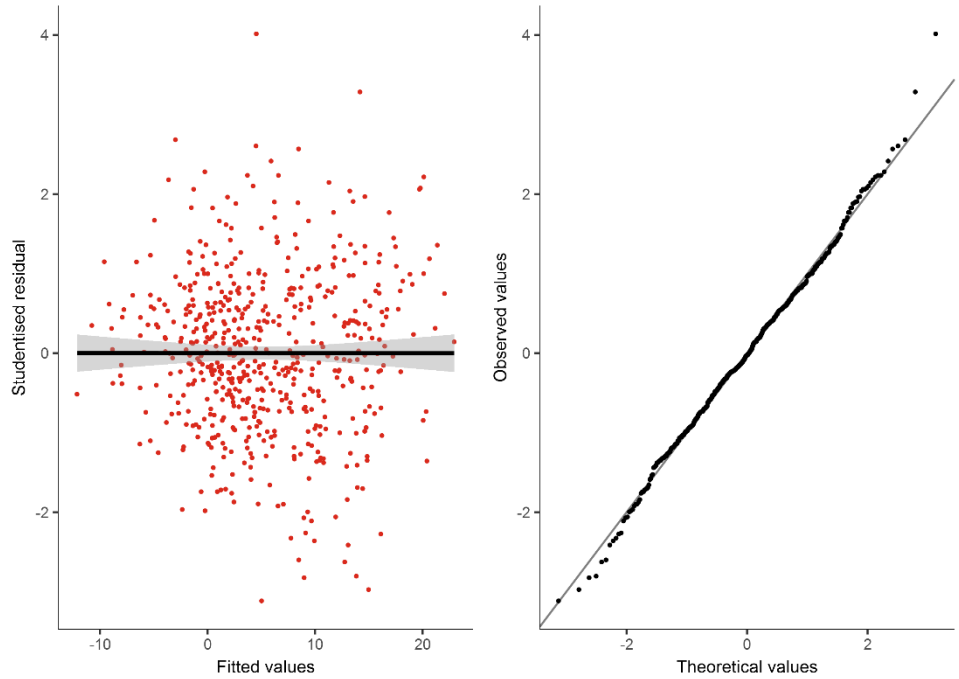

Figure O.1. Fitted value-studentised residual and QQ plots for the model predicting Labour vote share change, 1979-2017

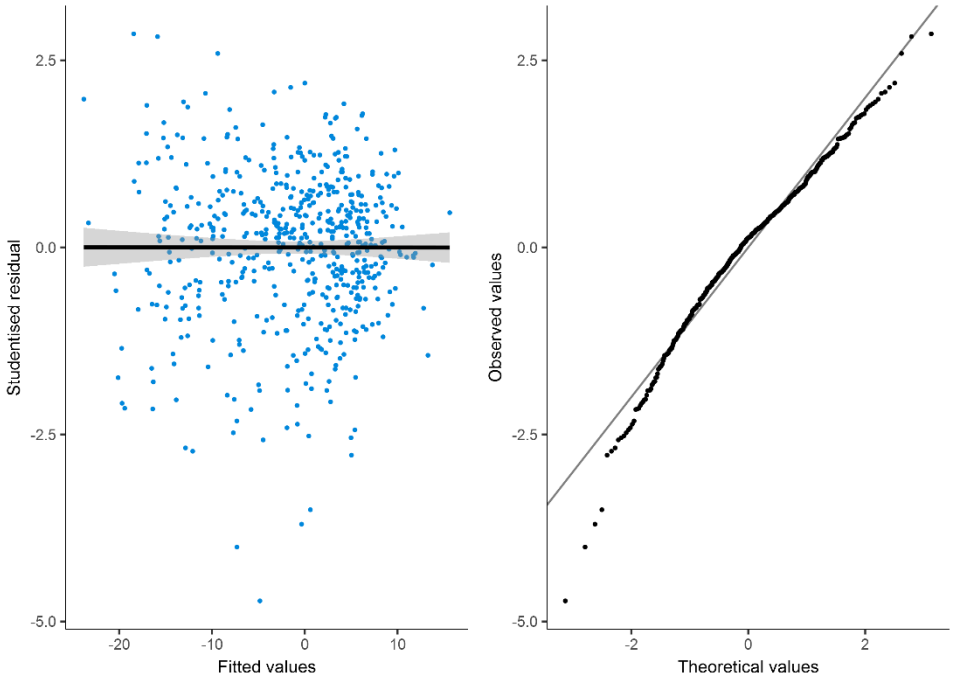

Figure O.2. Fitted value-studentised residual and QQ plots for the model predicting Conservative vote share change, 1979-2017

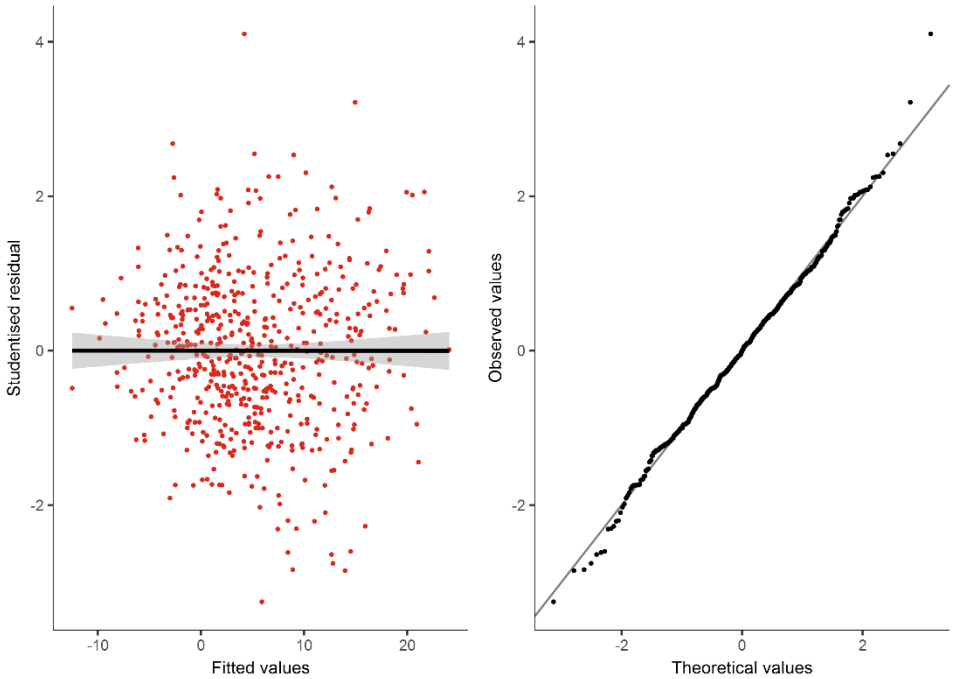

Figure O.3. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Labour vote share change, 1979-2017

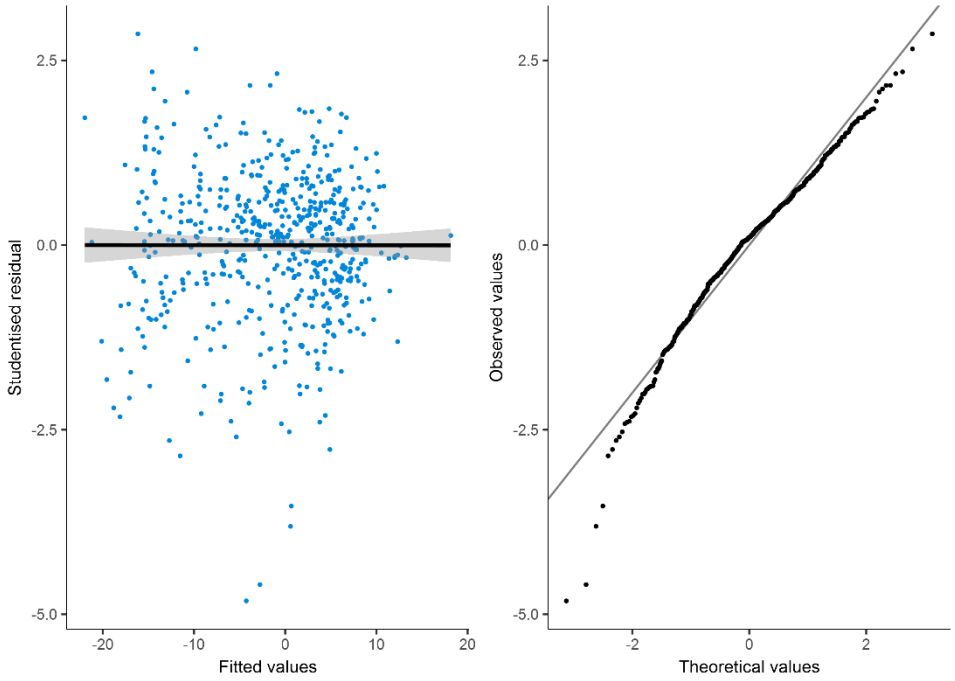

Figure O.4. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Conservative vote share change, 1979-2017

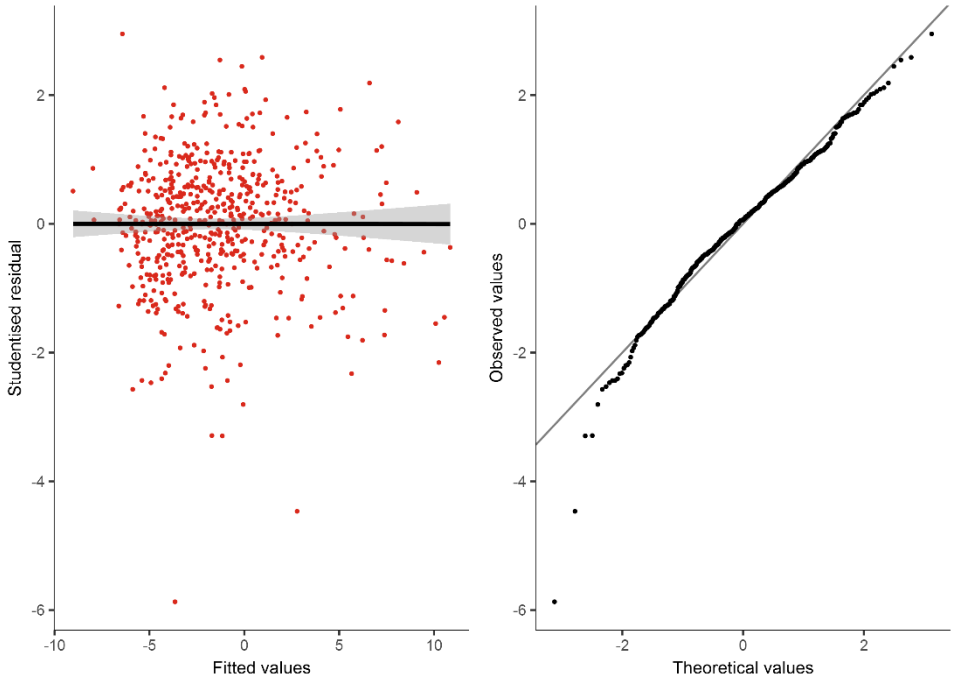

Figure O.5. Fitted value-studentised residual and QQ plots for the model predicting Labour vote share change, 1979-1992

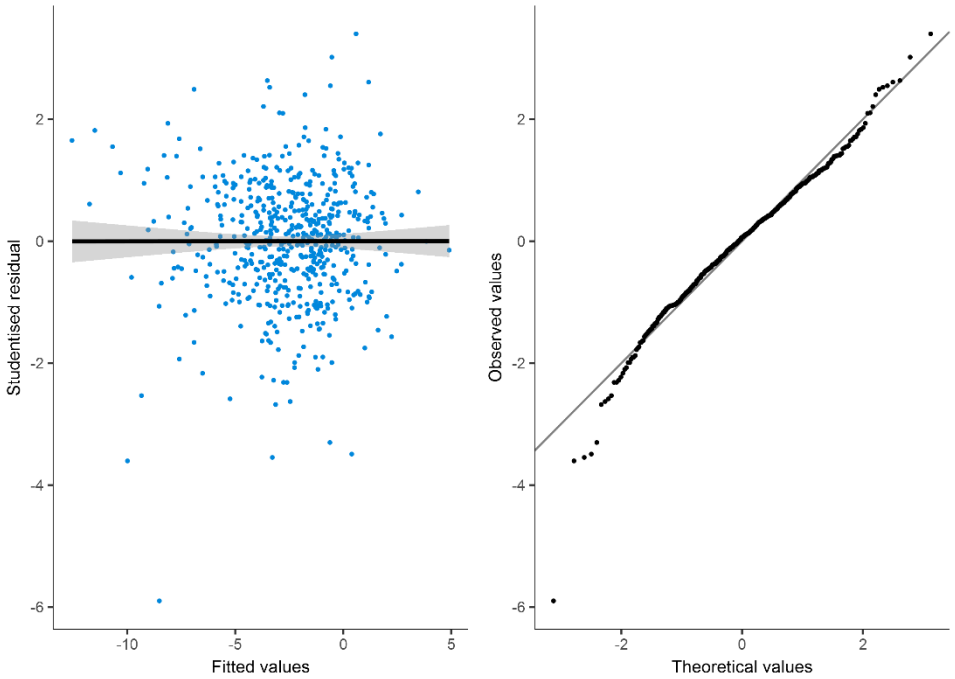

Figure O.6. Fitted value-studentised residual and QQ plots for the model predicting Conservative vote share change, 1979-1992

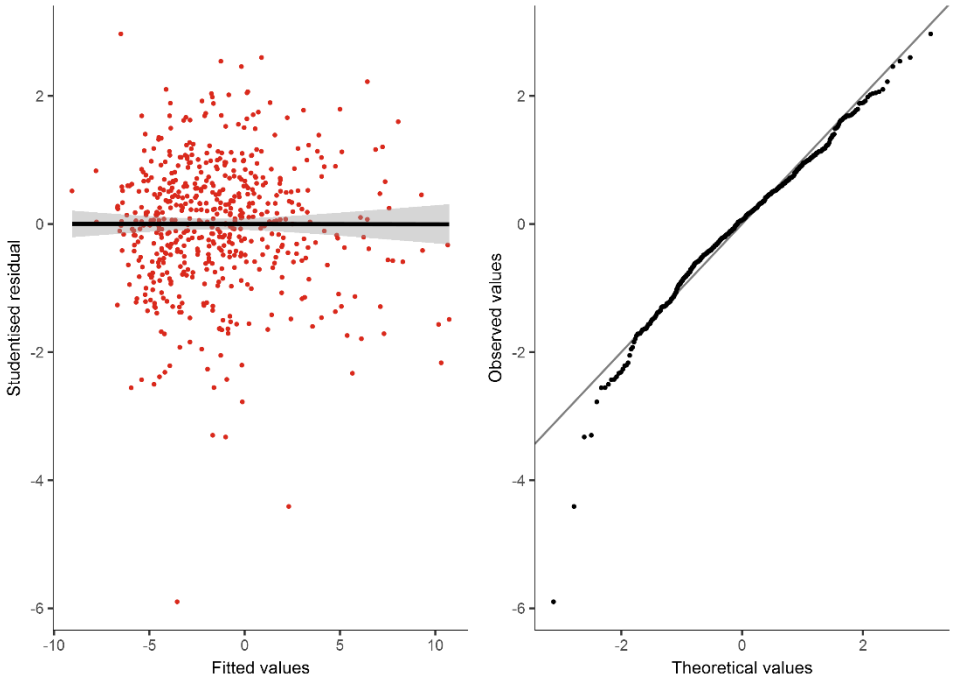

Figure O.7. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Labour vote share change, 1979-1992

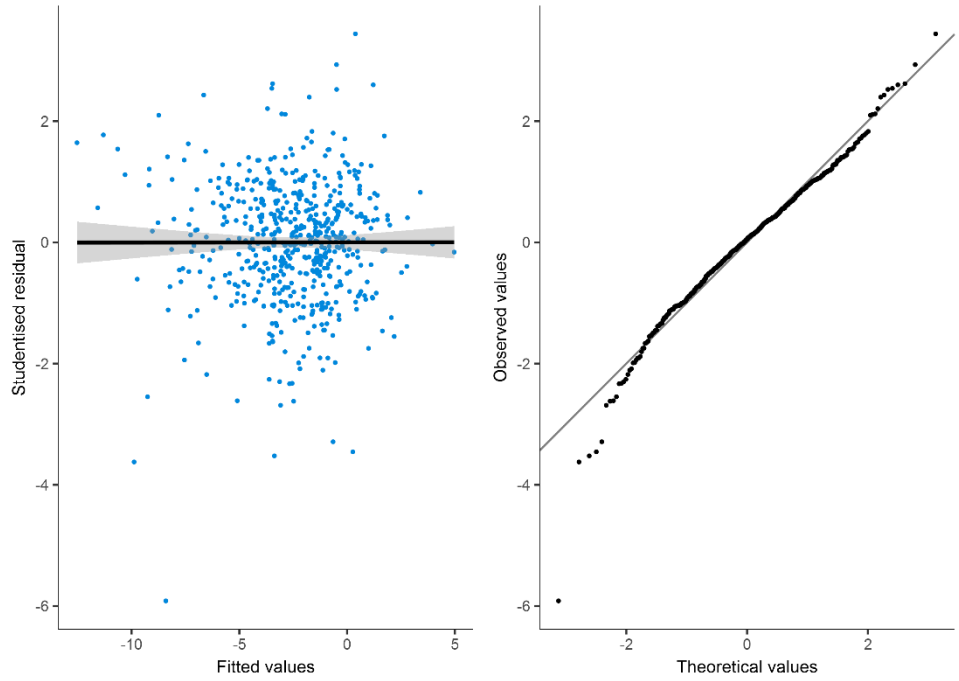

Figure O.8. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Conservative vote share change, 1979-1992

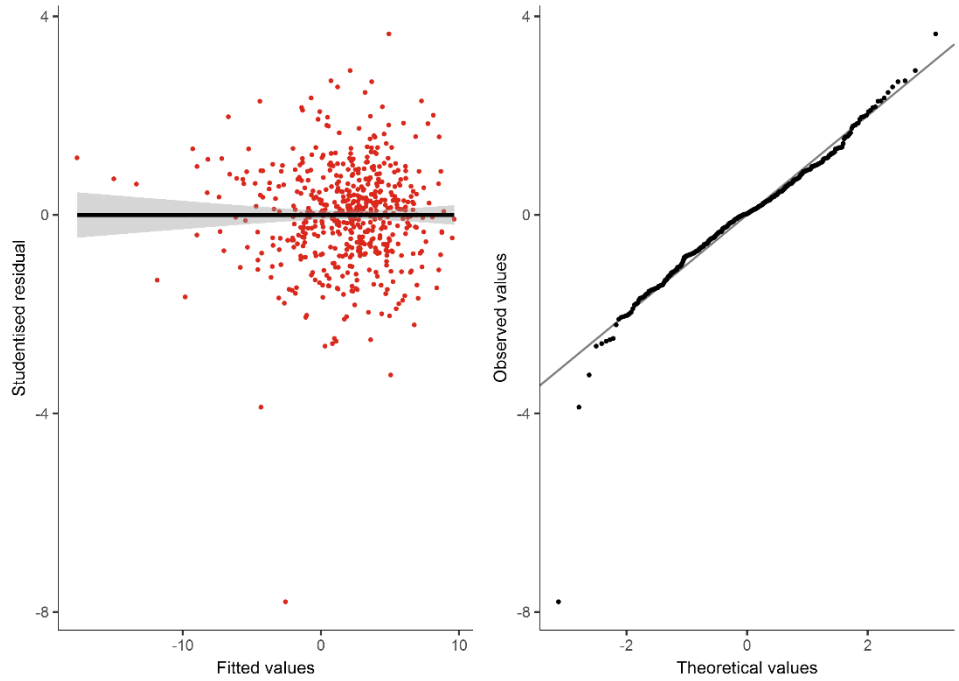

Figure O.9. Fitted value-studentised residual and QQ plots for the model predicting Labour vote share change, 1992-2005

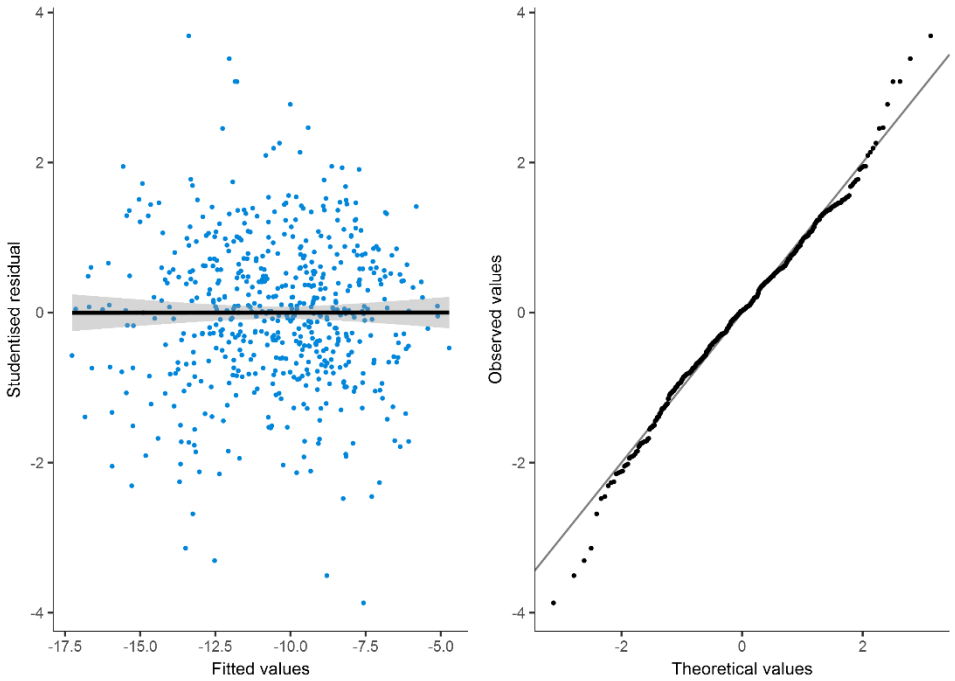

Figure O.10. Fitted value-studentised residual and QQ plots for the model predicting Conservative vote share change, 1992-2005

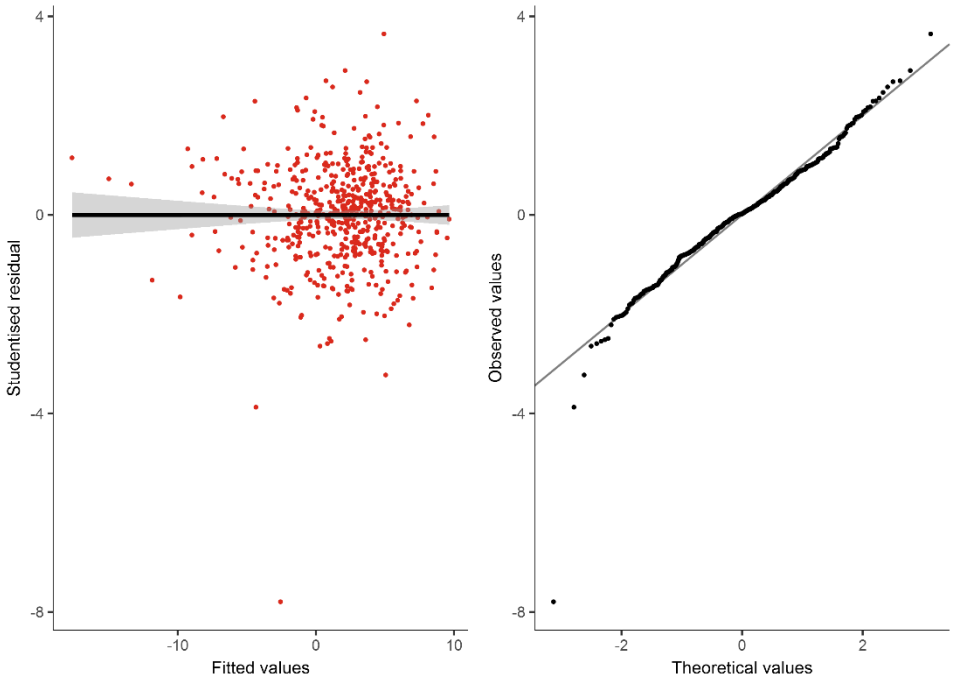

Figure O.11. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Labour vote share change, 1992-2005

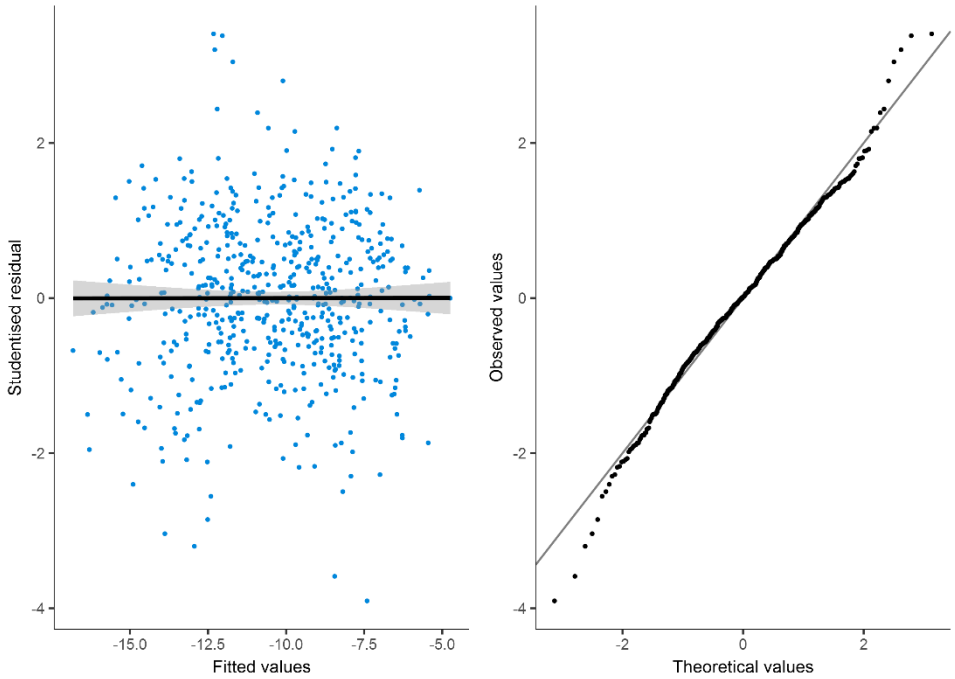

Figure O.12. Fitted value-studentised residual and QQ plots for the log-transformed model predicting Conservative vote share change, 1992-2005

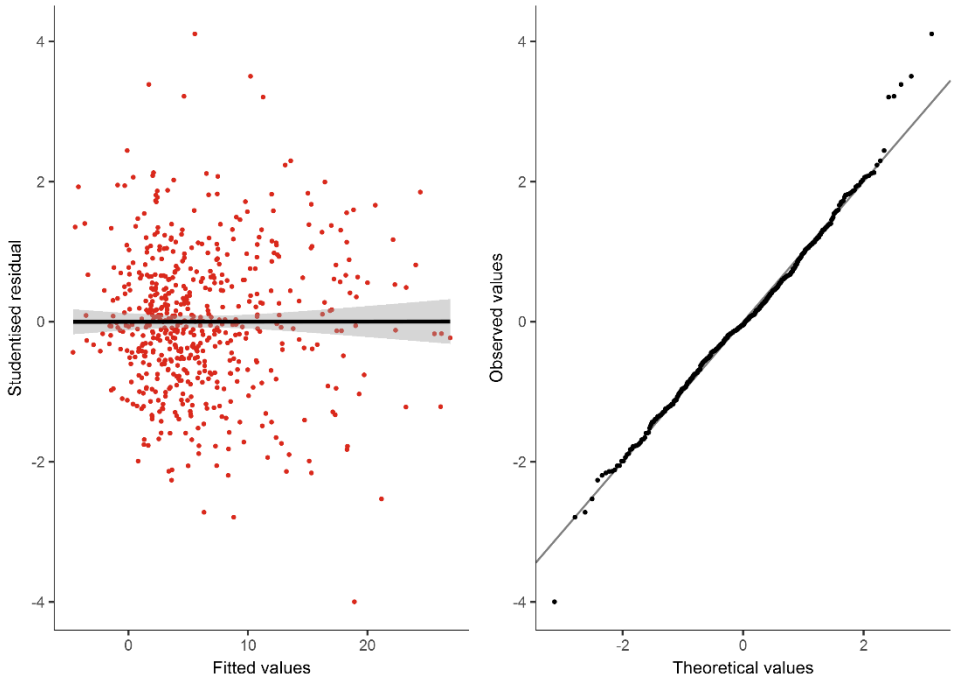

Figure O.13. Fitted value-studentised residual and QQ plots for the model predicting Labour vote share change, 2005-2017

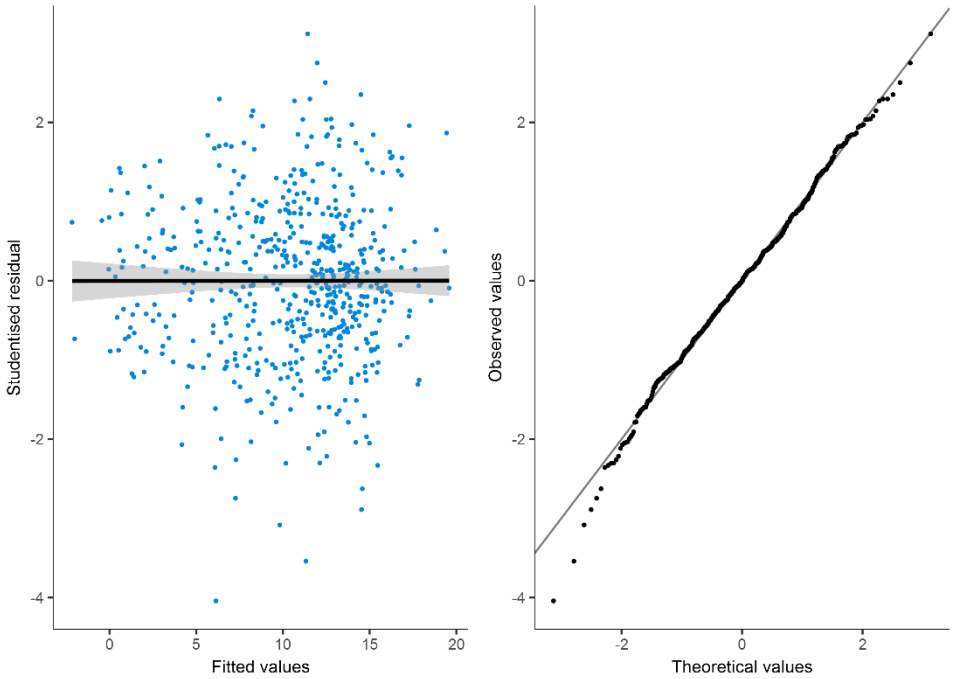

Figure O.14. Fitted value-studentised residual and QQ plots for the model predicting Conservative vote share change, 2005-2017

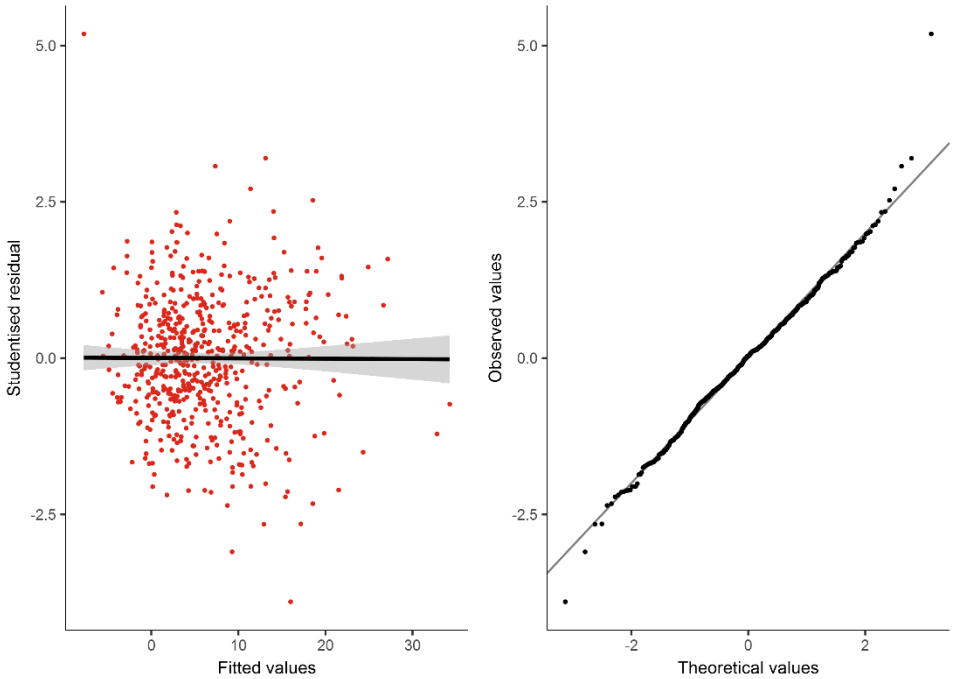

Figure O.15. Fitted value-studentised residual and QQ plots for the additional model predicting Labour vote share change, 2005-2017

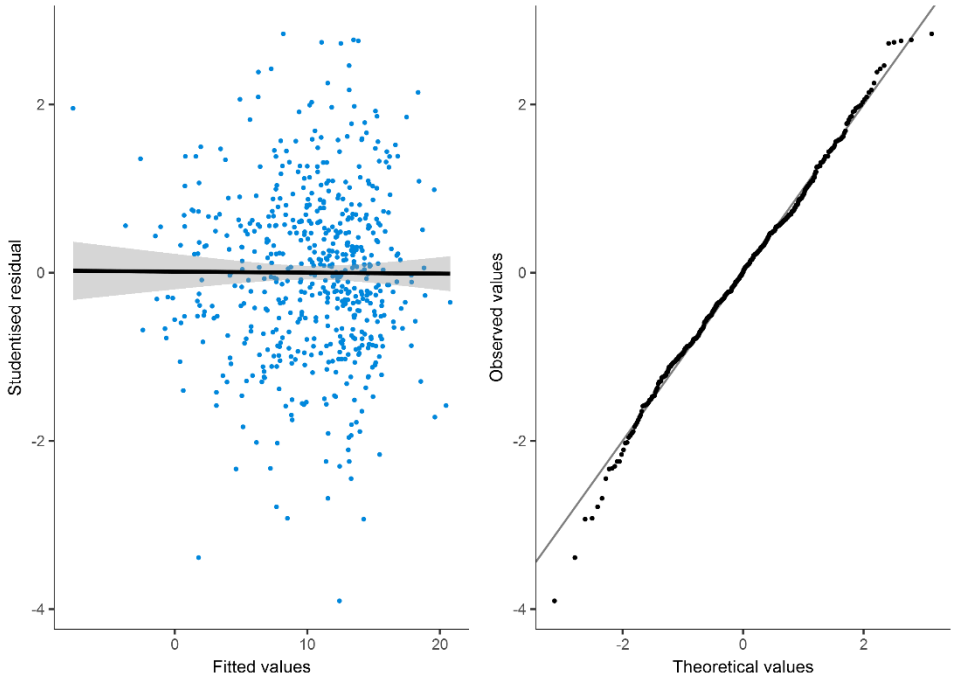

Figure O.16. Fitted value-studentised residual and QQ plots for the additional model predicting Conservative vote share change, 2005-2017

Appendix P. Correlation matrices for OLS models (Chapter 7)

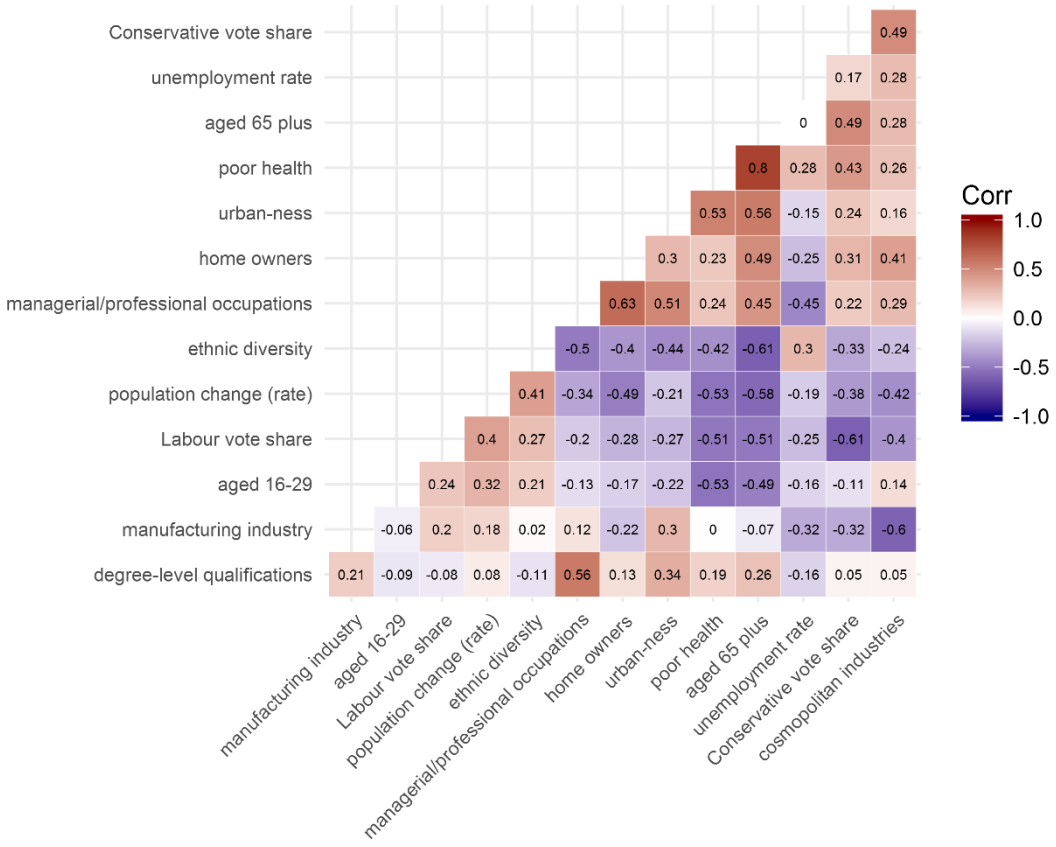

Figure P.1. Correlation plot of variables used in the models predicting Labour and Conservative vote share changes, 1979-2017

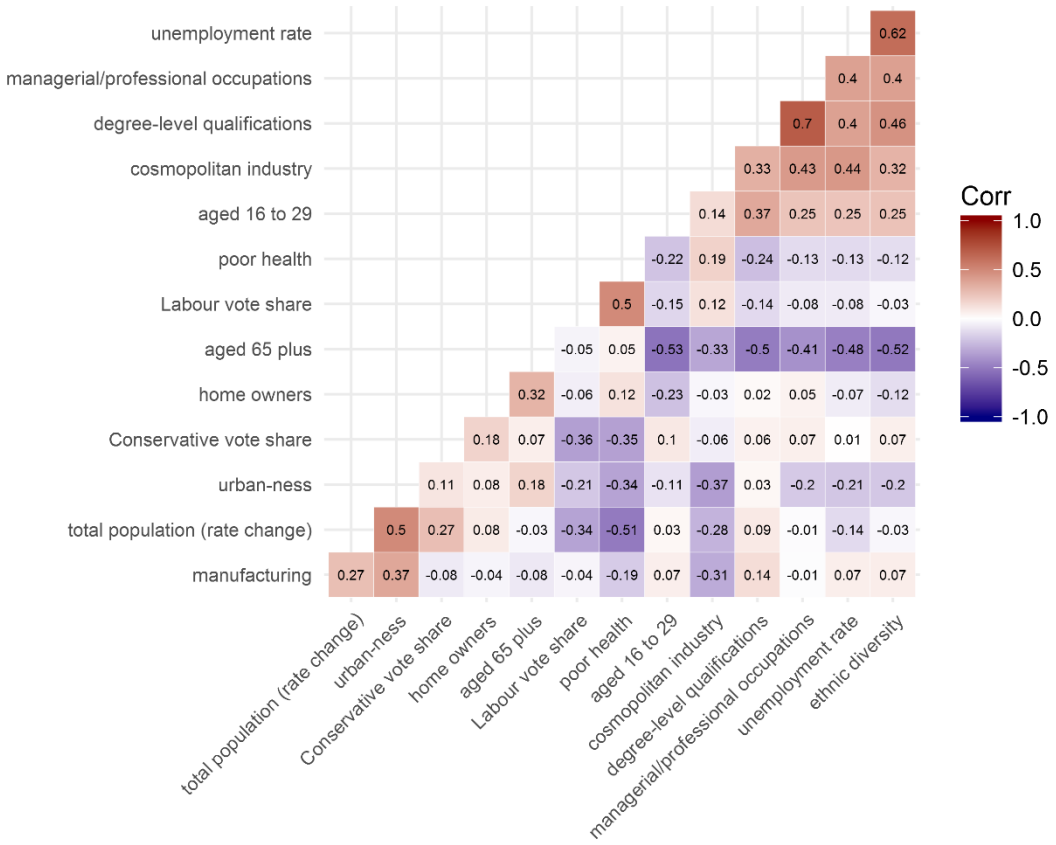

Figure P.2. Correlation plot of variables used in the models predicting Labour and Conservative vote share changes, 1979-1992

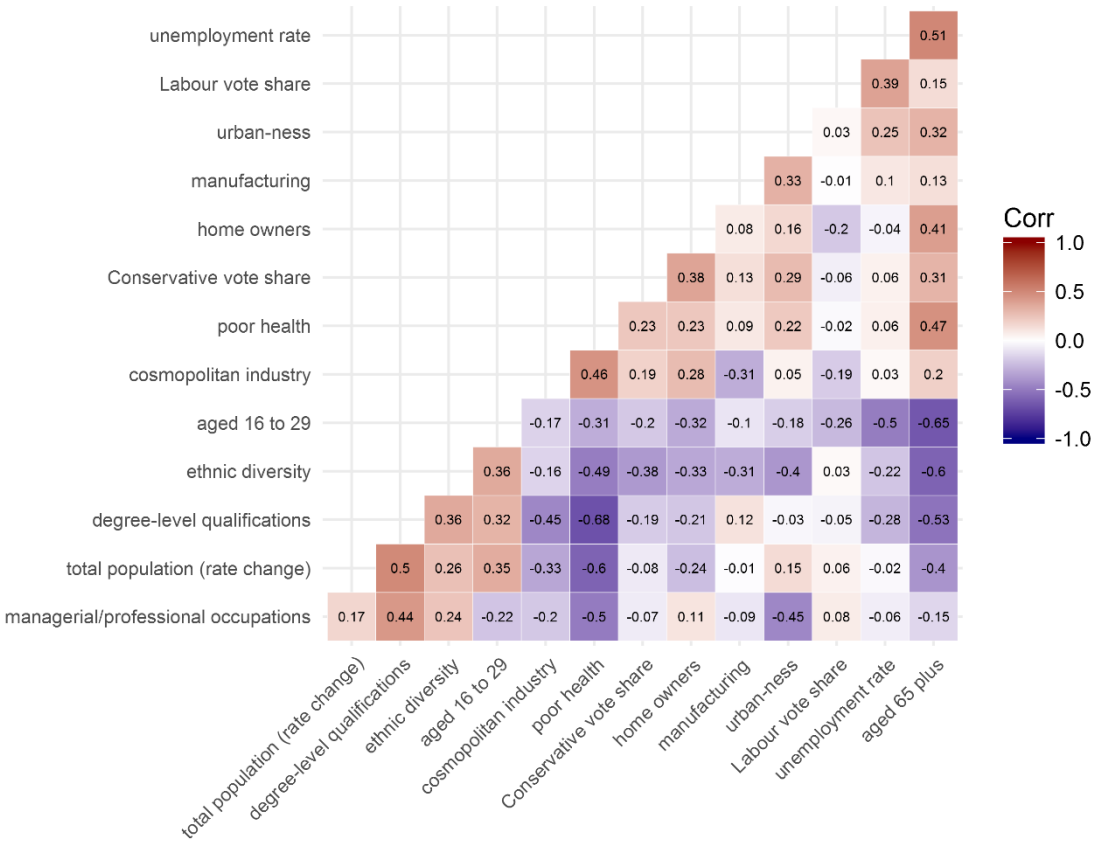

Figure P.3. Correlation plot of variables used in the models predicting Labour and Conservative vote share changes, 1992-2005

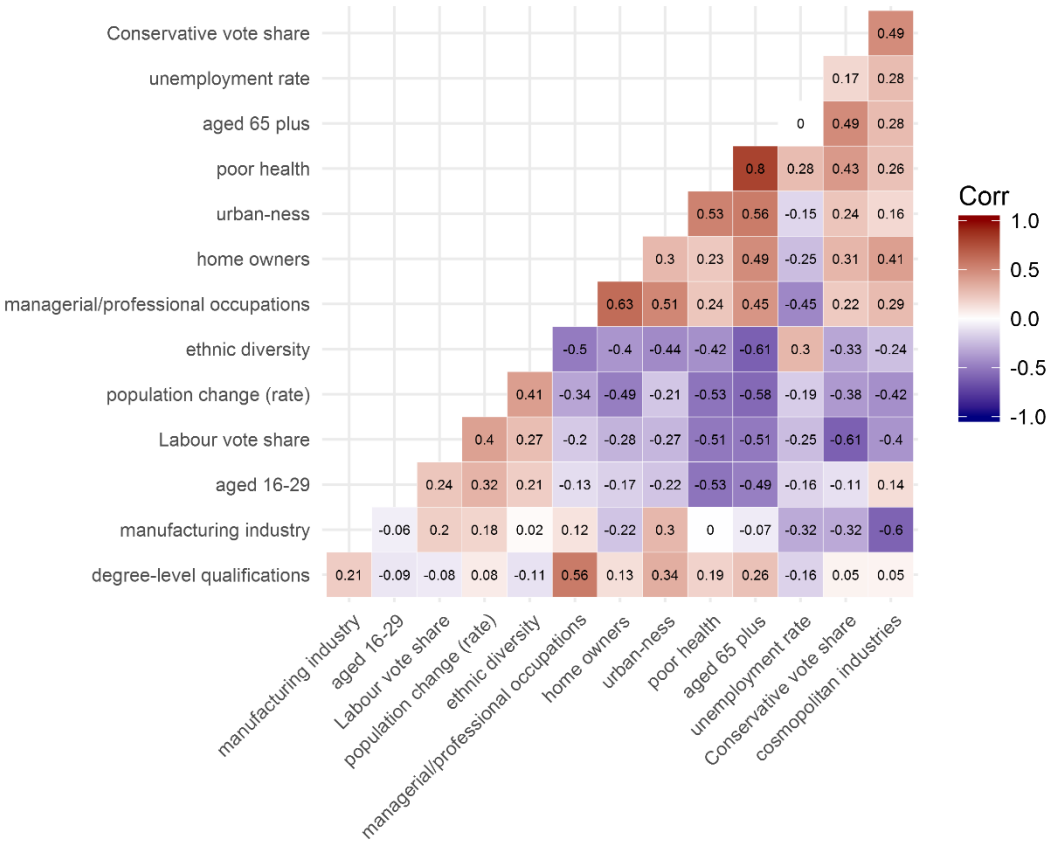

Figure P.4. Correlation plot of variables used in the models predicting Labour and Conservative vote share changes, 2005-2017

Appendix Q. Variance Inflation Factor scores for OLS models (Chapter 7)

Table Q.1. VIF scores for all OLS models (1979-2017) used in Chapter 7

	Model			
Variables	**1979-2017**	**1979-1992**	**1992-2005**	**2005-2017**
level 4 qualifications	7.36	2.68	3.07	2.26
managerial/professional occupations	6.38	2.29	3.18	4.80
manufacturing industry	2.96	1.38	1.48	2.59
population change	1.81	1.82	2.15	2.56
poor health	2.75	1.81	3.44	4.65
aged 16-29	2.51	1.56	2.89	1.84
aged 65 plus	3.71	2.43	3.46	5.49
ethnic diversity	3.26	1.95	1.99	2.21
unemployment rate	1.73	2.13	1.98	2.71
home owners	1.68	1.30	1.64	2.62
'cosmopolitan' industries	2.25	1.80	1.69	3.26
urban-ness	2.24	1.78	2.51	2.41

Appendix R. Large residuals and Cook's distance (Chapter 7)

Table R.1. Large residuals (>2 or <-2) for Conservative OLS model (1979-2017) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Battersea	2.84	0.04
Chelsea and Fulham	2.8	0.02
Stoke-on-Trent Central	2.58	0.01
Wrexham	2.19	0.01
Stoke-on-Trent North	2.13	0
Colne Valley	2.07	0
Bournemouth West	2.05	0.01
Birkenhead	-2.03	0.01
Ilford South	-2.03	0.01
Westmorland and Lonsdale	-2.06	0.01
Bristol West	-2.08	0.01
Garston and Halewood	-2.11	0.01
Manchester, Withington	-2.14	0.01
Liverpool, Wavertree	-2.15	0.01
Wallasey	-2.16	0.01
Bradford West	-2.31	0.01
Cheadle	-2.35	0.01
Liverpool, West Derby	-2.4	0.01
North Norfolk	-2.43	0.01
Birmingham, Hall Green	-2.47	0.01
Wirral South	-2.51	0.01
Knowsley	-2.53	0.03
Bootle	-2.56	0.01
Cambridge	-2.67	0.02
Hornsey and Wood Green	-2.71	0.01
Halton	-2.76	0.01
Sefton Central	-3.47	0.04
Ceredigion	-3.66	0.05
Leeds North West	-3.95	0.07
Sheffield, Hallam	-4.64	0.03

Appendix R

Table R.2. Large residuals (>2 or <-2) for Labour OLS model (1979-2017) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Sefton Central	3.96	0.05
Hove	3.26	0.04
Halton	2.67	0.01
Wirral South	2.59	0.01
Bootle	2.55	0.01
Wirral West	2.4	0.01
Stroud	2.27	0
Exeter	2.23	0.01
Garston and Halewood	2.23	0.01
Ilford South	2.21	0.02
Knowsley	2.17	0.02
Wallasey	2.14	0.01
Liverpool, West Derby	2.1	0.01
Walthamstow	2.07	0.01
Blyth Valley	2.06	0
Liverpool, Wavertree	2.06	0.01
Birkenhead	2.03	0.01
Swansea East	-2.05	0.01
Blaenau Gwent	-2.06	0.01
Bermondsey and Old Southwark	-2.1	0.03
Richmond Park	-2.25	0.01
Brighton, Pavilion	-2.27	0.01
Carshalton and Wallington	-2.32	0.01
Twickenham	-2.35	0.01
Torbay	-2.4	0.02
Bath	-2.59	0.02
Stoke-on-Trent Central	-2.61	0.01
Kingston and Surbiton	-2.79	0.01
Eastbourne	-2.81	0.02
Rhondda	-2.95	0.02
Cheltenham	-3.09	0.01

Table R.3. Large residuals (>2 or <-2) for Conservative OLS model (1979-1992) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Newham South	3.37	0.03
North East Cambridgeshire	3	0.05
Hornchurch	2.62	0.01
Battersea	2.59	0.05
Chertsey and Walton	2.54	0
Colne Valley	2.51	0.01
Birmingham Small Heath	2.48	0.01
Amber Valley	2.39	0
Hendon South	2.2	0.01
Wrexham	2.1	0.01
Gainsborough and Horncastle	2.09	0.01
Birmingham Edgbaston	-2.07	0.01
Yeovil	-2.09	0.01
Knowsley North	-2.16	0.03
Woolwich	-2.22	0.01
Greenwich	-2.27	0.01
Newcastle upon Tyne Central	-2.3	0.01
Sheffield Hallam	-2.31	0.01
Liverpool Walton	-2.52	0.02
Manchester Withington	-2.57	0.01
Leyton	-2.62	0.02
Birmingham Yardley	-2.66	0.01
Chesterfield	-3.27	0.01
Southwark and Bermondsey	-3.46	0.06
Falmouth and Camborne	-3.51	0.01
Liverpool Broadgreen	-3.56	0.04
Liverpool Mossley Hill	-5.72	0.06

Appendix R

Table R.4. Large residuals (>2 or <-2) for Labour OLS model (1979-1992) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Selby	2.93	0.01
Manchester Withington	2.57	0.01
Newcastle upon Tyne Central	2.53	0.01
Clwyd South West	2.44	0.01
Liverpool Walton	2.18	0.01
Worcester	2.11	0
Birmingham Edgbaston	2.08	0.01
Glanford and Scunthorpe	2.05	0.01
Brighton Pavilion	2.02	0.01
Streatham	2.01	0.01
Hastings and Rye	-2.06	0.01
Rhondda	-2.15	0.02
Greenwich	-2.18	0.01
Bath	-2.19	0.01
Carshalton and Wallington	-2.24	0.01
West Hertfordshire	-2.31	0.01
Llanelli	-2.32	0.01
Taunton	-2.39	0
Littleborough and Saddleworth	-2.42	0
Ribble Valley	-2.42	0.01
Oxford West and Abingdon	-2.46	0.01
Woolwich	-2.52	0.01
Hertford and Stortford	-2.56	0.01
Brecon and Radnor	-2.79	0.02
Newham South	-3.26	0.03
Portsmouth South	-3.26	0.01
Coventry South East	-4.39	0.04
Southwark and Bermondsey	-5.7	0.15

Table R.5. Large residuals (>2 or <-2) for Conservative OLS model (1992-2005) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Greenwich & Woolwich	3.65	0.04
Welwyn Hatfield	3.35	0.02
Isle of Wight	3.06	0.02
Romford	3.06	0.02
Folkestone & Hythe	2.76	0.01
Southwark North & Bermondsey	2.45	0.05
Bradford West	2.44	0.02
Telford	2.25	0
Liverpool, Riverside	2.18	0.04
Ribble Valley	2.13	0
Rhondda	2.09	0.02
Cambridge	-2.01	0.02
Romsey	-2.03	0
Brent North	-2.04	0.02
Northavon	-2.11	0.01
Derby South	-2.12	0
Wyre Forest	-2.13	0
Solihull	-2.14	0.01
Birmingham, Hodge Hill	-2.25	0.02
North West Cambridgeshire	-2.26	0.01
Cardiff Central	-2.3	0.04
Morley & Rothwell	-2.44	0.01
Blaydon	-2.47	0
Birmingham, Yardley	-2.67	0.02
Hornsey & Wood Green	-3.12	0.03
Brent East	-3.28	0.02
Hartlepool	-3.47	0.01
Ynys-Mon	-3.82	0.04

Appendix R

Table R.6. Large residuals (>2 or <-2) for Labour OLS model (1992-2005) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Hastings & Rye	3.61	0.02
Morecambe & Lunesdale	2.89	0.01
Pudsey	2.69	0.02
Crosby	2.67	0.01
North East Cambridgeshire	2.57	0.02
Sittingbourne & Sheppey	2.46	0.01
Canterbury	2.35	0.01
Dorset South	2.29	0.01
Knowsley North & Sefton East	2.28	0.03
Gillingham	2.17	0.01
Caernarfon	2.16	0.01
Coventry South	2.1	0.01
Thanet South	2.08	0.01
Harrow West	2	0.01
Swansea East	-2.02	0
Pendle	-2.03	0.01
Hornsey & Wood Green	-2.04	0.01
Oxford East	-2.06	0.01
Ludlow	-2.09	0.01
Kingston & Surbiton	-2.21	0.01
Carmarthen East & Dinefwr	-2.48	0.05
Brecon & Radnorshire	-2.5	0.01
Brent East	-2.53	0.01
Burnley	-2.58	0.01
Neath	-2.63	0.01
Norfolk North	-3.2	0.02
Birmingham, Sparkbrook & Small Heath	-3.83	0.04
Blaenau Gwent	-7.41	0.09

Table R.7. Large residuals (>2 or <-2) for Conservative OLS model (2005-2017) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Stoke-on-Trent Central	2.82	0.02
Stoke-on-Trent North	2.75	0.02
Mansfield	2.74	0.01
Stoke-on-Trent South	2.72	0.02
Chesterfield	2.71	0
Morley and Outwood	2.45	0.01
Harrogate and Knaresborough	2.41	0.01
Derby North	2.38	0.01
Newcastle-under-Lyme	2.25	0
Montgomeryshire	2.17	0
Wyre Forest	2.14	0.01
Portsmouth North	2.08	0
Swansea West	2.06	0.01
Burton	2.02	0
Chingford and Woodford Green	-2.01	0.01
Stretford and Urmston	-2.02	0.01
Isle of Wight	-2.1	0
Rhondda	-2.15	0.01
Halton	-2.24	0.01
Westmorland and Lonsdale	-2.24	0.01
Luton North	-2.29	0.01
Edmonton	-2.32	0.02
Leeds North West	-2.32	0.02
Folkestone and Hythe	-2.44	0.01
Knowsley	-2.67	0.02
Sheffield Hallam	-2.77	0.02
Enfield North	-2.9	0.02
Sefton Central	-2.91	0.01
Bradford West	-3.36	0.07
Wallasey	-3.85	0.02

Appendix R

Table R.8. Large residuals (>2 or <-2) for Labour OLS model (2005-2017) used in Chapter 7

Constituency	Standardised residual	Cook's distance
Blaenau Gwent	5.07	0.08
Leicester South	3.17	0.02
Blackburn	3.05	0.01
Oxford East	2.69	0.01
Birmingham Hall Green	2.51	0.02
Bristol West	2.34	0.02
Orpington	2.32	0.01
Norwich South	2.18	0.01
Rochdale	2.13	0.01
Sefton Central	2.11	0.01
Folkestone and Hythe	2.02	0
Richmond Park	-2	0.01
Cannock Chase	-2.05	0
Gosport	-2.05	0.01
Twickenham	-2.05	0.01
Cities of London and Westminst	-2.1	0.54
Dartford	-2.11	0
South Dorset	-2.11	0
Leeds East	-2.13	0.01
Gloucester	-2.14	0
Brigg and Goole	-2.18	0.01
Hendon	-2.21	0.01
Putney	-2.32	0.01
East Devon	-2.35	0.01
Portsmouth North	-2.64	0.01
Wimbledon	-2.64	0.03
St Albans	-3.07	0.01
Brighton Pavilion	-3.85	0.03

Appendix S. Residual maps of the OLS models from Chapter 6 (Chapter 8)

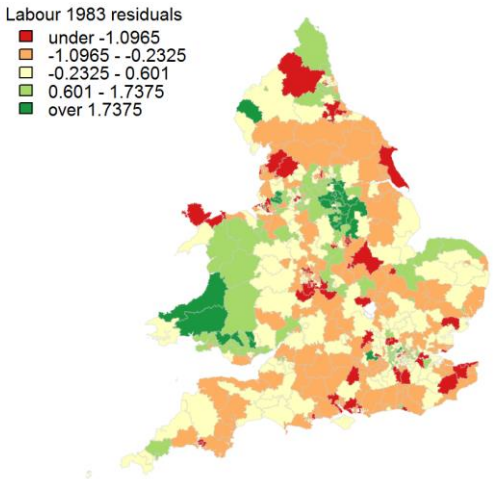

Figure S.1. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 1983

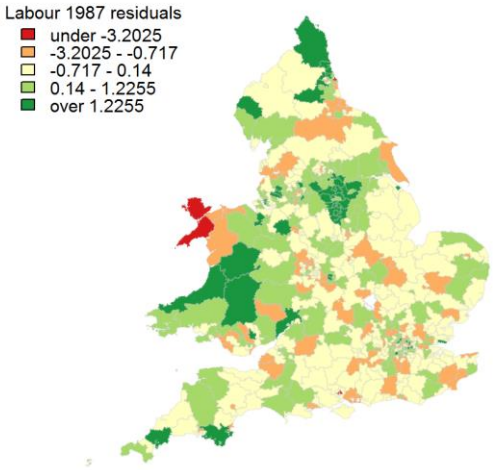

Figure S.2. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 1987

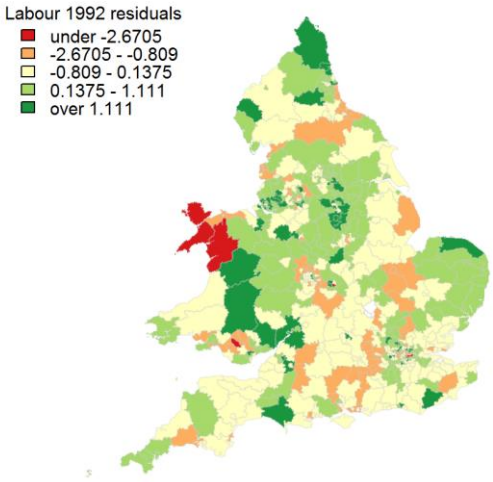

Figure S.3. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 1992

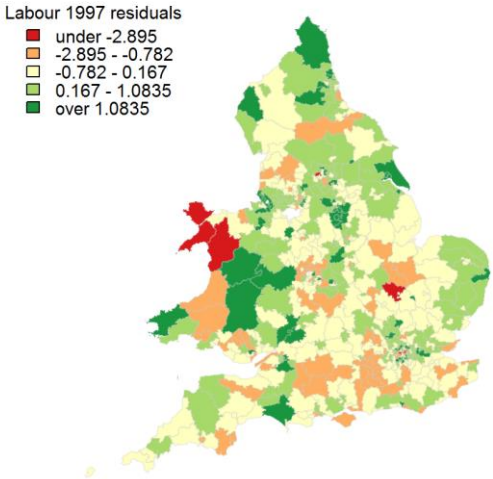

Figure S.4. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 1997

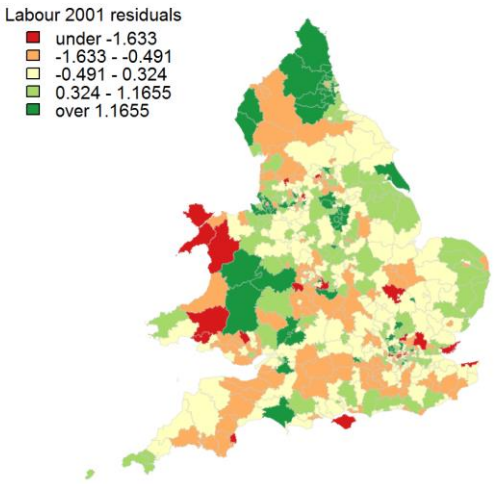

Figure S.5. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 2001

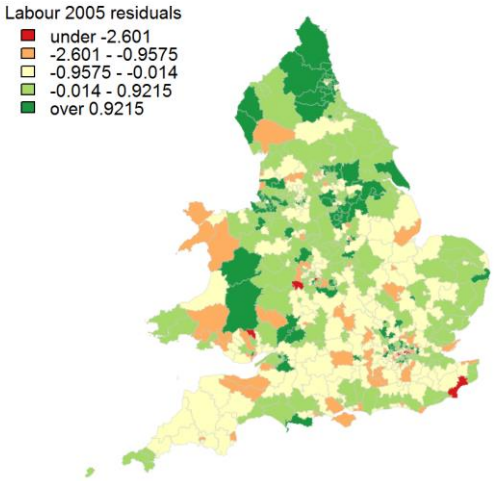

Figure S.6. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 2005

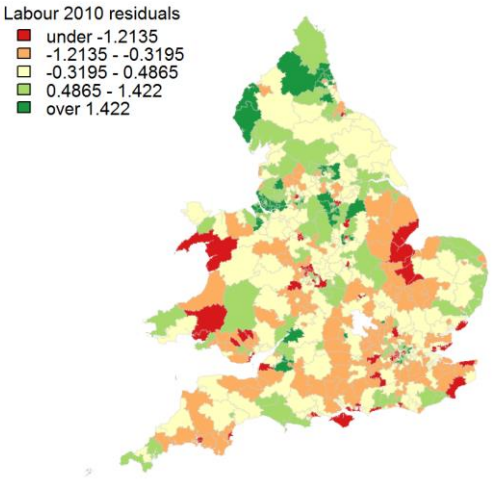

Figure S.7. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 2010

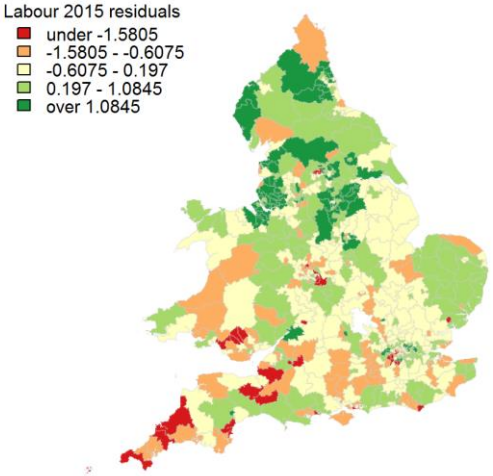

Figure S.8. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Labour vote shares in 2015

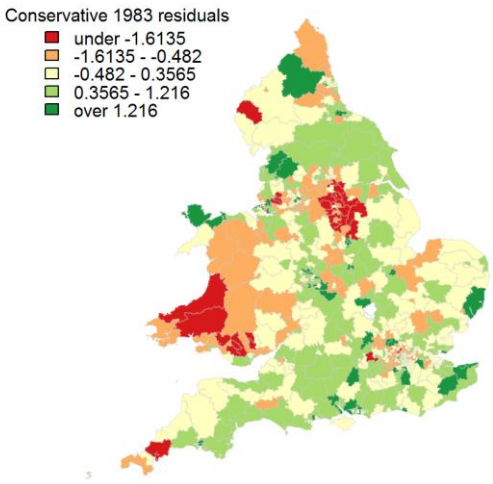

Figure S.9. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 1983

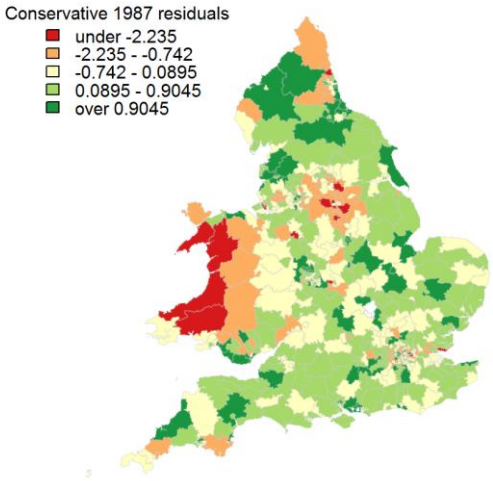

Figure S.10. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 1987

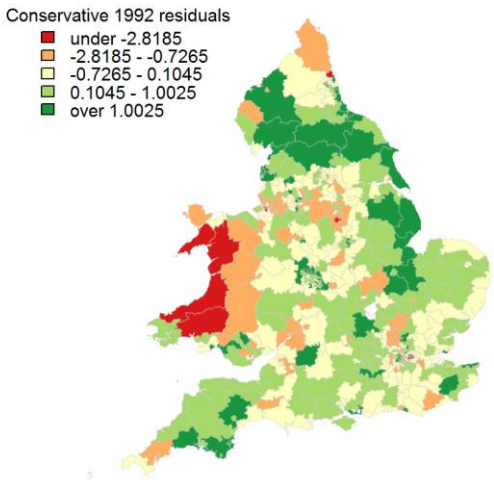

Figure S.11. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 1992

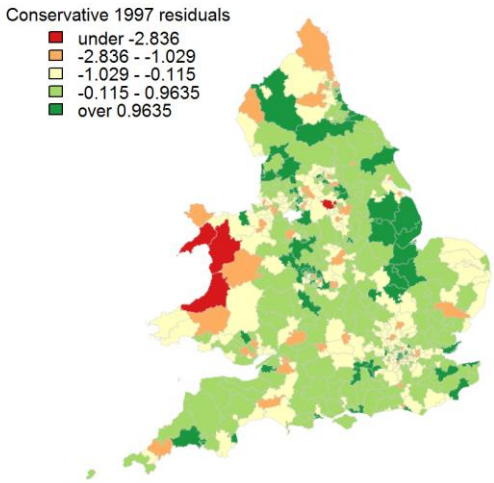

Figure S.12. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 1997

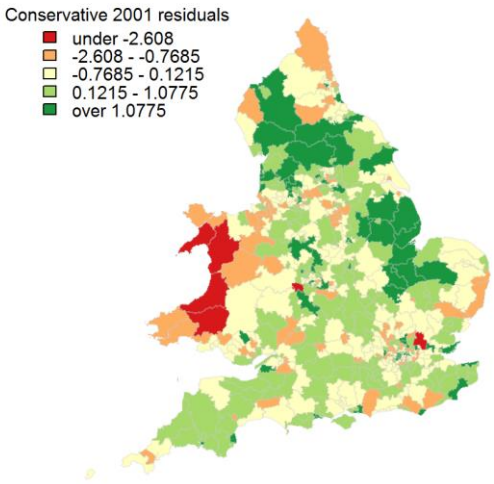

Figure S.13. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 2001

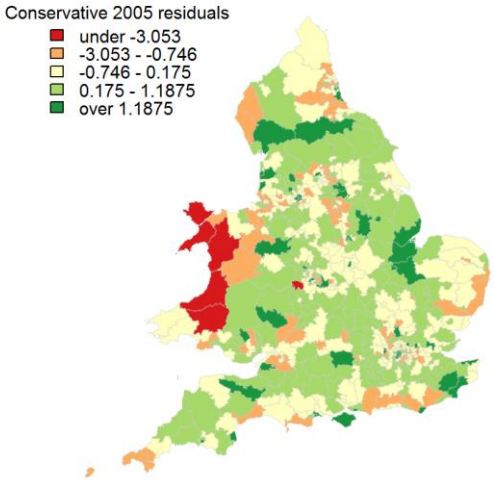

Figure S.14. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 2005

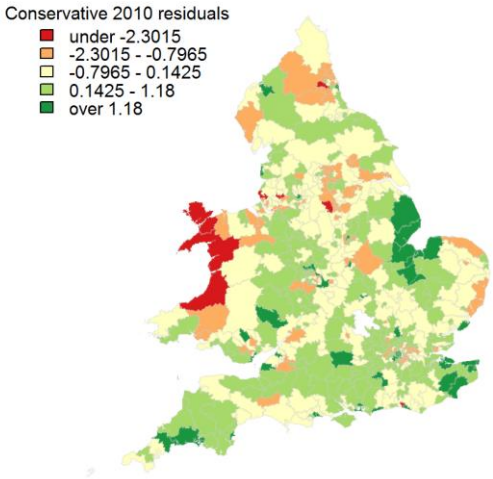

Figure S.15. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 2010

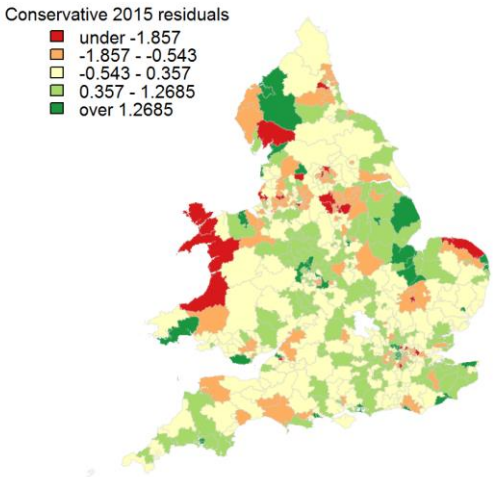

Figure S.16. A choropleth map of the residuals from the 'non-spatial' OLS model predicting Conservative vote shares in 2015

Appendix T. Summary of Merseyside and Lincolnshire vote shares and residual values from OLS models used in Chapter 6 (Chapter 8)

Table T.1. Mean predicted, actual and residual values across Merseyside constituencies contrasted with mean vote shares for constituencies in England and Wales (1979-2017)

Year	Party	mean predicted vote share	mean actual vote share	mean vote share England & Wales	standardised residual
2017	**Labour**	57.7	71.1	43.4	2
	Conservative	30	21.5	44.1	-1.3
2015	**Labour**	51.6	61.7	33.2	1.4
	Conservative	21.6	18.1	39	-0.5
2010	**Labour**	43.1	52.8	29.8	1.7
	Conservative	23.9	20.7	37.7	-0.6
2005	**Labour**	48.9	55.2	37.7	1.1
	Conservative	20.4	18.3	33.3	-0.4
2001	**Labour**	54.7	60.2	43.7	1.1
	Conservative	21.4	18.9	33	-0.5
1997	**Labour**	58.3	62.7	45.8	0.9
	Conservative	21.3	19.2	31.9	-0.5
1992	**Labour**	49.1	53.7	36.5	1
	Conservative	31.4	27.1	43.2	-0.9
1987	**Labour**	47.1	49.7	31.7	0.5
	Conservative	29.8	28.7	44.3	-0.2
1983	**Labour**	42.4	41	28.7	-0.3
	Conservative	33.8	34.5	44.6	0.1
1979	**Labour**	48	45.7	38	-0.5
	Conservative	36.4	40.3	45.8	0.7

Table T.2. Mean predicted, actual and residual values across Lincolnshire (excluding Lincoln) constituencies contrasted with mean vote shares for constituencies in England and Wales (1979-2017)

Year	Party	mean predicted vote share	mean actual vote share	mean vote share England & Wales	standardised residual
2017	**Labour**	32.6	25.5	43.4	-1.1
	Conservative	55	64.2	44.1	1.4
2015	**Labour**	17.8	17.1	33.2	-0.1
	Conservative	45.9	52.7	39	1
2010	**Labour**	22.8	17.1	29.8	-1
	Conservative	45.4	51.6	37.7	1.1
2005	**Labour**	29.8	27.5	37.7	-0.4
	Conservative	42.1	48.5	33.3	1.2
2001	**Labour**	33.5	33.3	43.7	0
	Conservative	41.2	48.1	33	1.4
1997	**Labour**	35.6	34.1	45.8	-0.3
	Conservative	36.4	44.1	31.9	1.8
1992	**Labour**	24.1	22.4	36.5	-0.4
	Conservative	49.6	55.1	43.2	1.2
1987	**Labour**	16.7	15.2	31.7	-0.3
	Conservative	51.6	55.4	44.3	0.7
1983	**Labour**	13.1	12.3	28.7	-0.2
	Conservative	53.5	54.7	44.6	0.2
1979	**Labour**	23	23.9	38	0.2
	Conservative	52	53.3	45.8	0.2

Table T.4. Mean predicted and actual vote shares and standardised residual values for each constituency in Merseyside (1979-2017)

1979						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Birkenhead	50.5	50.8	33.7	35	0.1	0.2
Bootle	58.5	58.4	28.1	28.5	0	0.1
Crosby	27.1	26.1	55.7	57.1	-0.2	0.2
Knowsley North	79.7	68.7	17.5	30.6	-2.2	2.4
Knowsley South	64.6	57.9	25.4	34.1	-1.3	1.5
Liverpool Broadgreen	40.8	37.9	35.9	39.2	-0.6	0.6
Liverpool Garston	58.3	52.6	32.6	41.4	-1.1	1.5
Liverpool Mossley Hill	29.8	27.4	42.4	45.2	-0.5	0.5
Liverpool Riverside	67.3	66.9	17.9	20.5	-0.1	0.5
Liverpool Walton	57.2	54.7	29.6	33.4	-0.5	0.7
Liverpool West Derby	65.9	58.7	22.8	33	-1.4	1.8
Southport	12	11.2	50.4	50.8	-0.2	0.1
St Helens North	44.8	52.4	42.4	35.8	1.5	-1.2
St Helens South	50.6	56.8	38.7	33.3	1.2	-0.9
Wallasey	46.7	39.6	41	49.7	-1.4	1.5
Wirral South	30.1	29.6	54.4	57.4	-0.1	0.5
Wirral West	32.9	26.5	51.1	60.5	-1.2	1.7
1983						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Birkenhead	47.8	49.6	30.4	28.9	0.3	-0.3
Bootle	51	53	24.6	23.6	0.4	-0.2
Crosby	8.1	10.2	50.1	47.2	0.4	-0.5
Knowsley North	71.8	64.5	12.4	20.1	-1.4	1.5
Knowsley South	58.7	53.8	23.3	29.2	-0.9	1.1
Liverpool Broadgreen	48.7	40.9	38.8	32.6	-1.4	-1.1
Liverpool Garston	52.9	46.6	30.7	37.9	-1.2	1.3
Liverpool Mossley Hill	22.3	26.8	36	31.8	0.8	-0.8
Liverpool Riverside	71.6	65	12.7	19.8	-1.2	1.4
Liverpool Walton	51.4	52.7	26	25.1	0.2	-0.2
Liverpool West Derby	60.7	54.5	20.3	27.5	-1.1	1.4
Southport	10.3	8.3	48.6	50.4	-0.4	0.3
St Helens North	36.2	47.9	41.9	30.4	2.1	-2.1
St Helens South	42	46.9	35.1	27.1	0.9	-1.5

Wallasey	38.8	32.5	38.7	46	-1.2	1.3
Wirral South	22.1	22.6	54	53.7	0.1	-0.1
Wirral West	26.5	21.8	50.6	55.9	-0.9	1

1987

constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	56.7	58.7	25.4	26.3	0.4	0.2
Bootle	62.4	66.9	21.3	20.1	0.8	-0.2
Crosby	15.6	17.9	48.4	46.1	0.4	-0.4
Knowsley North	70	69.9	11.7	12.5	0	0.1
Knowsley South	63.9	64.5	20	21.6	0.1	0.3
Liverpool Broadgreen	40.6	48.6	23.7	15.5	1.5	-1.5
Liverpool Garston	52.6	53.6	23.7	23.9	0.2	0
Liverpool Mossley Hill	25.6	38.8	31.5	17.5	2.4	-2.6
Liverpool Riverside	76.8	73.2	7.1	13.8	-0.7	1.3
Liverpool Walton	57.7	64.4	19.8	14.4	1.2	-1
Liverpool West Derby	64.5	65.3	17.6	19.2	0.1	0.3
Southport	23.3	17.8	51.1	58	-1	1.2
St Helens North	42.9	53.7	37	27.3	1.9	-1.7
St Helens South	51.4	54.6	28.8	26.7	0.6	-0.4
Wallasey	44.2	41.9	38.1	42.5	-0.4	0.8
Wirral South	25.3	28	51.4	50.2	0.5	-0.2
Wirral West	27.9	26.3	49.3	51.9	-0.3	0.5

1992

constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	57	63.6	29	25.1	1.4	-0.8
Bootle	62.2	74.6	26.6	16	2.7	-2.3
Crosby	21.7	25.7	52	47.4	0.9	-1
Knowsley North	71.5	77.5	19.1	14.4	1.3	-1
Knowsley South	61.5	68.6	25.8	21.3	1.5	-1
Liverpool Broadgreen	46	43.2	25.4	12.9	-0.6	-2.7
Liverpool Garston	56.5	57.1	27	26.9	0.1	0
Liverpool Mossley Hill	23.3	41.6	29.2	10.3	4	-4.1
Liverpool Riverside	74.8	75.9	9.1	11.5	0.3	0.5
Liverpool Walton	61.7	72.4	22.5	12.5	2.3	-2.2
Liverpool West Derby	65.5	68.2	18.6	16.6	0.6	-0.4
Southport	10.2	10.2	49.1	47	0	-0.4
St Helens North	51.3	57.9	33.6	28.5	1.4	-1.1
St Helens South	56	61	28.2	24.5	1.1	-0.8

Wallasey	49.5	49	38.9	41.9	-0.1	0.7
Wirral South	33.5	34.6	50.9	50.8	0.2	0
Wirral West	32.7	31	49.5	52.7	-0.4	0.7
1997						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Birkenhead	70.3	70.8	14.1	15.2	0.1	0.3
Bootle	73.2	82.9	14.2	8.5	2	-1.3
Crosby	43.8	51.1	38.1	34.8	1.5	-0.7
Knowsley North & Sefton East	61.4	69.9	20.3	17.3	1.8	-0.7
Knowsley South	67.6	77.1	18.1	12.6	2	-1.2
Liverpool, Garston	54.6	61.3	19.9	15.7	1.4	-0.9
Liverpool, Riverside	69.8	70.4	6	9.5	0.1	0.8
Liverpool, Walton	72.4	78.4	10	6.3	1.3	-0.8
Liverpool, Wavertree	52.4	64.4	19.3	10.8	2.5	-1.9
Liverpool, West Derby	71.3	71.2	12.4	8.7	0	-0.9
St Helens North	62.8	64.9	19.8	17.3	0.4	-0.5
St Helens South	66.4	68.6	15.1	15	0.5	0
Southport	17.3	12.1	31.8	35.9	-1.1	0.9
Wallasey	61.2	64.6	24.7	23.9	0.7	-0.2
Wirral South	45.1	50.9	39.1	36.4	1.2	-0.6
Wirral West	43	44.9	37.8	39	0.4	0.3
2001						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Birkenhead	66.6	70.5	12.9	16.7	0.7	0.8
Bootle	71.6	77.6	13.3	8	1.1	-1.1
Crosby	43.8	55.1	39.1	32.5	2.2	-1.3
Knowsley North & Sefton East	57.7	66.7	21.5	16.3	1.7	-1
Knowsley South	61.2	71.3	19.9	11.6	1.9	-1.6
Liverpool, Garston	50.1	61.4	20.7	15.5	2.2	-1
Liverpool, Riverside	65.2	71.4	5.5	8.4	1.2	0.6
Liverpool, Walton	71.4	77.8	6.3	6.1	1.2	0
Liverpool, Wavertree	50.8	62.7	17.4	9.6	2.3	-1.5
Liverpool, West Derby	68.8	66.2	12.5	8	-0.5	-0.9
St Helens North	56.4	61.1	20.9	18.8	0.9	-0.4
St Helens South	56.2	49.7	15	13.8	-1.2	-0.2
Southport	22.9	16.6	30.6	36.5	-1.2	1.2
Wallasey	58.2	60.8	24.5	28	0.5	0.7

Wirral South	36.2	47.4	41.7	34.8	2.1	-1.4
Wirral West	38.4	47.2	40.3	37.2	1.7	-0.6

2005

constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	60.9	65	10.7	16.6	0.7	1.1
Bootle	65.2	75.5	13	6.2	1.8	-1.3
Crosby	35	48.2	41	32.1	2.3	-1.7
Knowsley North & Sefton East	51	63.3	20.7	13.7	2.1	-1.3
Knowsley South	53.4	68.1	19	12.3	2.5	-1.3
Liverpool, Garston	43.3	54	16.5	9.8	1.9	-1.2
Liverpool, Riverside	55.1	57.6	3.9	9.1	0.4	1
Liverpool, Walton	67.9	72.8	5.3	5.9	0.8	0.1
Liverpool, Wavertree	42.3	52.4	12.8	6.6	1.8	-1.2
Liverpool, West Derby	64.5	62.8	11.4	8.4	-0.3	-0.6
St Helens North	50.3	56.9	21.6	18.9	1.1	-0.5
St Helens South	50.8	54.5	14.1	13	0.6	-0.2
Southport	23.8	12.8	28.1	37	-1.9	1.7
Wallasey	53.1	54.8	24.9	29.9	0.3	0.9
Wirral South	31	42.5	42	33.2	2	-1.6
Wirral West	34.7	42.5	41.9	39.9	1.4	-0.4

2010

constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	52.7	62.5	15.6	18.9	1.7	0.6
Bootle	51.9	66.4	18.2	8.9	2.5	-1.6
Garston and Halewood	48.3	59.5	19.1	16.1	1.9	-0.5
Knowsley	58.6	70.9	12.3	9	2.1	-0.6
Liverpool, Riverside	50.9	59.3	11.9	10.9	1.5	-0.2
Liverpool, Walton	62.7	72	6.7	6.5	1.6	0
Liverpool, Wavertree	39.8	53.1	15.7	7.5	2.3	-1.4
Liverpool, West Derby	57.3	64.1	15	9.2	1.2	-1
Sefton Central	20.1	41.9	50.5	33.9	3.7	-2.8
Southport	14.6	9.4	29.2	35.8	-0.9	1.1
St Helens North	44.1	51.7	23.9	22.3	1.3	-0.3
St Helens South and Whiston	44.1	52.9	22	17.8	1.5	-0.7
Wallasey	46.3	51.8	26.3	31.4	0.9	0.9
Wirral South	28	40.8	46.9	39.5	2.2	-1.3
Wirral West	27.4	36.3	45.9	42.5	1.5	-0.6

2015						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	63.3	67.6	13	14.9	0.6	0.3
Bootle	61.8	74.5	12.9	8.1	1.8	-0.7
Garston and Halewood	59	69.1	16.7	13.7	1.4	-0.4
Knowsley	69.4	78.1	7.3	6.6	1.2	-0.1
Liverpool, Riverside	61.3	67.4	5.7	9.6	0.9	0.6
Liverpool, Walton	76	81.3	0.1	4.7	0.8	0.7
Liverpool, Wavertree	56.4	69.3	16.8	10	1.8	-1
Liverpool, West Derby	68	75.2	9	6.6	1	-0.3
Sefton Central	22.2	53.8	47.8	29.6	4.5	-2.6
Southport	26.6	19.2	38.5	28	-1	-1.5
St Helens North	48.5	57	24.2	19.6	1.2	-0.6
St Helens South and Whiston	51	59.8	22.1	15.9	1.2	-0.9
Wallasey	51.2	60.4	22.7	22.7	1.3	0
Wirral South	28.9	48.2	45.2	37.2	2.7	-1.1
Wirral West	30.3	45.1	42.5	44.2	2.1	0.2
2017						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Birkenhead	66.8	76.9	22.3	18.4	1.5	-0.6
Bootle	64.6	84	24.2	12	2.9	-1.9
Garston and Halewood	62.6	77.7	26.5	17.7	2.2	-1.4
Knowsley	69.1	85.3	19.7	9.3	2.4	-1.6
Liverpool, Riverside	77.6	84.5	9.7	9.7	1	0
Liverpool, Walton	76.4	85.7	11.8	8.6	1.4	-0.5
Liverpool, Wavertree	65.3	79.6	20.2	12	2.1	-1.3
Liverpool, West Derby	69.8	82.7	19.7	9.9	1.9	-1.5
Sefton Central	34.1	63	56.4	33	4.3	-3.6
Southport	29	32.6	40	38.7	0.5	-0.2
St Helens North	56.2	63.7	33.7	27.1	1.1	-1
St Helens South and Whiston	57.2	67.8	31.4	21.8	1.6	-1.5
Wallasey	58.3	71.5	31.4	23.2	2	-1.3
Wirral South	38.8	57.2	53.3	38.8	2.7	-2.2
Wirral West	40.1	54.3	50.2	42.1	2.1	-1.2

Table T.4. Mean predicted and actual vote shares and standardised residual values for each constituency in Lincolnshire (excluding Lincoln) (1979-2017)

1979						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
East Lindsey	15.5	17.3	51.7	52.3	0.4	0.1
Gainsborough and Horncastle	17.9	19.8	48.2	47.1	0.4	-0.2
Grantham	30.5	28	51.6	55.5	-0.5	0.7
Holland with Boston	27.1	30.1	51.8	53.4	0.6	0.3
Stamford and Spalding	24	24.2	56.6	58	0	0.2
1983						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
East Lindsey	8.1	8.3	53	53.2	0	0
Gainsborough and Horncastle	9.7	7.7	49.2	50.9	-0.4	0.3
Grantham	22.5	19.4	53.6	57.5	-0.6	0.7
Holland with Boston	14.9	15.4	55	55.3	0.1	0
Stamford and Spalding	10.3	10.9	56.8	56.5	0.1	0
1987						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
East Lindsey	12.8	11.1	47.3	52.2	-0.3	0.9
Gainsborough and Horncastle	11.5	11.5	50.4	53.3	0	0.5
Grantham	23.8	20.5	53.5	57.1	-0.6	0.6
Holland with Boston	23	20.5	50.3	57.9	-0.5	1.4
Stamford and Spalding	12.3	12.5	56.3	56.5	0	0
1992						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
East Lindsey	20.2	15.2	42.2	51.1	-1.1	1.9
Gainsborough and Horncastle	19.9	19.9	47.9	54	0	1.3
Grantham	29.2	26.6	53.8	56.2	-0.6	0.5
Holland with Boston	29	29	47.5	55.1	0	1.6
Stamford and Spalding	22	21.5	56.8	59	-0.1	0.5
1997						
constituency	Labour predicted vote share	Labour actual vote share	Conservative predicted vote share	Conservative actual vote share	Labour std. residual	Conservative std. residual
Boston & Skegness	44.3	41	29.2	42.4	-0.7	3
Gainsborough	26.2	28.8	35	43.1	0.5	1.8
Grantham & Stamford	42.5	37.7	40.7	42.8	-1	0.5

Louth & Horncastle	29.2	29.6	33.7	43.4	0.1	2.2
Sleaford & North Hykeham	36.9	34.3	38.8	43.9	-0.5	1.2
South Holland & The Deepings	34.3	33.3	40.7	49.3	-0.2	1.9
2001						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Boston & Skegness	43.3	41.6	34.3	42.9	-0.3	1.7
Gainsborough	24.7	27.1	39.1	46.2	0.5	1.4
Grantham & Stamford	38.8	36.3	43.6	46.1	-0.5	0.5
Louth & Horncastle	28.5	31.5	39.4	48.5	0.6	1.8
Sleaford & North Hykeham	32.3	32	43.9	49.7	-0.1	1.1
South Holland & The Deepings	33.5	31.4	47.1	55.4	-0.4	1.7
2005						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Boston & Skegness	43.1	32.1	34.9	46.2	-1.9	2.1
Gainsborough	23.3	25.7	38.9	43.9	0.4	0.9
Grantham & Stamford	31.9	31.1	45.5	46.9	-0.1	0.3
Louth & Horncastle	25.6	25.4	40.5	46.6	0	1.1
Sleaford & North Hykeham	26.9	26.5	45.6	50.3	-0.1	0.9
South Holland & The Deepings	28.2	24.4	47.2	57.1	-0.7	1.9
2010						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Boston and Skegness	33.5	20.6	37.4	49.5	-2.2	2.1
Gainsborough	17.7	15.6	45.2	49.3	-0.3	0.7
Grantham and Stamford	21.6	18	47.1	50.3	-0.6	0.5
Louth and Horncastle	21.6	17.4	41.9	49.6	-0.7	1.3
Sleaford and North Hykeham	20.3	16.9	52.1	51.6	-0.6	-0.1
South Holland and The Deepings	21.8	14	48.5	59.1	-1.3	1.8
2015						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Boston and Skegness	17.5	16.5	37.6	43.8	-0.1	0.9

Gainsborough	20.2	21.3	47.8	52.7	0.2	0.7
Grantham and Stamford	19.6	16.9	49.5	52.8	-0.4	0.5
Louth and Horncastle	18.3	18	40.9	51.2	0	1.5
Sleaford and North Hykeham	17	17.3	51.9	56.2	0	0.6
South Holland and The Deepings	14.3	12.4	47.5	59.6	-0.3	1.7
2017						
constituency	**Labour predicted vote share**	**Labour actual vote share**	**Conservative predicted vote share**	**Conservative actual vote share**	**Labour std. residual**	**Conservative std. residual**
Boston and Skegness	40.9	25	47.2	63.6	-2.4	2.6
Gainsborough	31.3	28.7	55.1	61.8	-0.4	1
Grantham and Stamford	31.2	26.5	57.2	62	-0.7	0.7
Louth and Horncastle	33.7	26.7	51.6	63.9	-1.1	1.9
Sleaford and North Hykeham	29.7	25.8	60.2	64.2	-0.6	0.6
South Holland and The Deepings	29	20.4	58.6	69.9	-1.3	1.8

Appendix U. Global Moran's I scatterplots: Chapter 6 models (Chapter 8)

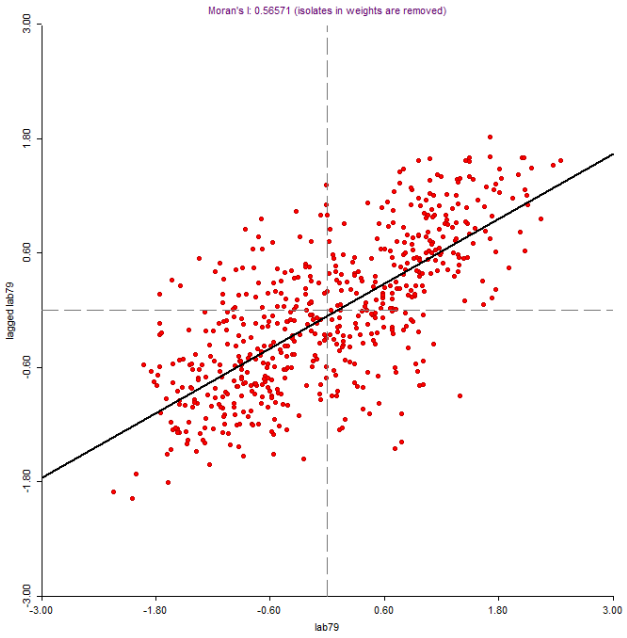

Figure U.1. Global Moran's scatterplot with the spatially lagged Labour vote share (1979) on the y-axis and the Labour vote share (1979) on the x-axis.

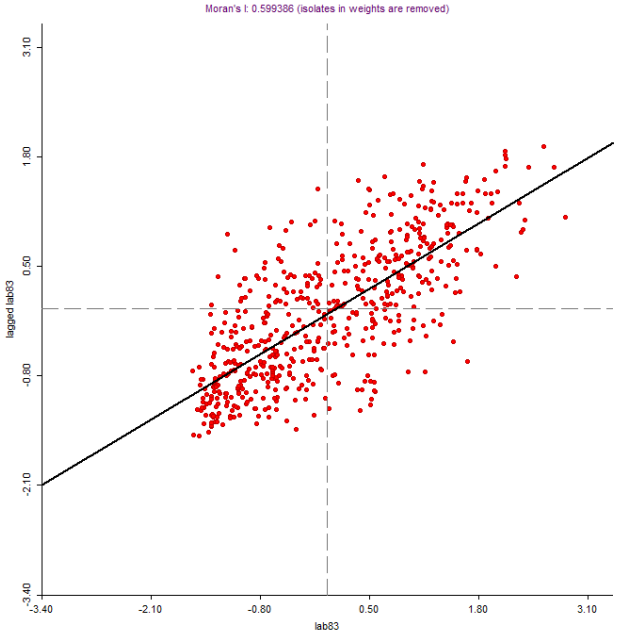

Figure U.2. Global Moran's scatterplot with the spatially lagged Labour vote share (1983) on the y-axis and the Labour vote share (1983) on the x-axis.

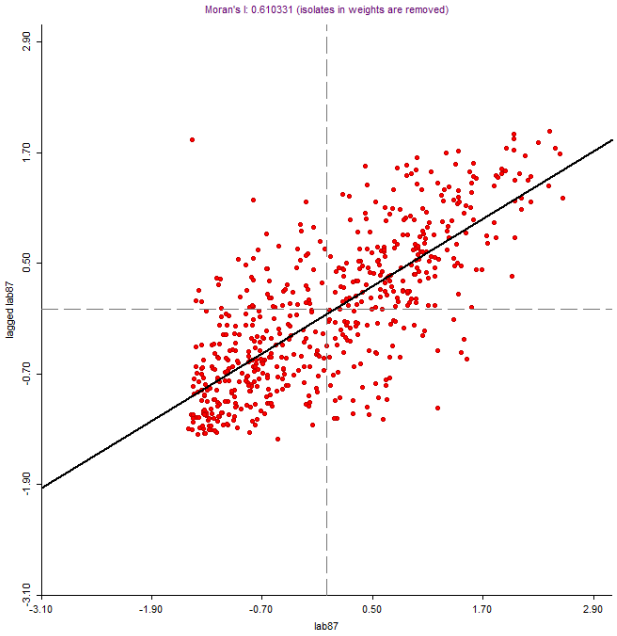

Figure U.3. Global Moran's scatterplot with the spatially lagged Labour vote share (1987) on the y-axis and the Labour vote share (1987) on the x-axis.

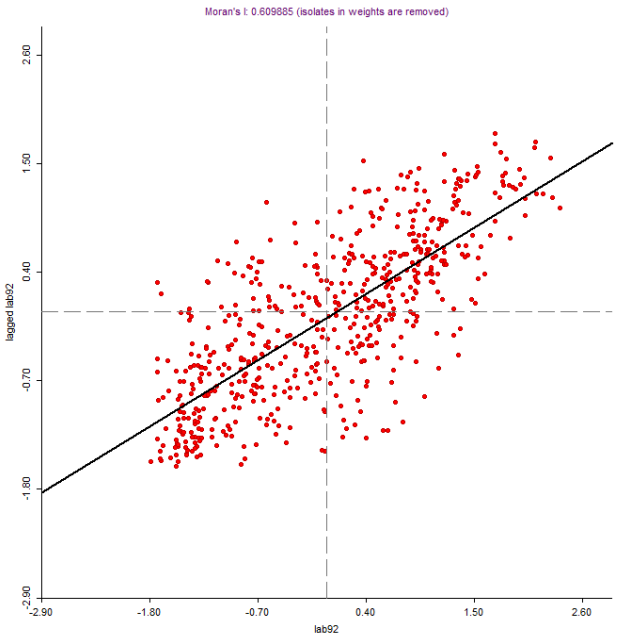

Figure U.4. Global Moran's scatterplot with the spatially lagged Labour vote share (1992) on the y-axis and the Labour vote share (1992) on the x-axis.

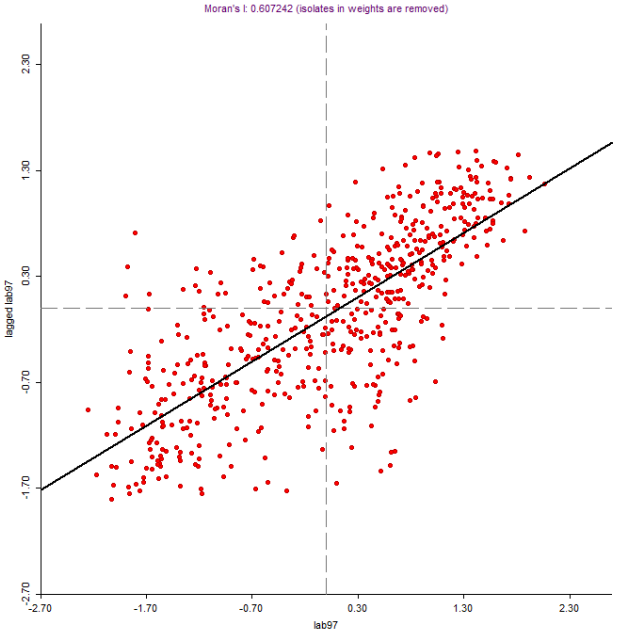

Figure U.5. Global Moran's scatterplot with the spatially lagged Labour vote share (1997) on the y-axis and the Labour vote share (1997) on the x-axis.

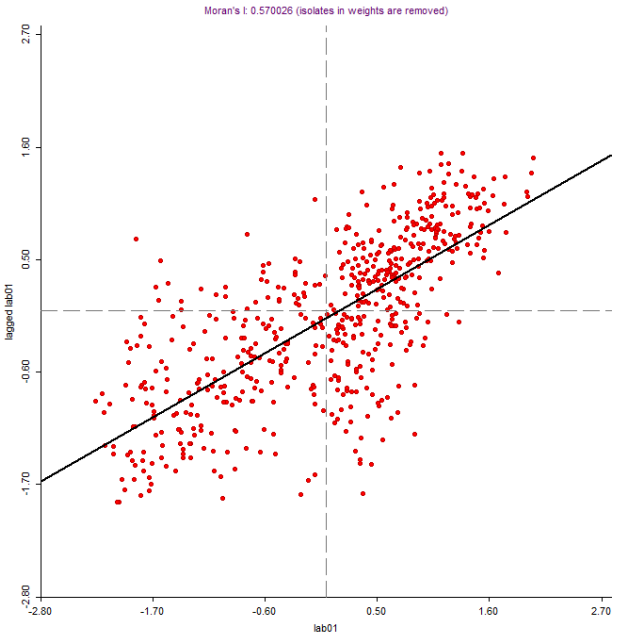

Figure U.6. Global Moran's scatterplot with the spatially lagged Labour vote share (2001) on the y-axis and the Labour vote share (2001) on the x-axis.

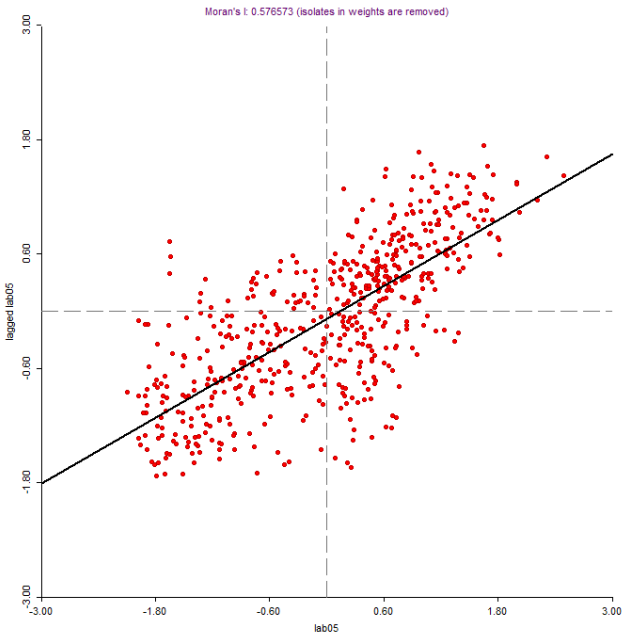

Figure U.7. Global Moran's scatterplot with the spatially lagged Labour vote share (2005) on the y-axis and the Labour vote share (2005) on the x-axis.

Figure U.8. Global Moran's scatterplot with the spatially lagged Labour vote share (2010) on the y-axis and the Labour vote share (2010) on the x-axis.

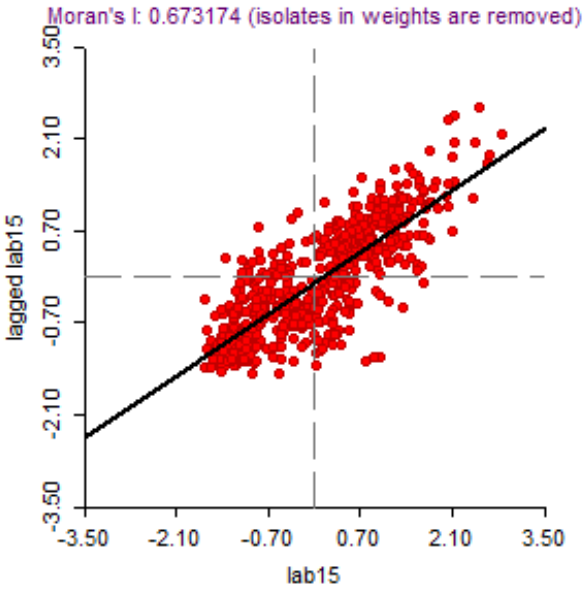

Figure U.9. Global Moran's scatterplot with the spatially lagged Labour vote share (2015) on the y-axis and the Labour vote share (2015) on the x-axis.

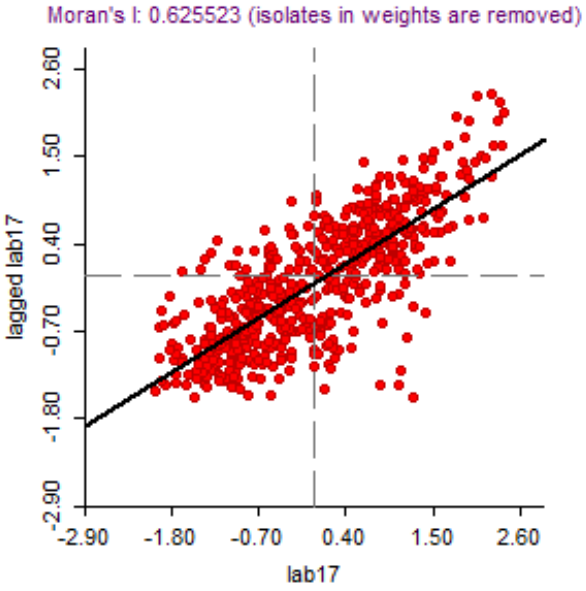

Figure U.10. Global Moran's scatterplot with the spatially lagged Labour vote share (2017) on the y-axis and the Labour vote share (2017) on the x-axis.

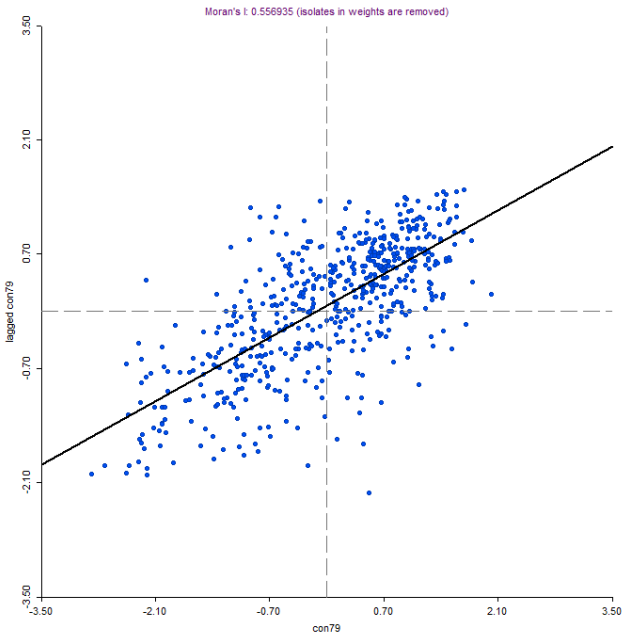

Figure U.11. Global Moran's scatterplot with the spatially lagged Conservative vote share (1979) on the y-axis and the Conservative vote share (1979) on the x-axis.

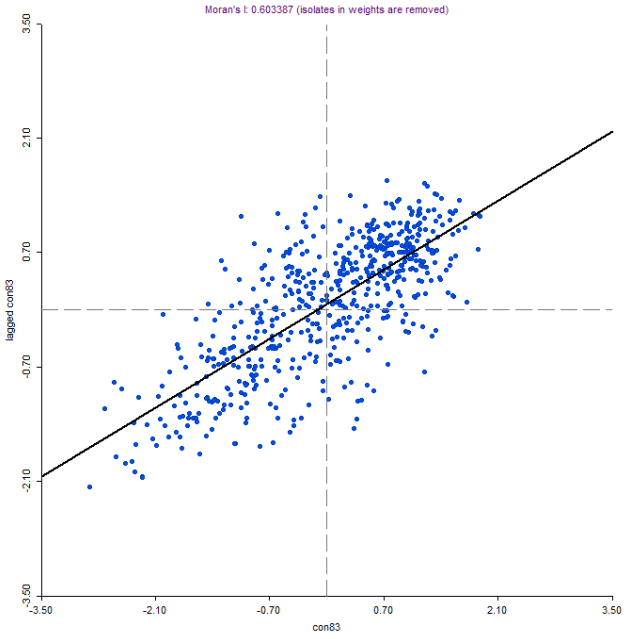

Figure U.12. Global Moran's scatterplot with the spatially lagged Conservative vote share (1983) on the y-axis and the Conservative vote share (1983) on the x-axis.

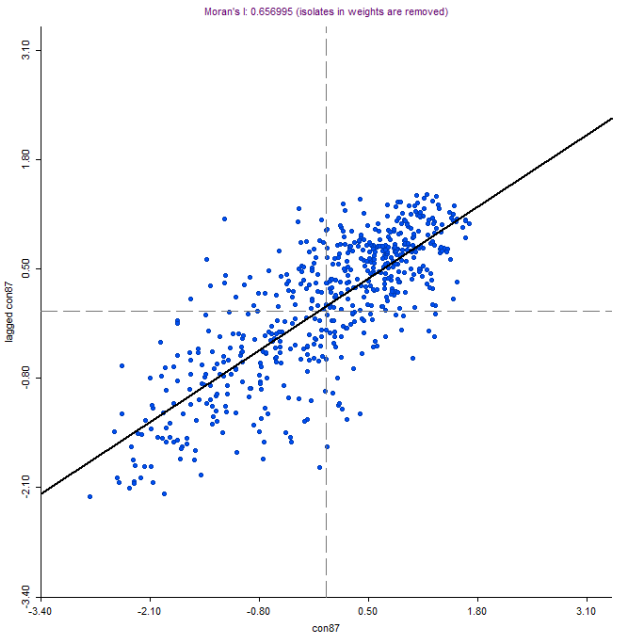

Figure U.13. Global Moran's scatterplot with the spatially lagged Conservative vote share (1987) on the y-axis and the Conservative vote share (1987) on the x-axis.

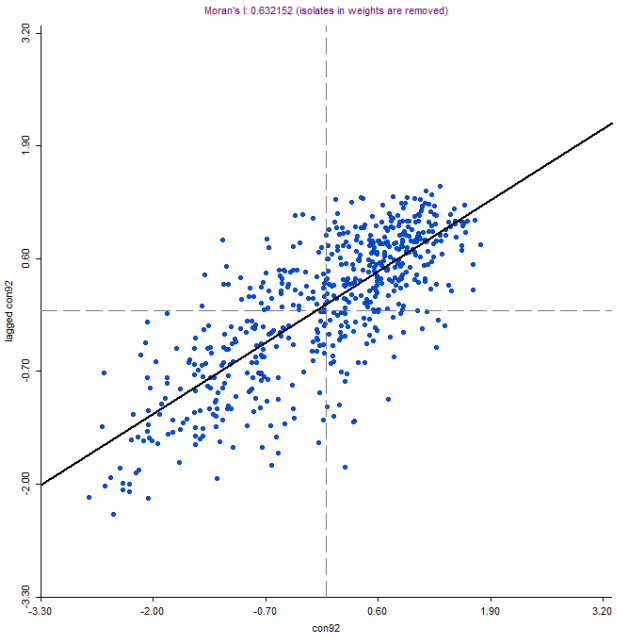

Figure U.14. Global Moran's scatterplot with the spatially lagged Conservative vote share (1992) on the y-axis and the Conservative vote share (1992) on the x-axis.

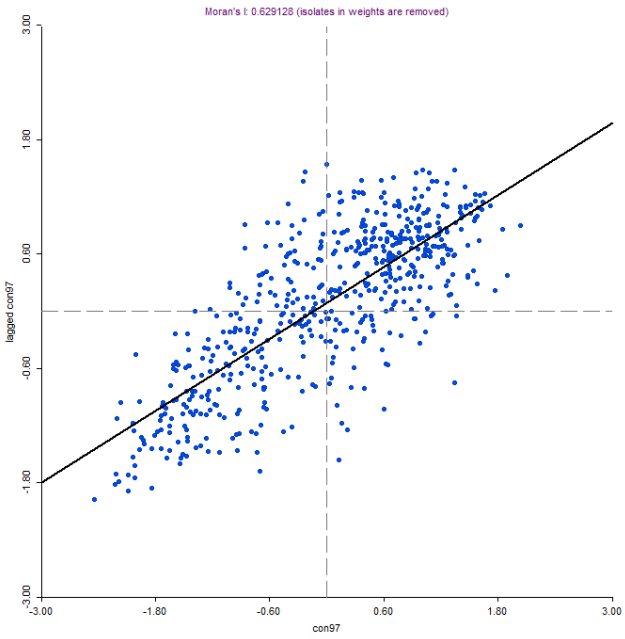

Figure U.15. Global Moran's scatterplot with the spatially lagged Conservative vote share (1997) on the y-axis and the Conservative vote share (1997) on the x-axis.

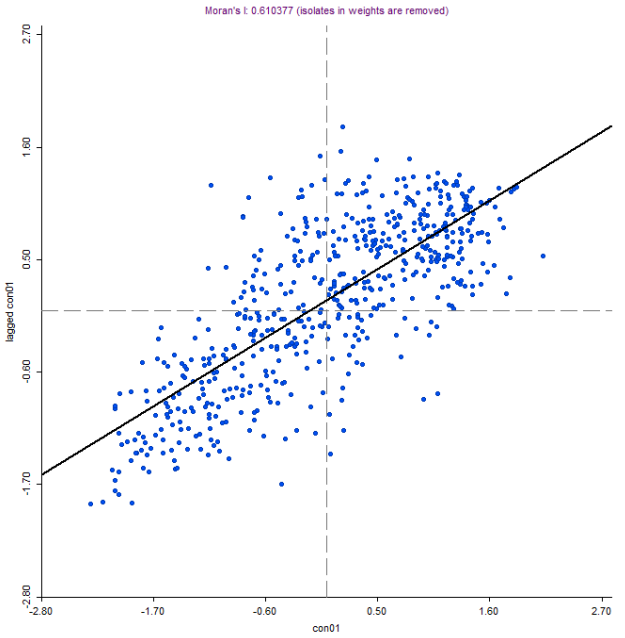

Figure U.16. Global Moran's scatterplot with the spatially lagged Conservative vote share (2001) on the y-axis and the Conservative vote share (2001) on the x-axis.

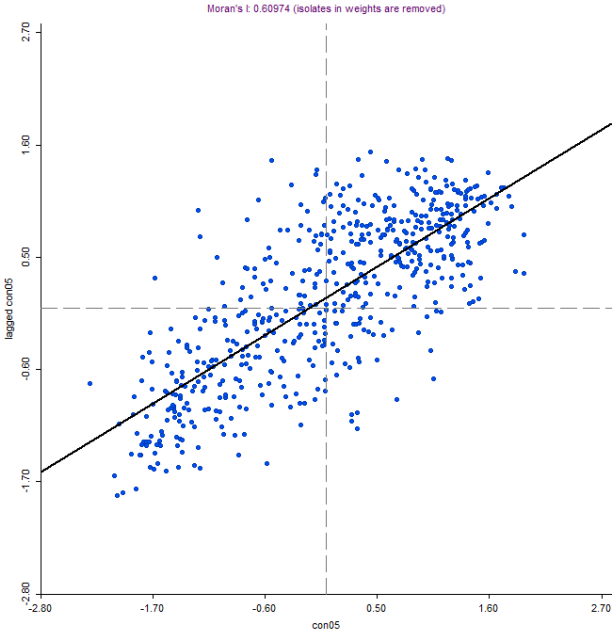

Figure U.17. Global Moran's scatterplot with the spatially lagged Conservative vote share (2005) on the y-axis and the Conservative vote share (2005) on the x-axis.

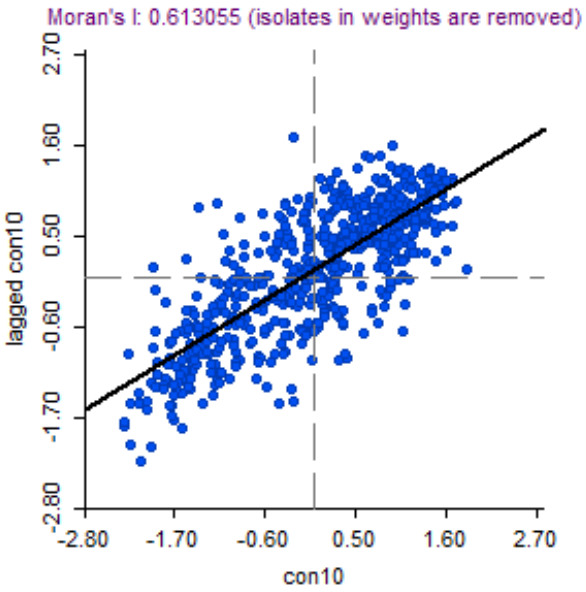

Figure U.18. Global Moran's scatterplot with the spatially lagged Conservative vote share (2010) on the y-axis and the Conservative vote share (2010) on the x-axis.

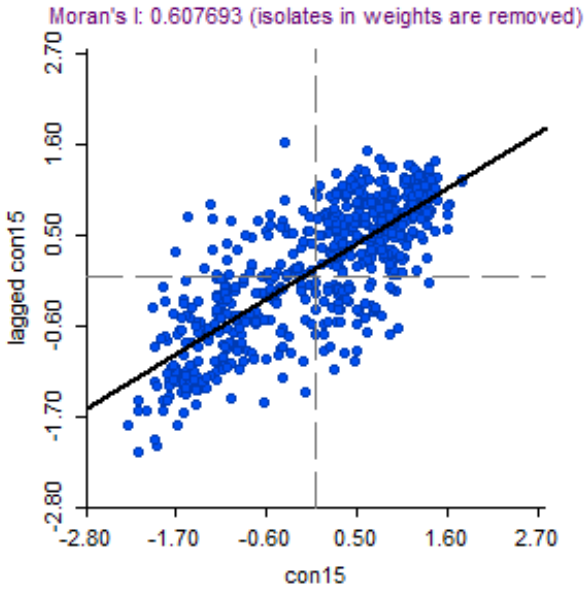

Figure U.19. Global Moran's scatterplot with the spatially lagged Conservative vote share (2015) on the y-axis and the Conservative vote share (2015) on the x-axis.

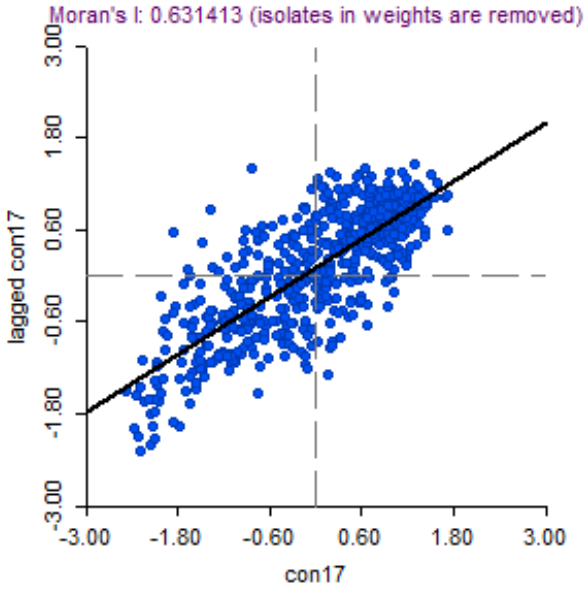

Figure U.20. Global Moran's scatterplot with the spatially lagged Conservative vote share (2017) on the y-axis and the Conservative vote share (2017) on the x-axis.

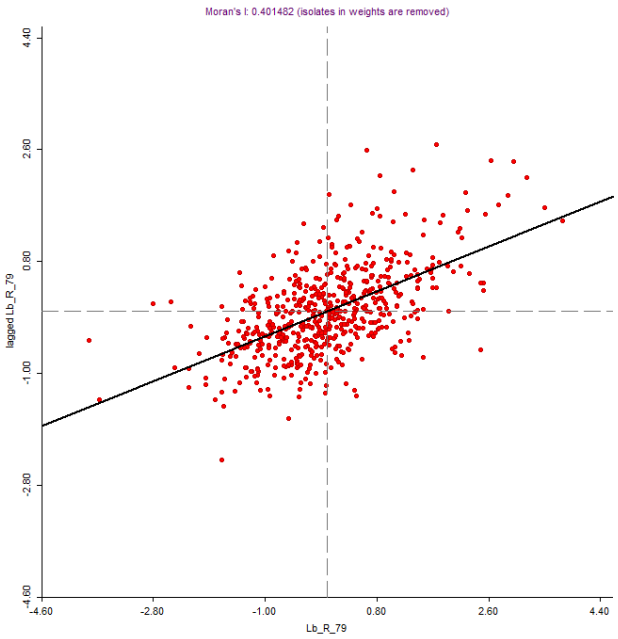

Figure U.21. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (1979) on the y-axis and the Labour standardised residuals (1979) on the x-axis.

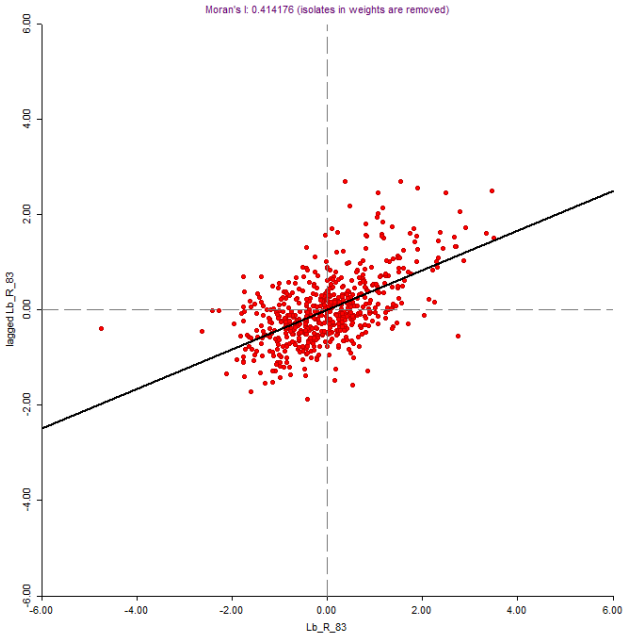

Figure U.22. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (1983) on the y-axis and the Labour standardised residuals (1983) on the x-axis.

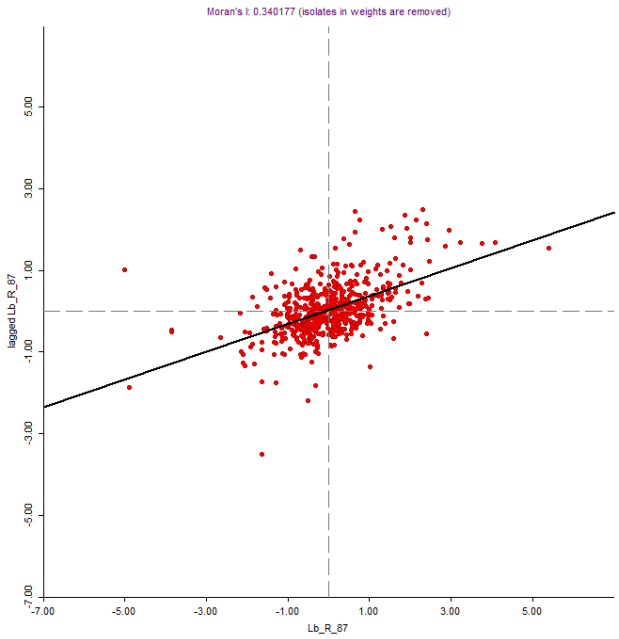

Figure U.23. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (1987) on the y-axis and the Labour standardised residuals (1987) on the x-axis.

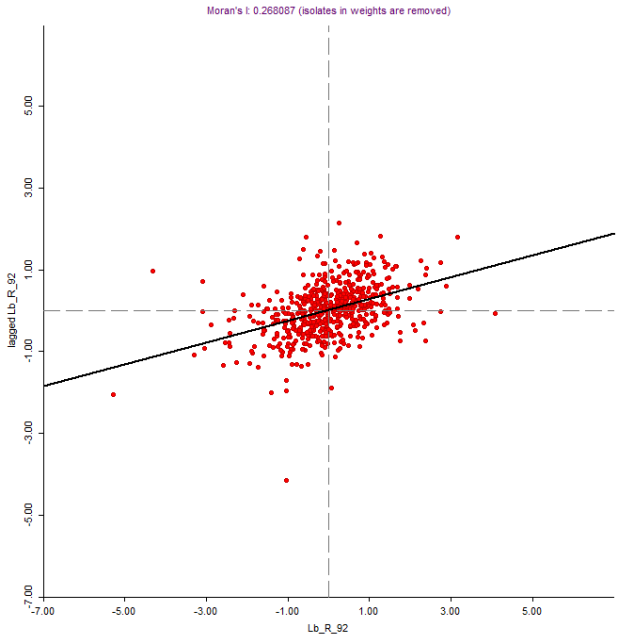

Figure U.24. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (1992) on the y-axis and the Labour standardised residuals (1992) on the x-axis.

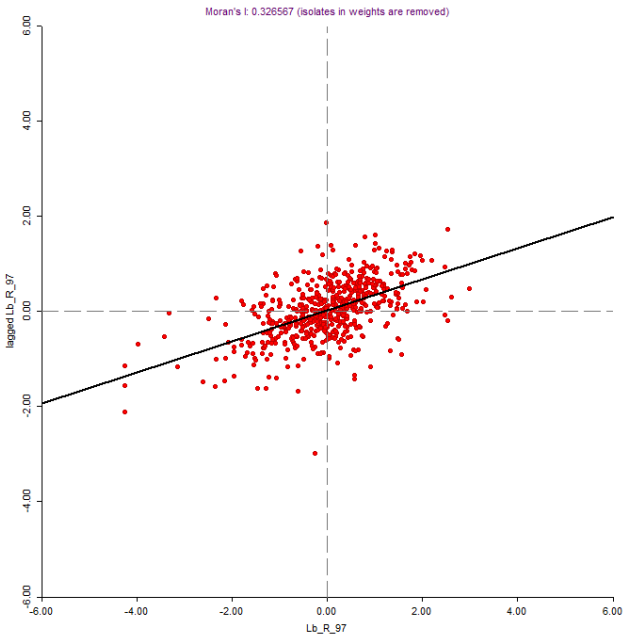

Figure U.25. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (1997) on the y-axis and the Labour standardised residuals (1997) on the x-axis.

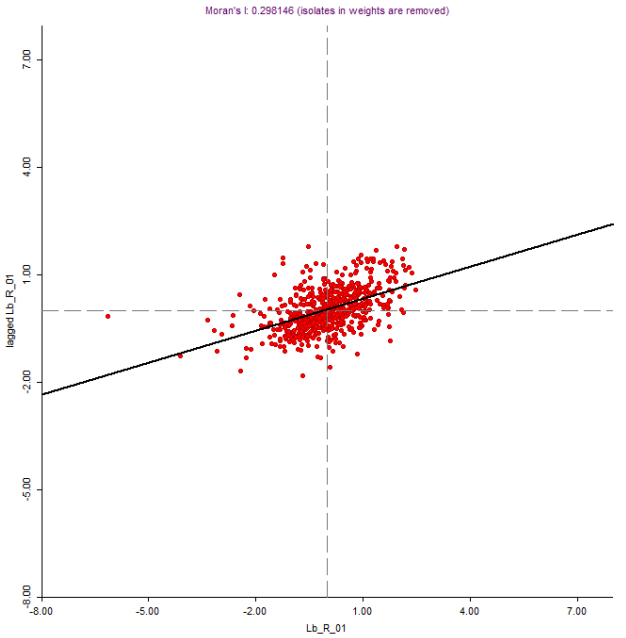

Figure U.26. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2001) on the y-axis and the Labour standardised residuals (2001) on the x-axis.

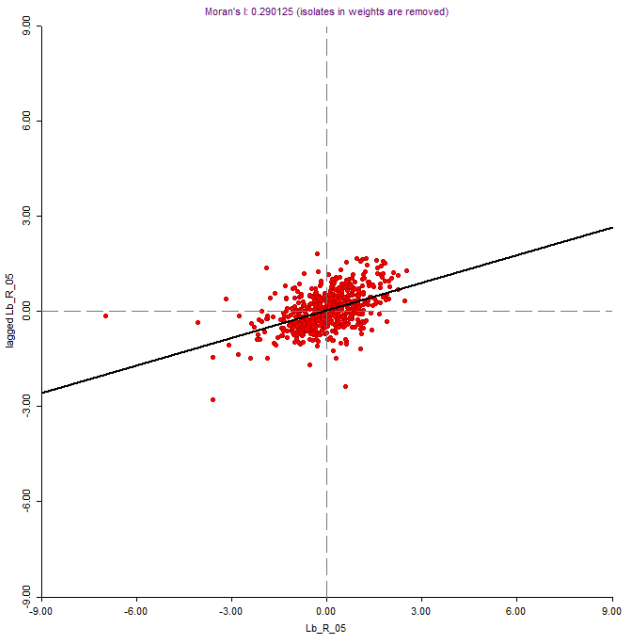

Figure U.27. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2005) on the y-axis and the Labour standardised residuals (2005) on the x-axis.

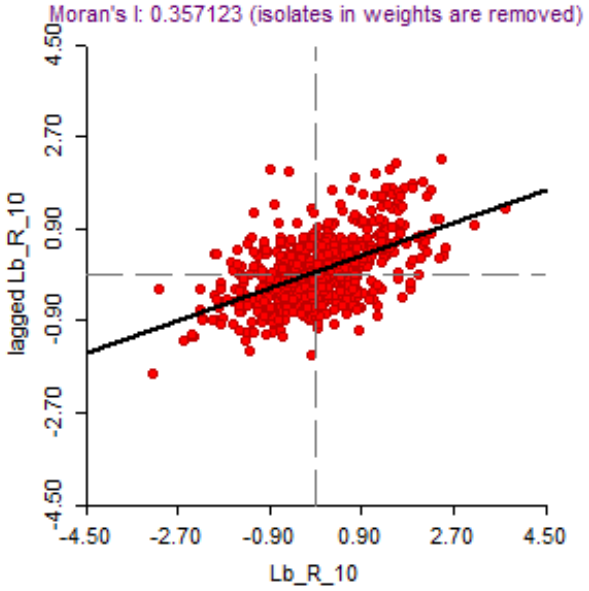

Figure U.28. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2010) on the y-axis and the Labour standardised residuals (2010) on the x-axis.

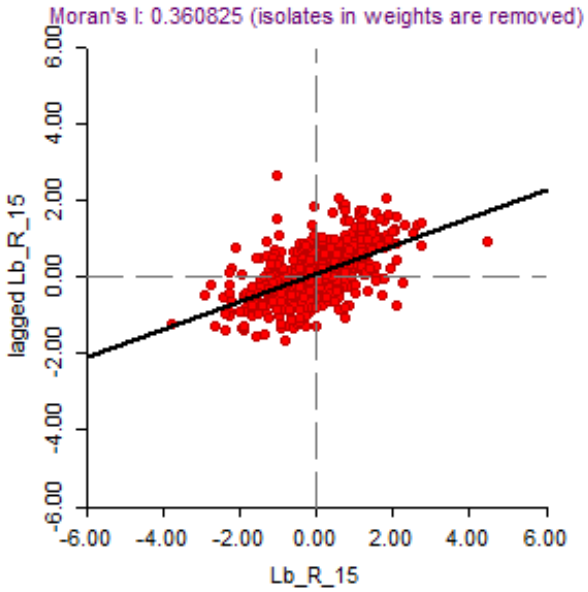

Figure U.29. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2015) on the y-axis and the Labour standardised residuals (2015) on the x-axis.

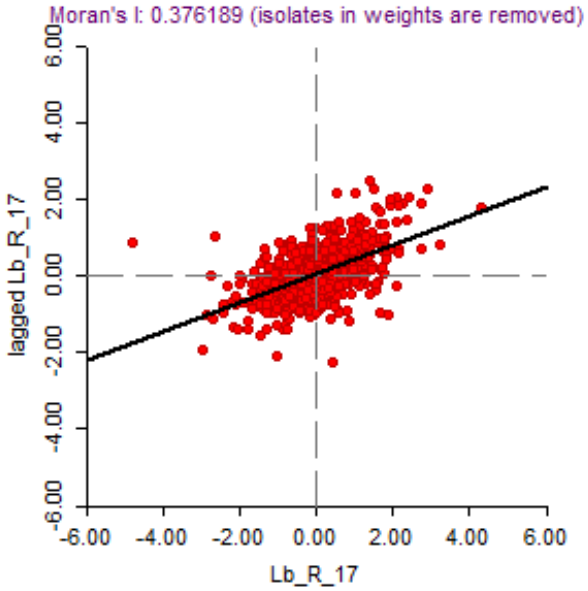

Figure U.30. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2017) on the y-axis and the Labour standardised residuals (2017) on the x-axis.

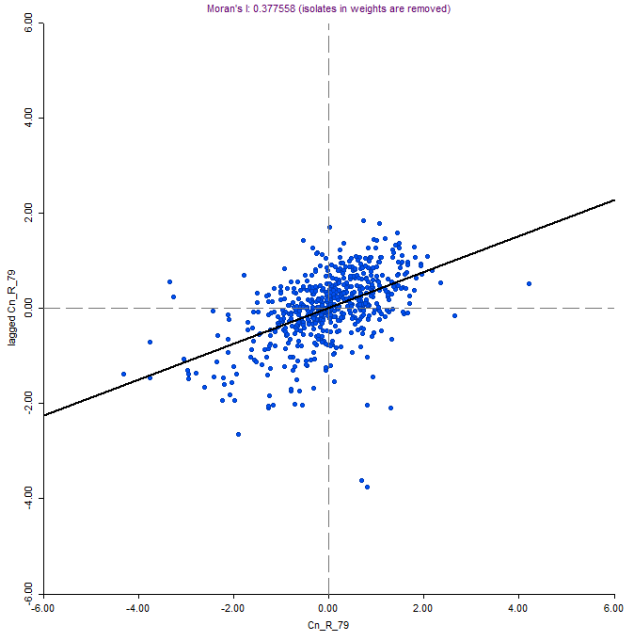

Figure U.31. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (1979) on the y-axis and the Conservative standardised residuals (1979) on the x-axis.

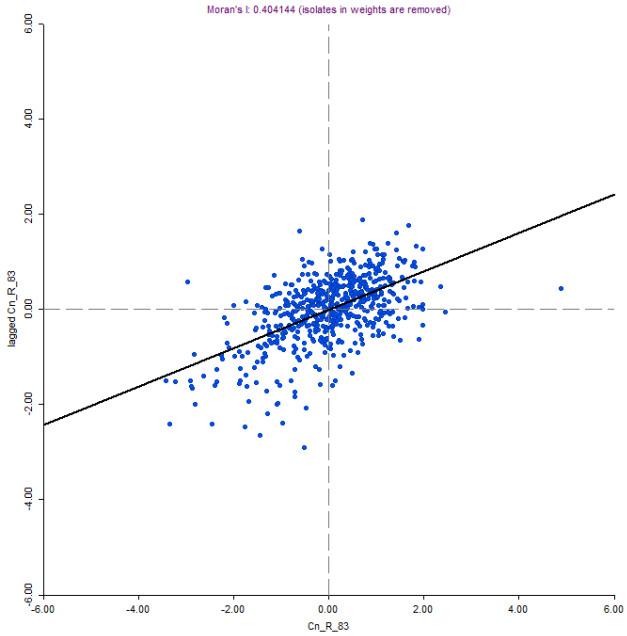

Figure U.32. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (1983) on the y-axis and the Conservative standardised residuals (1983) on the x-axis.

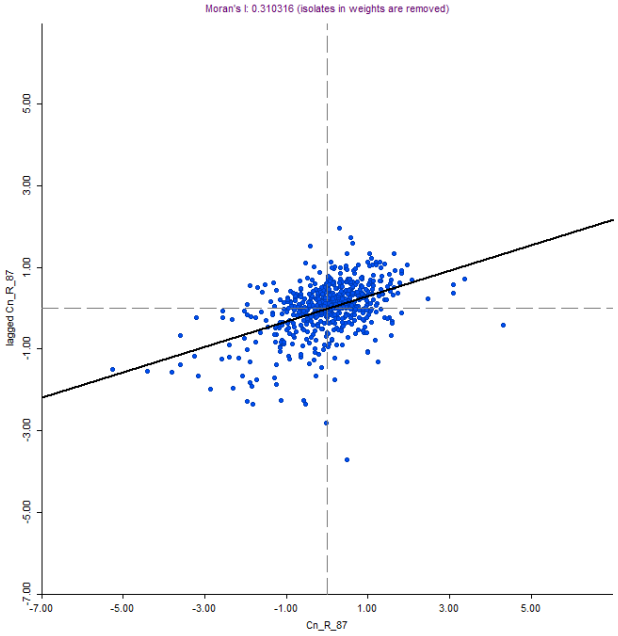

Figure U.33. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (1987) on the y-axis and the Conservative standardised residuals (1987) on the x-axis.

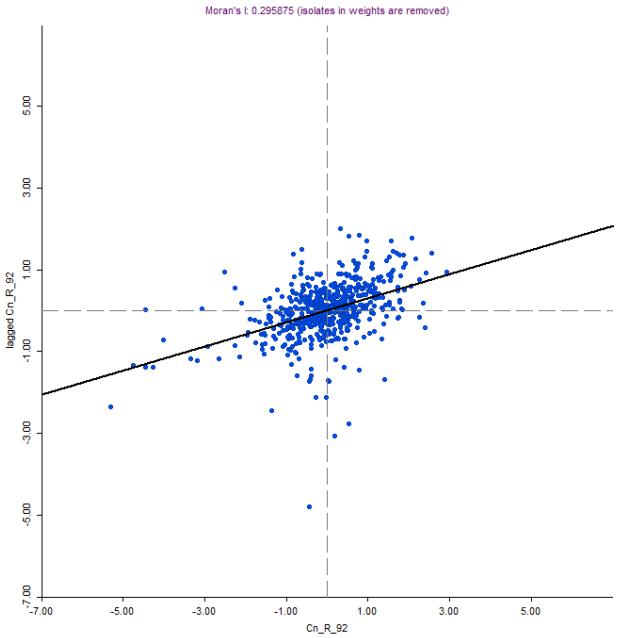

Figure U.34. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (1992) on the y-axis and the Conservative standardised residuals (1992) on the x-axis.

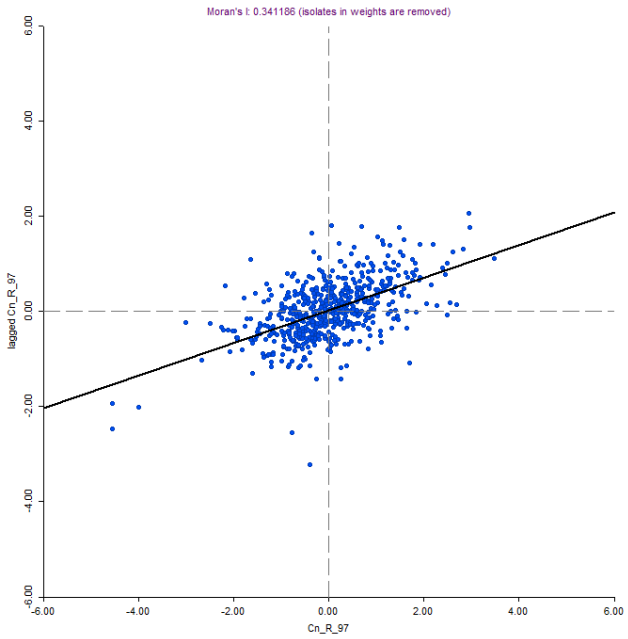

Figure U.35. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (1997) on the y-axis and the Conservative standardised residuals (1997) on the x-axis.

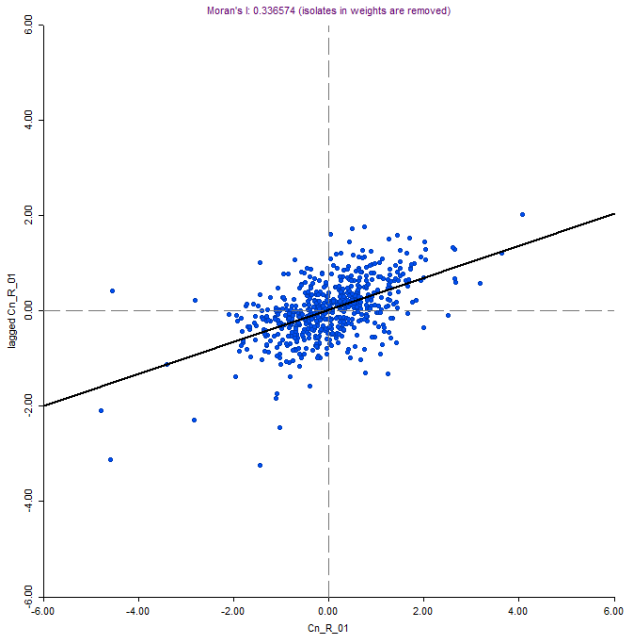

Figure U.36. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2001) on the y-axis and the Conservative standardised residuals (2001) on the x-axis.

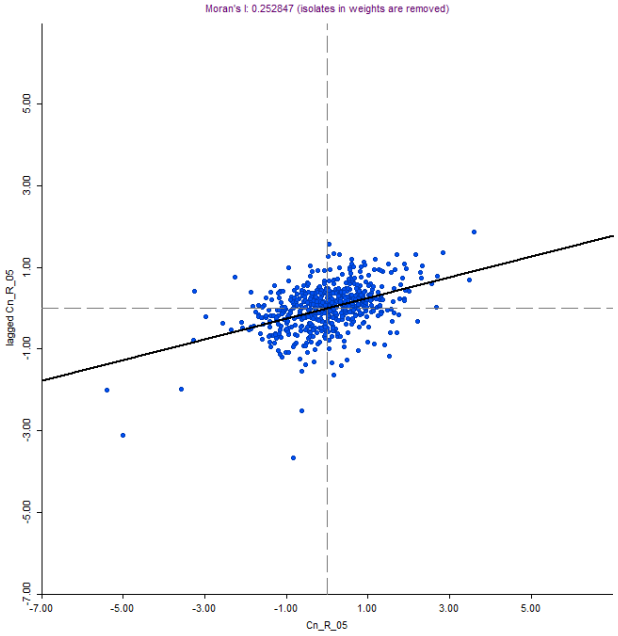

Figure U.37. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2005) on the y-axis and the Conservative standardised residuals (2005) on the x-axis.

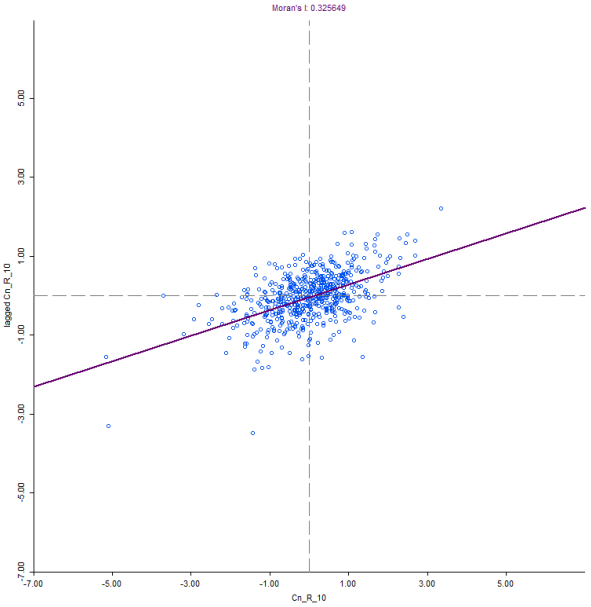

Figure U.38. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2010) on the y-axis and the Conservative standardised residuals (2010) on the x-axis.

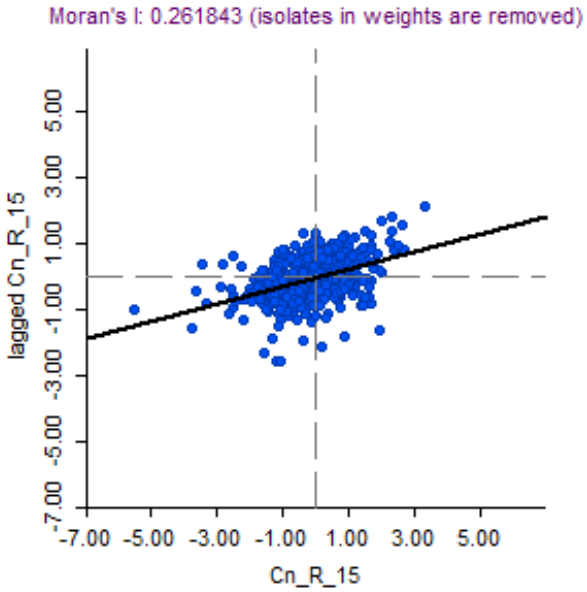

Figure U.39. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2015) on the y-axis and the Conservative standardised residuals (2015) on the x-axis.

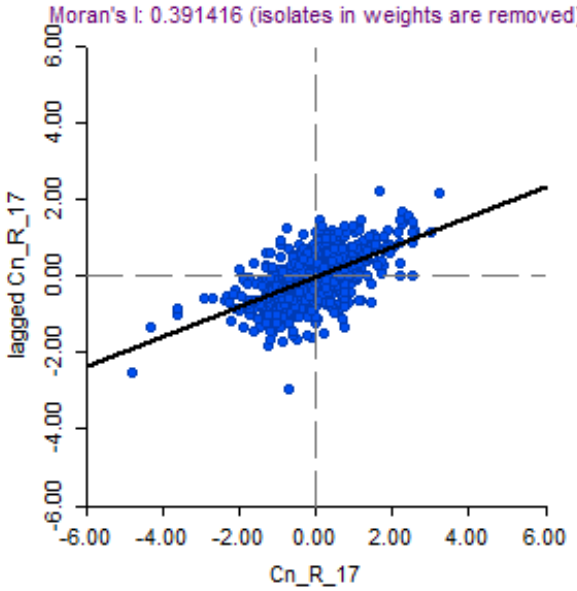

Figure U.40. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2017) on the y-axis and the Conservative standardised residuals (2017) on the x-axis.

Appendix V. LISA cluster maps: OLS models used in Chapter 6 (Chapter 8)

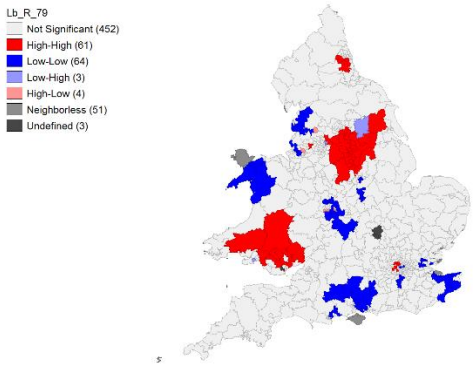

Figure V.1. LISA cluster map of the residuals from the model predicting Labour vote shares at the 1979 General Election

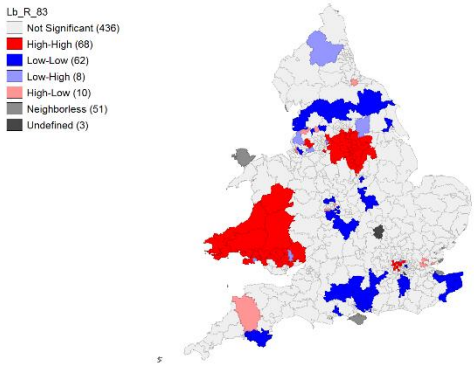

Figure V.2. LISA cluster map of the residuals from the model predicting Labour vote shares at the 1983 General Election

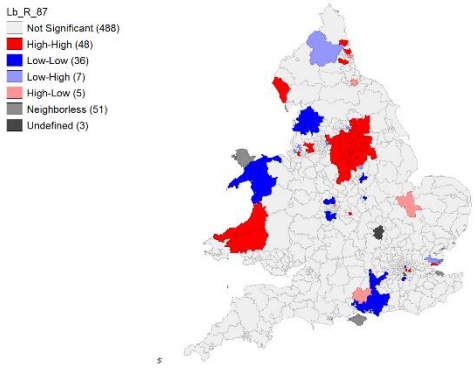

Figure V.3. LISA cluster map of the residuals from the model predicting Labour vote shares at the 1987 General Election

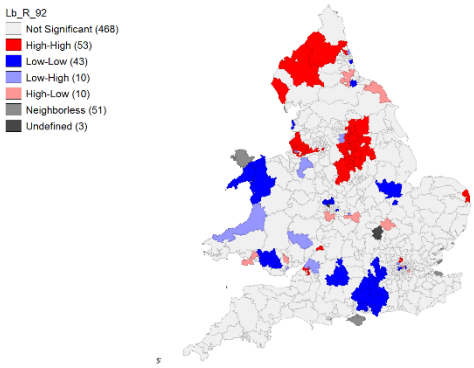

Figure V.4. LISA cluster map of the residuals from the model predicting Labour vote shares at the 1992 General Election

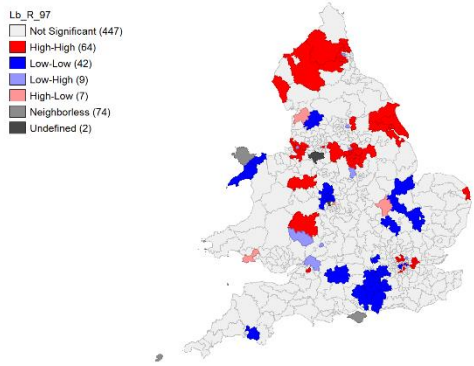

Figure V.5. LISA cluster map of the residuals from the model predicting Labour vote shares at the 1997 General Election

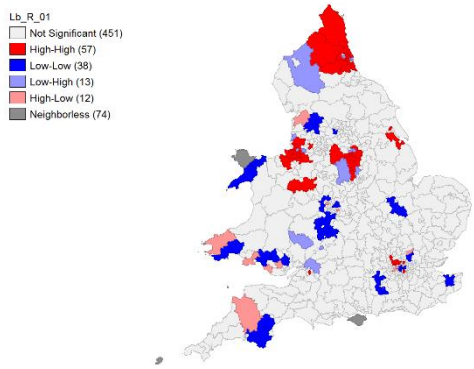

Figure V.6. LISA cluster map of the residuals from the model predicting Labour vote shares at the 2001 General Election

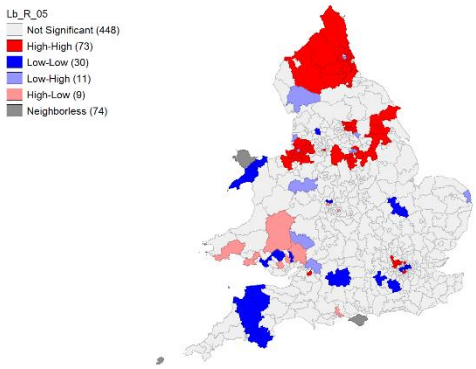

Figure V.7. LISA cluster map of the residuals from the model predicting Labour vote shares at the 2005 General Election

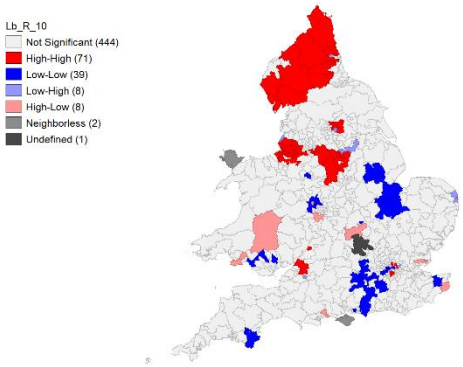

Figure V.8. LISA cluster map of the residuals from the model predicting Labour vote shares at the 2010 General Election

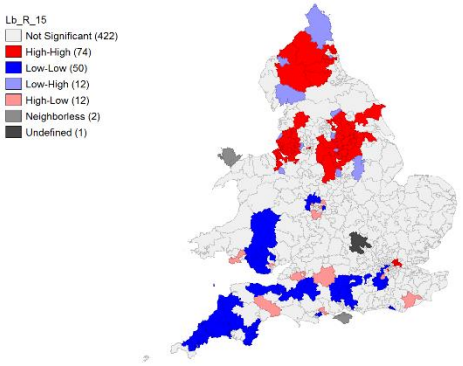

Figure V.9. LISA cluster map of the residuals from the model predicting Labour vote shares at the 2015 General Election

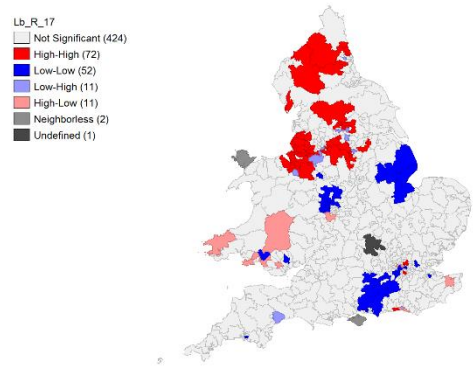

Figure V.10. LISA cluster map of the residuals from the model predicting Labour vote shares at the 2017 General Election

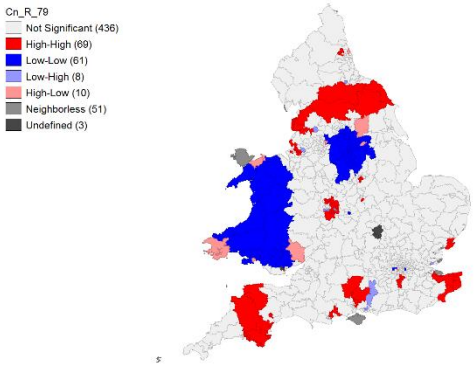

Figure V.11. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 1979 General Election

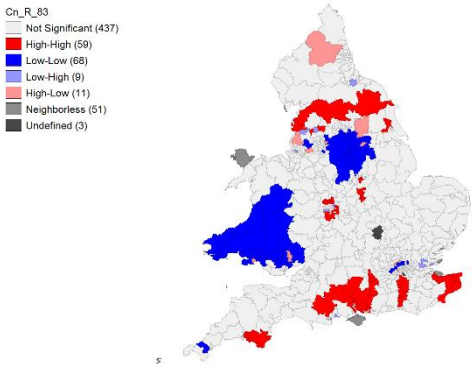

Figure V.12. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 1983 General Election

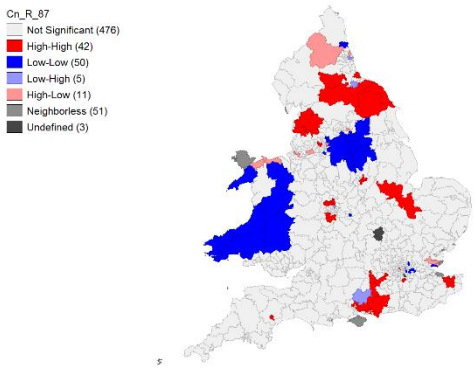

Figure V.13. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 1987 General Election

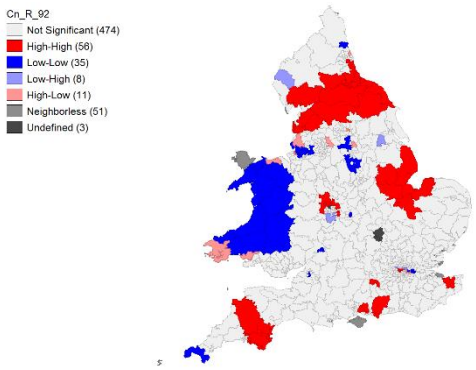

Figure V.14. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 1992 General Election

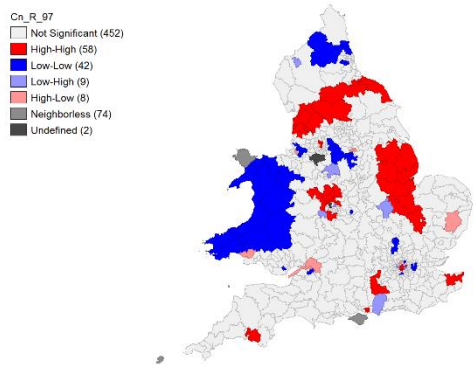

Figure V.15. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 1997 General Election

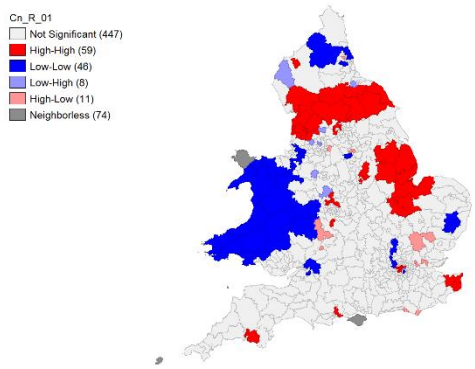

Figure V.16. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 2001 General Election

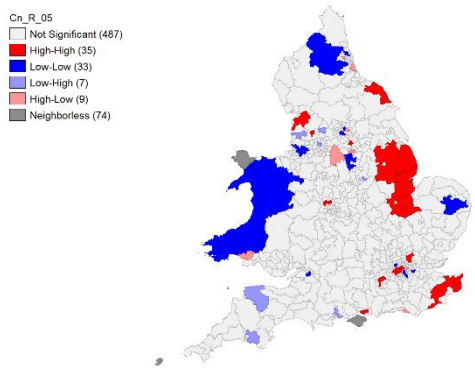

Figure V.17. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 2005 General Election

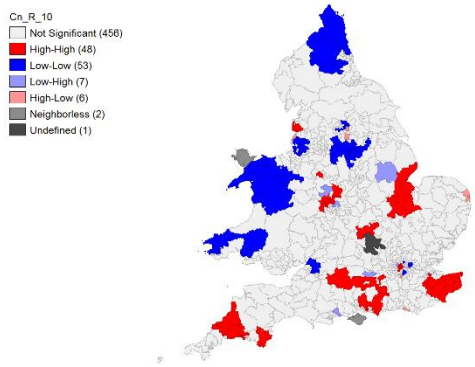

Figure V.18. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 2010 General Election

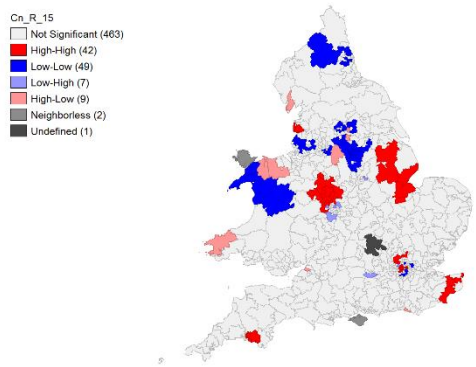

Figure V.19. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 2015 General Election

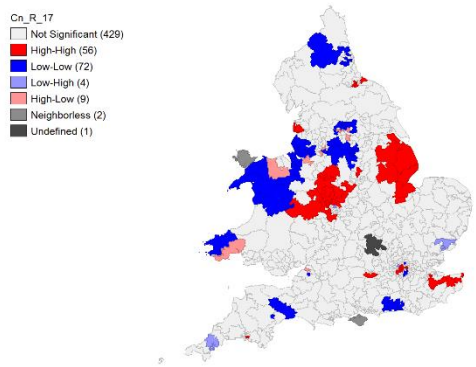

Figure V.20. LISA cluster map of the residuals from the model predicting Conservative vote shares at the 2017 General Election

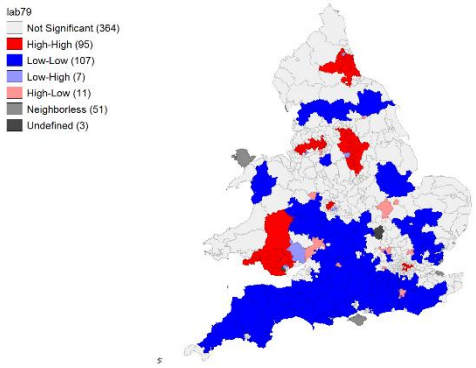

Figure V.21. LISA cluster map of the Labour vote shares at the 1979 General Election

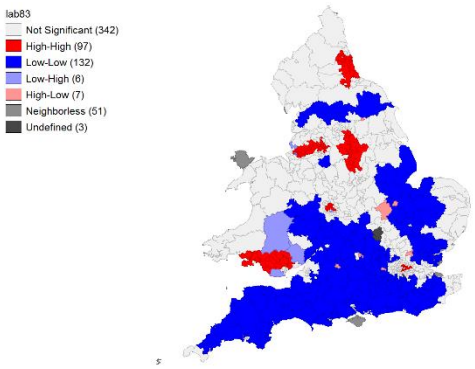

Figure V.22. LISA cluster map of the Labour vote shares at the 1983 General Election

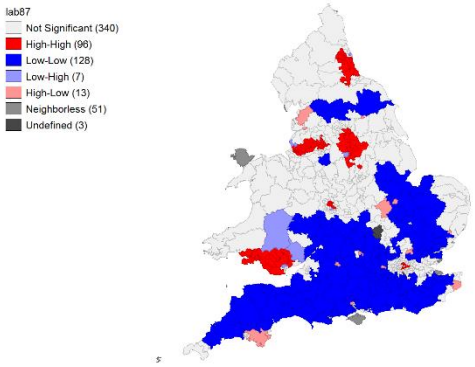

Figure V.23. LISA cluster map of the Labour vote shares at the 1987 General Election

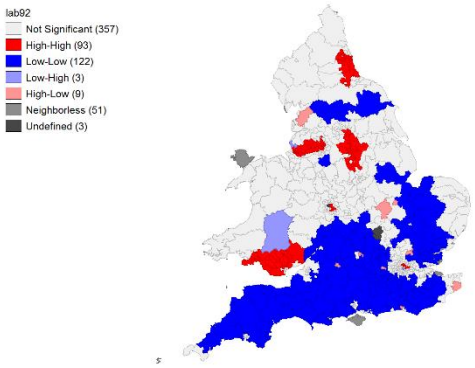

Figure V.24. LISA cluster map of the Labour vote shares at the 1992 General Election

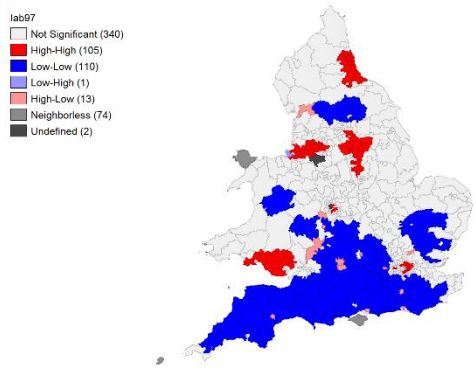

Figure V.25. LISA cluster map of the Labour vote shares at the 1997 General Election

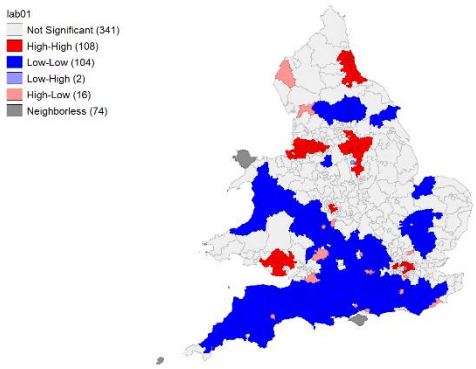

Figure V.26. LISA cluster map of the Labour vote shares at the 2001 General Election

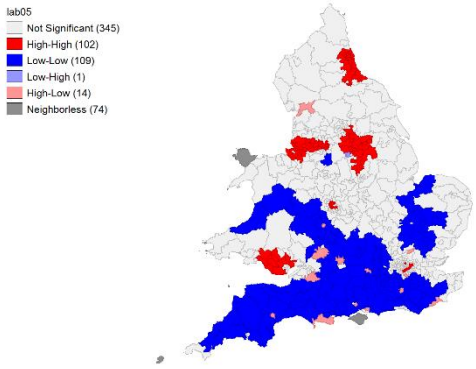

Figure V.27. LISA cluster map of the Labour vote shares at the 2005 General Election

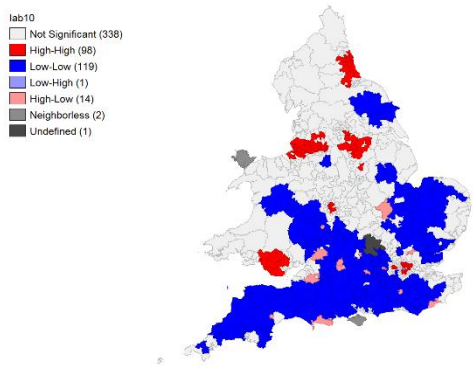

Figure V.28. LISA cluster map of the Labour vote shares at the 2010 General Election

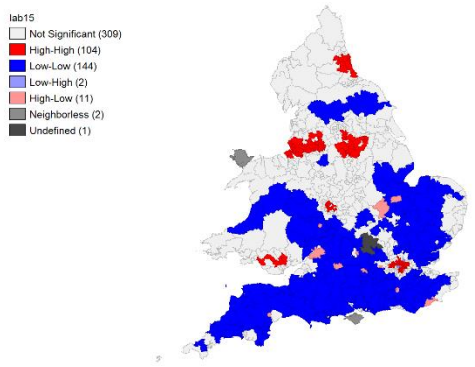

Figure V.29. LISA cluster map of the Labour vote shares at the 2015 General Election

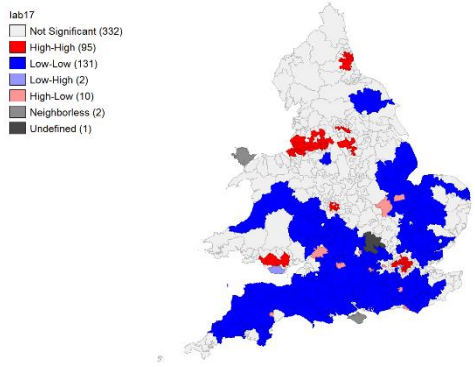

Figure V.30. LISA cluster map of the Labour vote shares at the 2017 General Election

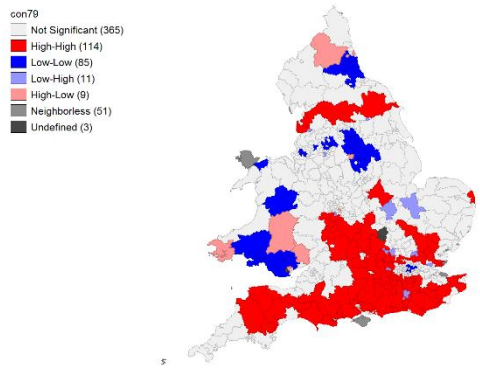

Figure V.31. LISA cluster map of the Conservative vote shares at the 1979 General Election

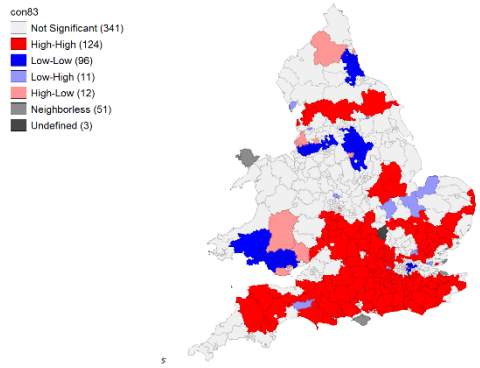

Figure V.32. LISA cluster map of the Conservative vote shares at the 1983 General Election

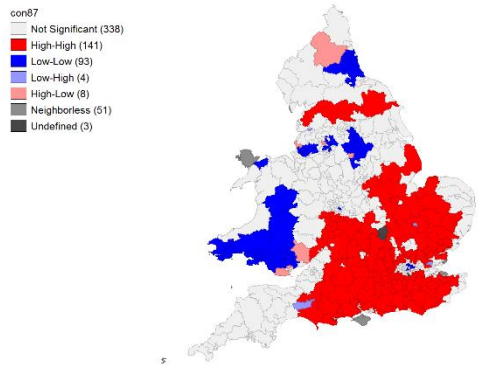

Figure V.33. LISA cluster map of the Conservative vote shares at the 1987 General Election

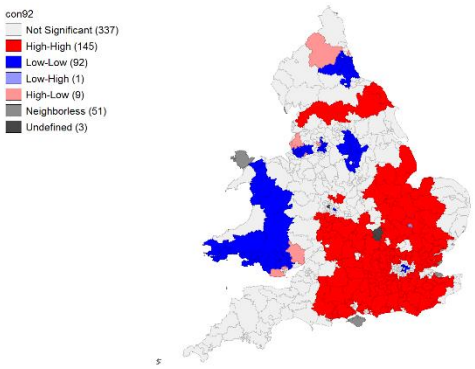

Figure V.34. LISA cluster map of the Conservative vote shares at the 1992 General Election

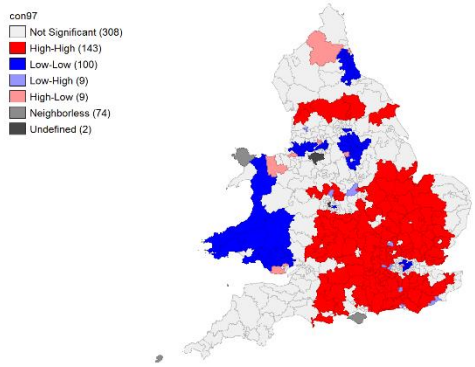

Figure V.35. LISA cluster map of the Conservative vote shares at the 1997 General Election

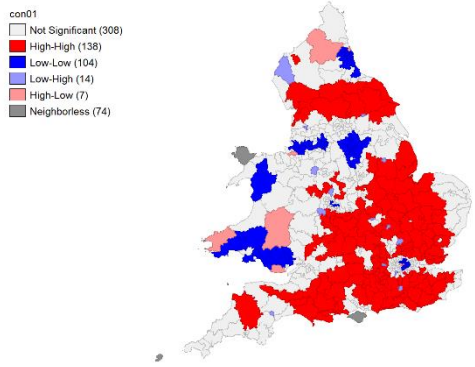

Figure V.36. LISA cluster map of the Conservative vote shares at the 2001 General Election

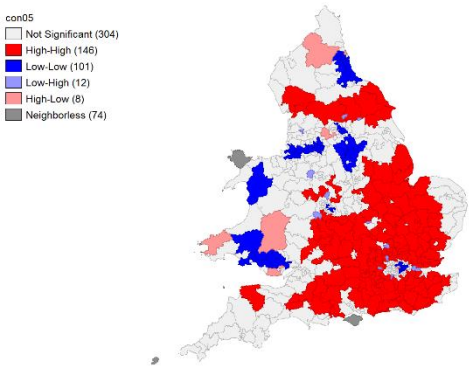

Figure V.37. LISA cluster map of the Conservative vote shares at the 2005 General Election

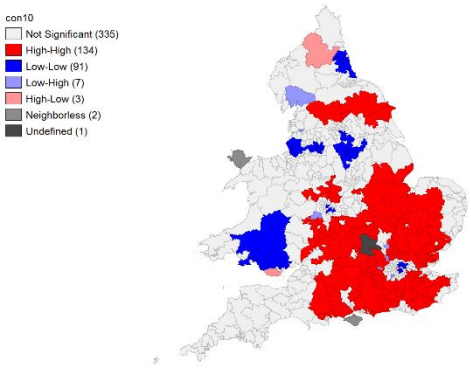

Figure V.38. LISA cluster map of the Conservative vote shares at the 2010 General Election

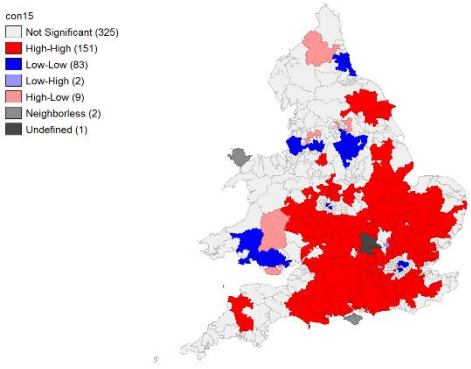

Figure V.39. LISA cluster map of the Conservative vote shares at the 2015 General Election

Appendix V

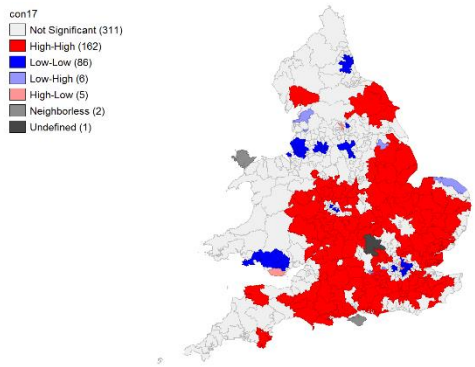

Figure V.40. LISA cluster map of the Conservative vote shares at the 2017 General Election

Appendix W. Global Moran's I scatterplots: additional variables models (Chapter 8)

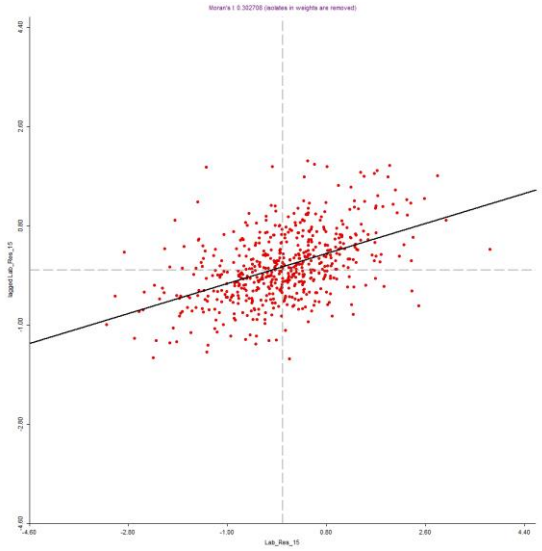

Figure Q.1. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2015) on the y-axis and the Labour standardised residuals (2015) on the x-axis.

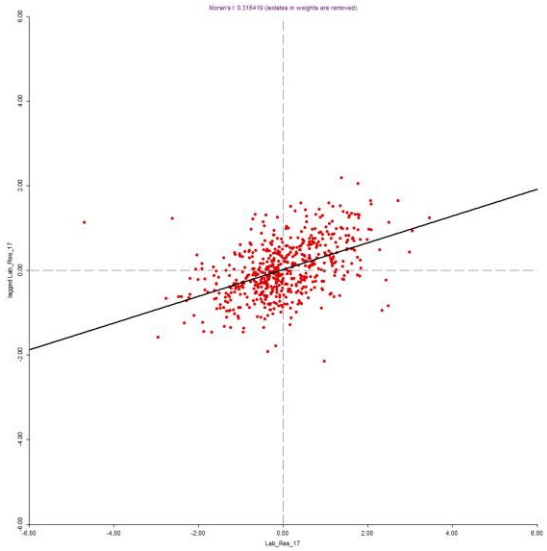

Figure Q.2. Global Moran's scatterplot with the spatially lagged Labour standardised residuals (2017) on the y-axis and the Labour standardised residuals (2017) on the x-axis.

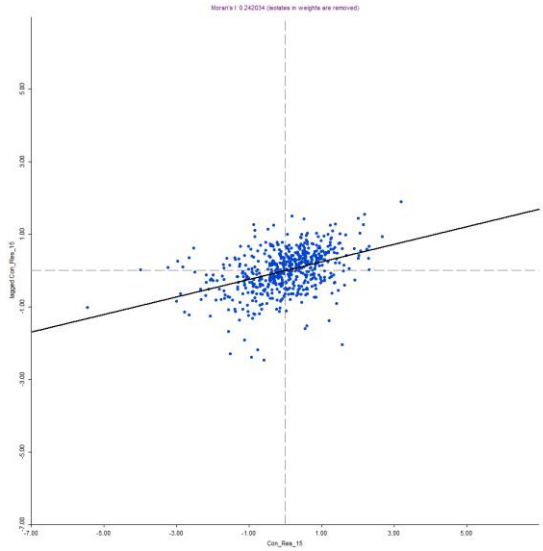

Figure Q.3. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2015) on the y-axis and the Conservative standardised residuals (2015) on the x-axis.

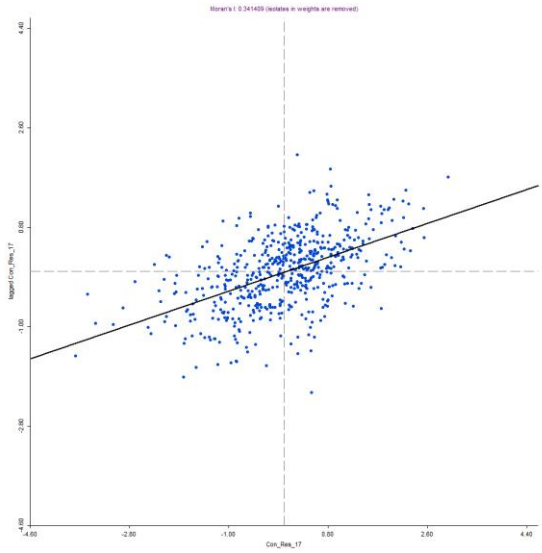

Figure Q.4. Global Moran's scatterplot with the spatially lagged Conservative standardised residuals (2017) on the y-axis and the Conservative standardised residuals (2017) on the x-axis.

Appendix X. LISA cluster maps: models with additional variables (Chapter 8)

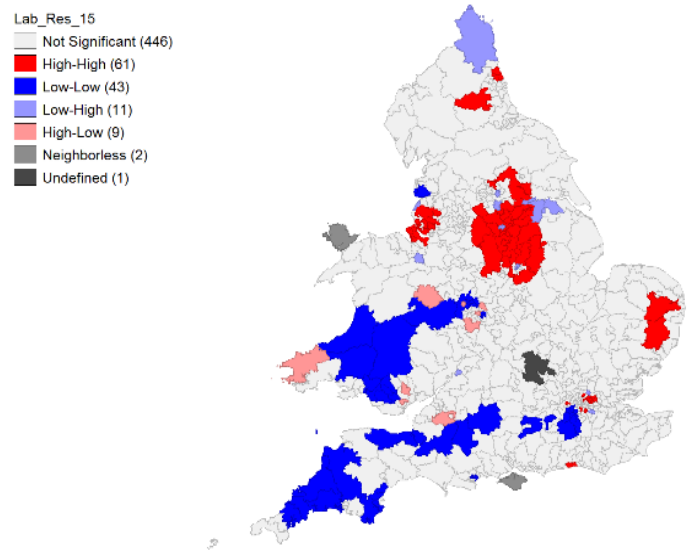

Figure X.1. LISA cluster map of the residuals from the model (with additional variables) predicting Labour vote shares at the 2015 General Election

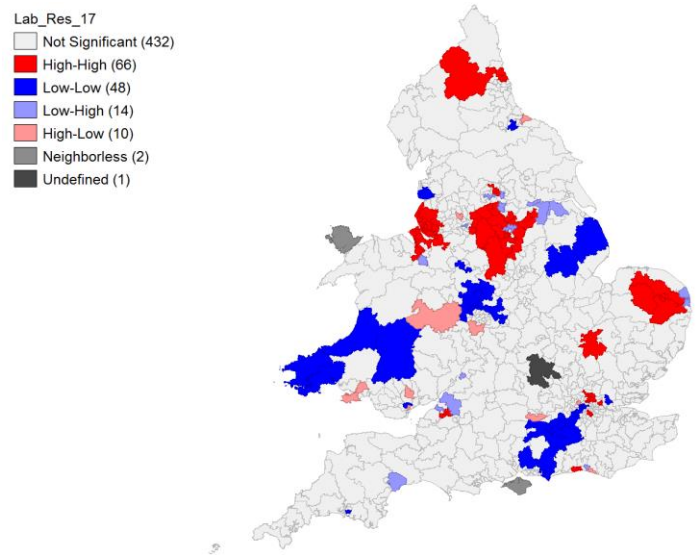

Figure X.2. LISA cluster map of the residuals from the model (with additional variables) predicting Labour vote shares at the 2017 General Election

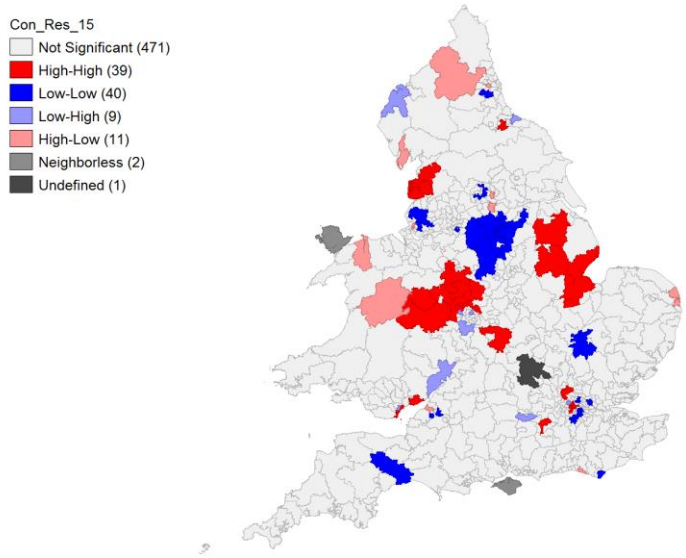

Figure X.3. LISA cluster map of the residuals from the model (with additional variables) predicting Conservative vote shares at the 2015 General Election

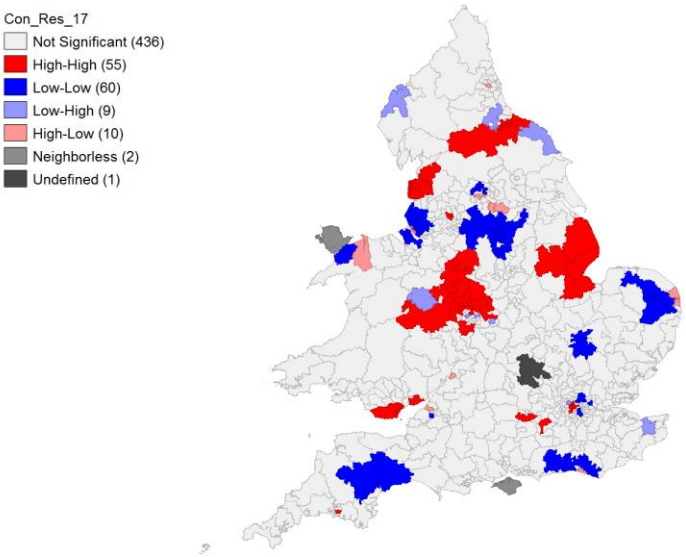

Figure X.4. LISA cluster map of the residuals from the model (with additional variables) predicting Conservative vote shares at the 2017 General Election

Appendix Y. QQ plots and plots of fitted values against studentised residuals for models with additional variables (Chapter 8)

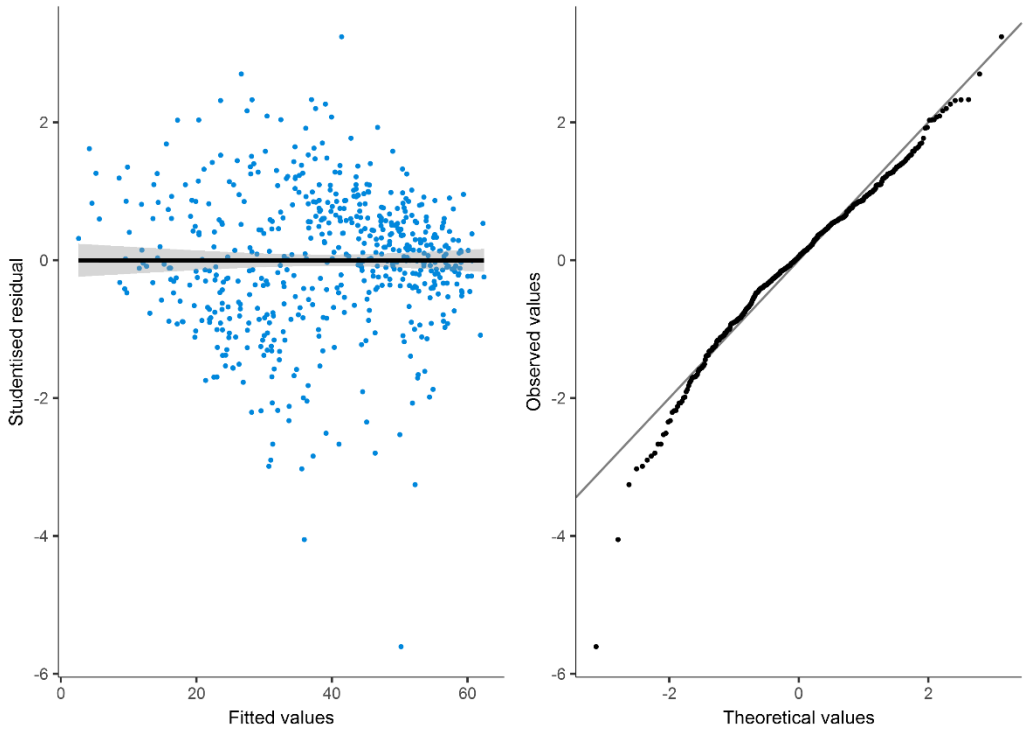

Figure Y.1. Plots of fitted values against studentised residuals and QQ-plots for the 2015 model with additional variables predicting Conservative vote shares for parliamentary constituencies

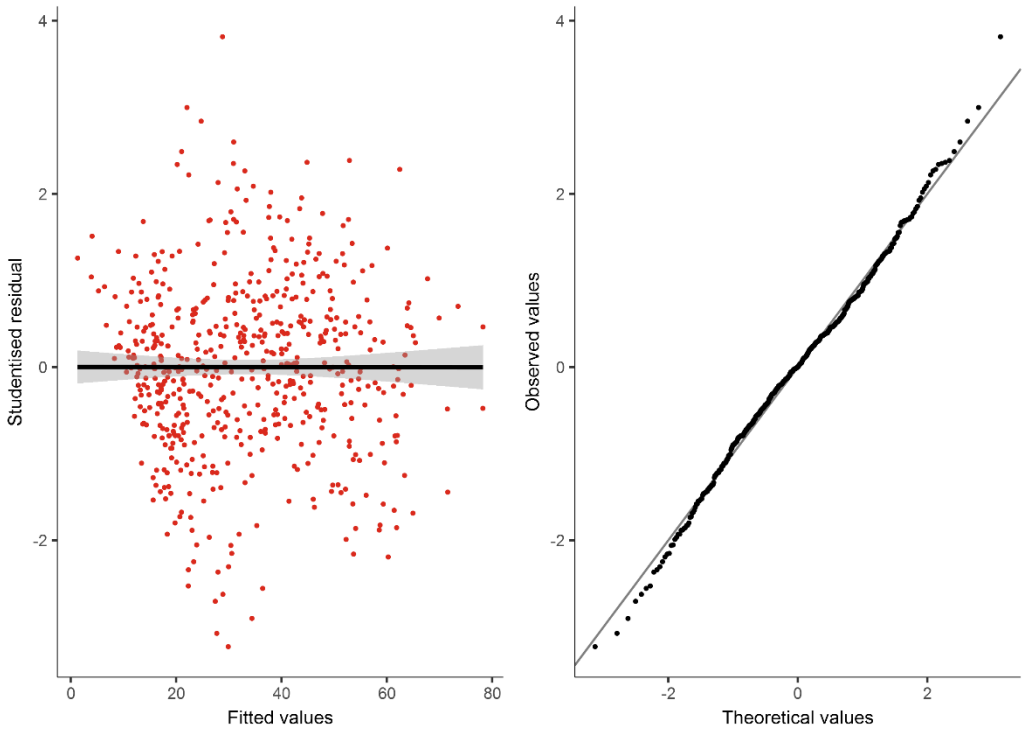

Figure Y.2. Plots of fitted values against studentised residuals and QQ-plots for the 2015 model with additional variables predicting Labour vote shares for parliamentary constituencies

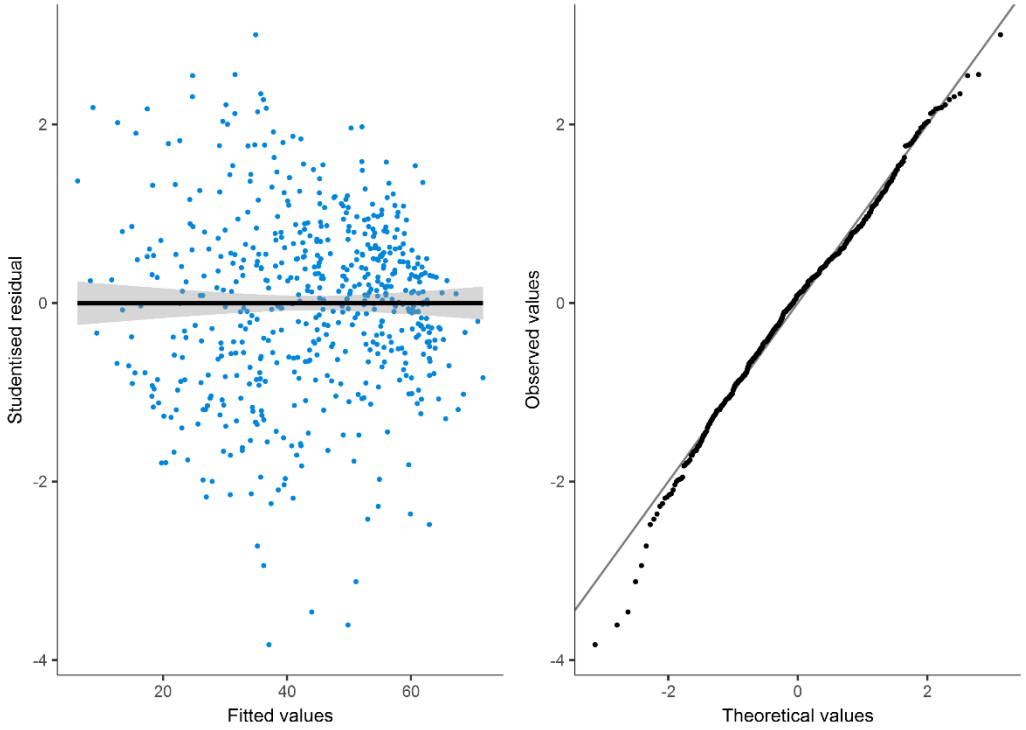

Figure Y.3. Plots of fitted values against studentised residuals and QQ-plots for the 2017 model with additional variables predicting Conservative vote shares for parliamentary constituencies

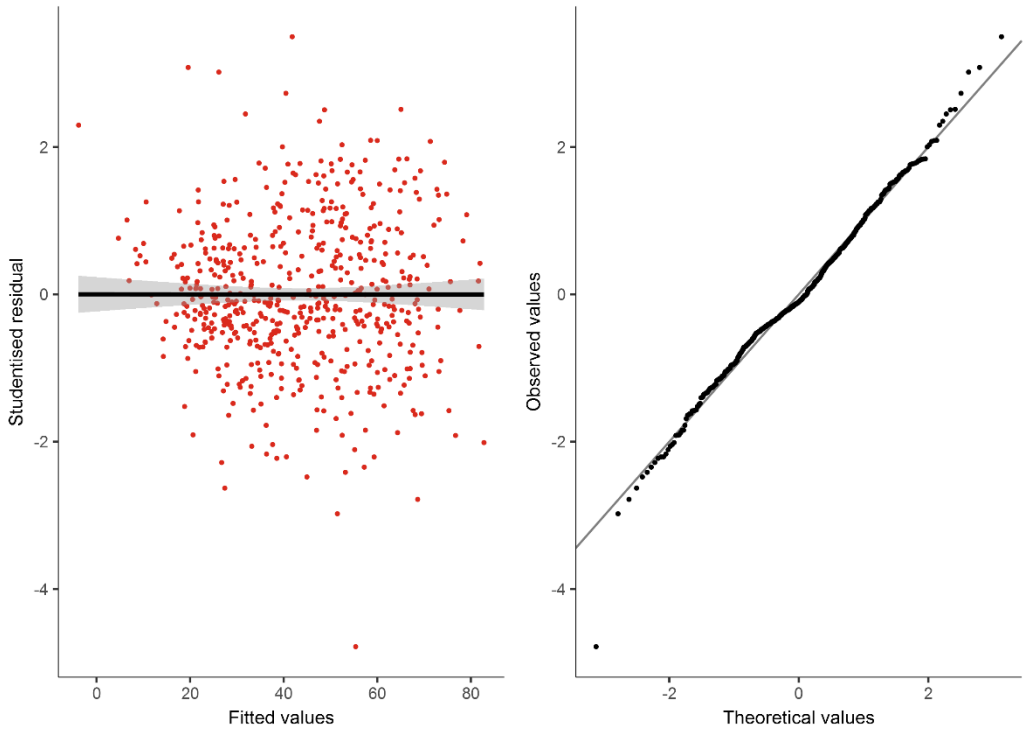

Figure Y.4. Plots of fitted values against studentised residuals and QQ-plots for the 2017 model with additional variables predicting Labour vote shares for parliamentary constituencies

Appendix Z. Large residuals and Cook's distance for additional models (Chapter 8)

Table Z.1. Large residuals (>2 or <-2) for Conservative OLS models with additional variables (2015 and 2017) used in Chapter 8

Conservative model 2015			Conservative model 2017		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Chelsea and Fulham	3.21	0.02	Chelsea and Fulham	2.98	0.02
Blackpool North and Cleveleys	2.69	0.02	Cities of London and Westminster	2.55	0.01
Battersea	2.32	0.02	Stoke-on-Trent Central	2.53	0.01
Carmarthen West and South Pembrokeshire	2.32	0.01	Middlesbrough South and East Cleveland	2.33	0.01
Vale of Clwyd	2.31	0.01	Birmingham, Erdington	2.30	0.01
Cities of London and Westminster	2.26	0.01	Walsall North	2.27	0.01
Kensington	2.19	0.01	Blackpool South	2.21	0.01
Westminster North	2.16	0.01	Blackley and Broughton	2.18	0.01
Carlisle	2.08	0.01	Blackpool North and Cleveleys	2.17	0.01
Putney	2.07	0.01	Cardiff South and Penarth	2.17	0.01
Vale of Glamorgan	2.03	0.01	Hendon	2.14	0.00
Blackpool South	2.03	0.01	Vale of Clwyd	2.12	0.01
Birmingham, Erdington	2.03	0.01	Battersea	2.03	0.01
Brighton, Pavilion	-2.04	0.01	Newcastle upon Tyne Central	2.02	0.01
Sheffield South East	-2.06	0.01	Ynys Mon	-2.03	0.02
Lewes	-2.07	0.01	Carmarthen East and Dinefwr	-2.09	0.01
Makerfield	-2.11	0.01	Halton	-2.13	0.01
Blaydon	-2.17	0.01	Ceredigion	-2.14	0.02
Bristol West	-2.18	0.02	Walthamstow	-2.16	0.01
Walthamstow	-2.20	0.01	Denton and Reddish	-2.18	0.00
Chesterfield	-2.32	0.01	Barnsley Central	-2.24	0.01
Sefton Central	-2.34	0.02	North Norfolk	-2.27	0.03
Dwyfor Meirionnydd	-2.50	0.02	Stroud	-2.35	0.01
Westmorland and Lonsdale	-2.52	0.01	Wirral South	-2.41	0.01
Burnley	-2.65	0.01	East Devon	-2.47	0.02
Rother Valley	-2.65	0.01	Leeds North West	-2.71	0.04
Penistone and Stocksbridge	-2.78	0.01	Brighton, Pavilion	-2.92	0.03
Leeds North West	-2.82	0.03	Sefton Central	-3.10	0.03
Arfon	-2.88	0.09	Sheffield, Hallam	-3.43	0.03
Ceredigion	-2.97	0.03	Dwyfor Meirionnydd	-3.57	0.05
Cambridge	-3.01	0.03	Arfon	-3.78	0.16
North Norfolk	-3.23	0.03			
Hornsey and Wood Green	-4.00	0.04			
Sheffield, Hallam	-5.46	0.05			

Table Z.2. Large residuals (>2 or <-2) for Labour OLS models with additional variables (2015 and 2017) used in Chapter 8

Labour model 2015			Labour model 2017		
Constituency	**Standardised residual**	**Cook's distance**	**Constituency**	**Standardised residual**	**Cook's distance**
Sefton Central	3.77	0.04	Sefton Central	3.46	0.03
Penistone and Stocksbridge	2.98	0.01	Sheffield, Hallam	3.06	0.02
Rother Valley	2.82	0.01	Leeds North West	3.00	0.05
Wirral South	2.59	0.01	Wirral South	2.71	0.01
Stroud	2.48	0.01	Walthamstow	2.50	0.01
Walthamstow	2.38	0.01	Hove	2.49	0.01
Mitcham and Morden	2.36	0.01	Stroud	2.44	0.01
Exeter	2.34	0.02	Exeter	2.34	0.01
Sheffield, Hallam	2.33	0.01	North Norfolk	2.29	0.03
East Ham	2.27	0.01	Wallasey	2.08	0.01
Tynemouth	2.26	0.01	Halton	2.08	0.01
Broxtowe	2.21	0.01	Bootle	2.07	0.01
Gedling	2.12	0.00	Wentworth and Dearne	2.02	0.01
Bassetlaw	2.08	0.01	Blackley and Broughton	-2.01	0.01
Wirral West	2.05	0.01	Clacton	-2.03	0.02
Sheffield South East	2.01	0.01	Dwyfor Meirionnydd	-2.06	0.02
St Austell and Newquay	-2.05	0.01	Kensington	-2.10	0.01
Bournemouth East	-2.05	0.01	Isle of Wight	-2.16	0.01
Colchester	-2.14	0.01	Meriden	-2.20	0.00
Stoke-on-Trent Central	-2.15	0.01	Battersea	-2.20	0.01
Birmingham, Erdington	-2.18	0.01	Boston and Skegness	-2.22	0.02
Chippenham	-2.24	0.00	South West Surrey	-2.27	0.01
Kingston and Surbiton	-2.30	0.00	Walsall North	-2.34	0.01
Wells	-2.33	0.01	Cities of London and Westminster	-2.40	0.01
Richmond Park	-2.36	0.02	Carmarthen East and Dinefwr	-2.47	0.01
Montgomeryshire	-2.51	0.02	East Devon	-2.62	0.02
Portsmouth South	-2.54	0.01	Stoke-on-Trent Central	-2.77	0.01
Twickenham	-2.61	0.01	Chelsea and Fulham	-2.96	0.02
Ceredigion	-2.69	0.02	Brighton, Pavilion	-4.69	0.07
Carshalton and Wallington	-2.88	0.01			
Cheltenham	-3.05	0.01			
Torbay	-3.20	0.03			

Appendix AA. Direct, indirect and total impacts in spatial lag models (Chapter 8)

Table AA.1. Indirect, direct and total impacts and associated p-values of explanatory variables in the spatial lag model predicting Labour vote shares at the 2015 and 2017 General Elections

	2015						2017					
	direct impact		indirect impact		total impact		direct impact		indirect impact		total impact	
variable	value	p value	value	p value	value	p value	value	p value	value	p value	value	p value
unemployment rate	0.14	0.61	0.09	0.62	0.22	0.61	0.05	0.80	0.02	0.80	0.07	0.80
manufacturing	-0.05	0.64	-0.03	0.65	-0.08	0.65	-0.33	0.00	-0.14	0.00	-0.47	0.00
social renters	0.11	0.09	0.07	0.09	0.17	0.09	-0.04	0.48	-0.02	0.48	-0.06	0.48
degree-level qualifications	-0.61	0.00	-0.38	0.00	-0.99	0.00	-0.05	0.64	-0.02	0.62	-0.07	0.63
secure employment (residual)	-2.57	0.00	-1.61	0.00	-4.18	0.00	-2.86	0.00	-1.23	0.00	-4.09	0.00
aged 16 to 29	-0.05	0.63	-0.03	0.63	-0.08	0.63	0.28	0.00	0.12	0.00	0.40	0.00
aged 65 plus	-1.09	0.00	-0.69	0.00	-1.78	0.00	-0.85	0.00	-0.37	0.00	-1.22	0.00
ethnic diversity	0.08	0.01	0.05	0.01	0.14	0.01	0.15	0.00	0.06	0.00	0.21	0.00
poor health	2.25	0.00	1.41	0.00	3.66	0.00	1.95	0.00	0.84	0.00	2.79	0.00
distance: 'cosmopolitan' LA	0.20	0.87	0.13	0.87	0.33	0.87	1.20	0.21	0.51	0.22	1.71	0.21
distance: university	-8.39	0.00	-5.28	0.00	-13.66	0.00	-9.83	0.00	-4.22	0.00	-14.05	0.00
small urban {ref: major urban}	1.16	0.20	0.73	0.21	1.89	0.20	1.34	0.15	0.58	0.15	1.92	0.15
semi-rural/rural {ref: major urban}	0.81	0.24	0.51	0.24	1.31	0.24	0.61	0.43	0.26	0.44	0.87	0.43
university entry rate	0.03	0.65	0.02	0.66	0.05	0.65	-0.17	0.01	-0.07	0.01	-0.24	0.01
public sector	0.07	0.07	0.05	0.08	0.12	0.07	0.10	0.03	0.04	0.03	0.14	0.03
Catholic schools	0.27	0.00	0.17	0.00	0.44	0.00	0.32	0.00	0.14	0.00	0.46	0.00
union membership	-0.01	0.83	0.00	0.83	-0.01	0.83	0.25	0.00	0.11	0.00	0.35	0.00
third party vote share	-0.56	0.00	-0.36	0.00	-0.92	0.00	-0.59	0.00	-0.25	0.00	-0.84	0.00

Table AA.2. Indirect, direct and total impacts and associated p-values of explanatory variables in the spatial lag model predicting Conservative vote shares at the 2015 and 2017 General Elections

	2015						2017					
	direct impact		indirect impact		total impact		direct impact		indirect impact		total impact	
variable	value	p value	value	p value	value	p value	value	p value	value	p value	value	p value
unemployment rate	-0.19	0.60	-0.09	0.61	-0.28	0.60	-0.39	0.15	-0.20	0.15	-0.58	0.15
manufacturing	0.49	0.00	0.25	0.00	0.74	0.00	0.51	0.00	0.26	0.00	0.77	0.00
social renters	-0.06	0.28	-0.03	0.29	-0.10	0.28	0.08	0.12	0.04	0.13	0.13	0.12
degree-level qualifications	0.38	0.00	0.19	0.00	0.57	0.00	0.10	0.26	0.05	0.27	0.15	0.26
secure employment (residual)	2.73	0.00	1.40	0.00	4.13	0.00	2.50	0.00	1.28	0.00	3.78	0.00
aged 16 to 29	-0.51	0.00	-0.26	0.00	-0.77	0.00	-0.47	0.00	-0.24	0.00	-0.71	0.00
aged 65 plus	0.55	0.00	0.28	0.00	0.82	0.00	0.96	0.00	0.49	0.00	1.45	0.00
ethnic diversity	-0.04	0.23	-0.02	0.23	-0.07	0.23	-0.10	0.00	-0.05	0.00	-0.16	0.00
poor health	-2.44	0.00	-1.24	0.00	-3.68	0.00	-2.49	0.00	-1.28	0.00	-3.77	0.00
distance: 'cosmopolitan' LA	-1.33	0.13	-0.68	0.14	-2.01	0.13	-1.34	0.13	-0.69	0.14	-2.02	0.13
distance: university	4.86	0.07	2.48	0.08	7.35	0.07	5.15	0.02	2.65	0.02	7.80	0.02
small urban {ref: major urban}	-0.69	0.37	-0.35	0.37	-1.05	0.37	-1.59	0.07	-0.82	0.08	-2.41	0.07
semi-rural/rural {ref: major urban}	-0.04	0.91	-0.02	0.90	-0.07	0.91	-0.85	0.30	-0.44	0.30	-1.28	0.30
university entry rate	0.05	0.62	0.03	0.62	0.08	0.62	0.09	0.13	0.05	0.12	0.14	0.12
public sector	-0.03	0.48	-0.01	0.50	-0.04	0.49	-0.06	0.10	-0.03	0.12	-0.09	0.11
Catholic schools	-0.08	0.17	-0.04	0.19	-0.12	0.18	-0.14	0.01	-0.07	0.01	-0.21	0.01
union membership	-0.32	0.00	-0.17	0.00	-0.49	0.00	-0.45	0.00	-0.23	0.00	-0.68	0.00
third party vote share	0.04	0.66	0.02	0.65	0.06	0.66	-0.28	0.00	-0.14	0.00	-0.42	0.00

Appendix AB. Global Moran's I scatterplots for spatial models (Chapter 8)

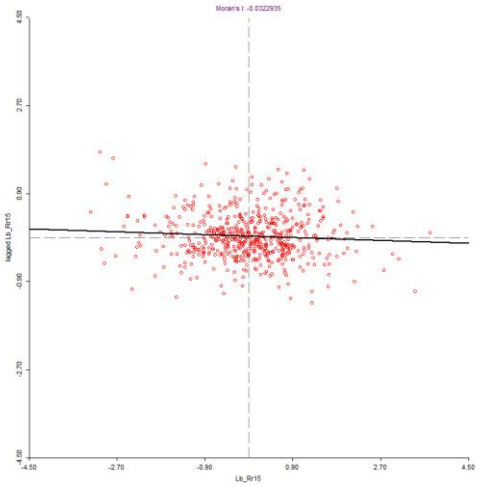

Figure AB.1. Global Moran's scatterplot for the 2015 spatial error model predicting Labour vote shares: spatially lagged Labour standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

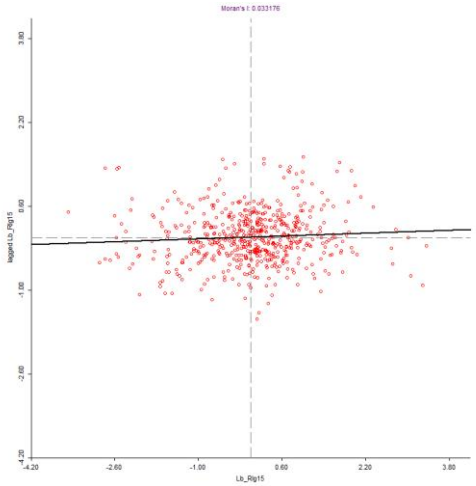

Figure AB.1. Global Moran's scatterplot for the 2015 spatial lag model predicting Labour vote shares: spatially lagged Labour standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

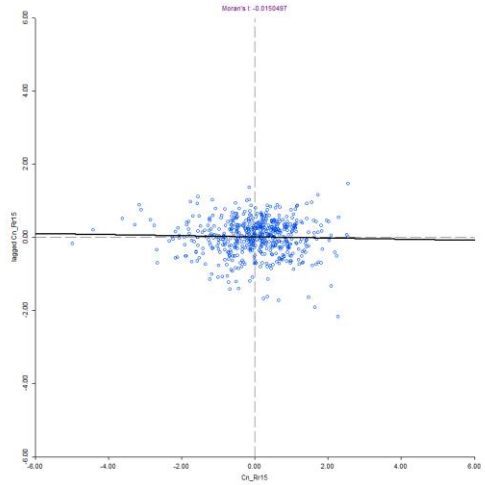

Figure AB.1. Global Moran's scatterplot for the 2015 spatial error model predicting Conservative vote shares: spatially lagged Conservative standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

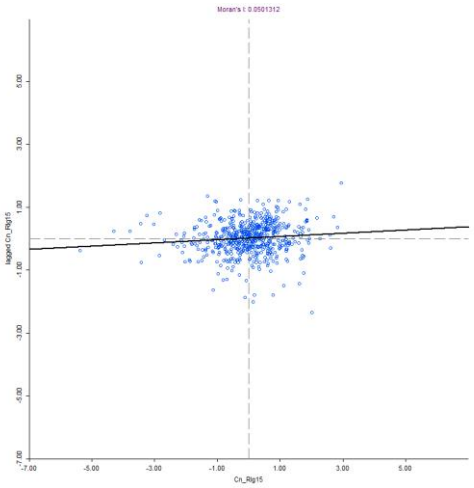

Figure AB.1. Global Moran's scatterplot for the 2015 spatial lag model predicting Conservative vote shares: spatially lagged Conservative standardised residuals are on the y-axis and the Conservative standardised residuals are on the x-axis.

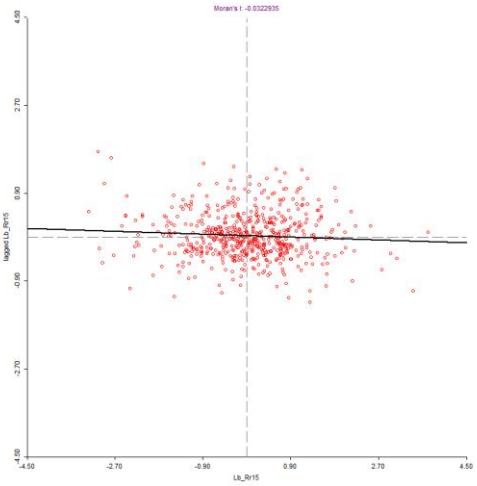

Figure AB.1. Global Moran's scatterplot for the 2017 spatial error model predicting Labour vote shares: spatially lagged Labour standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

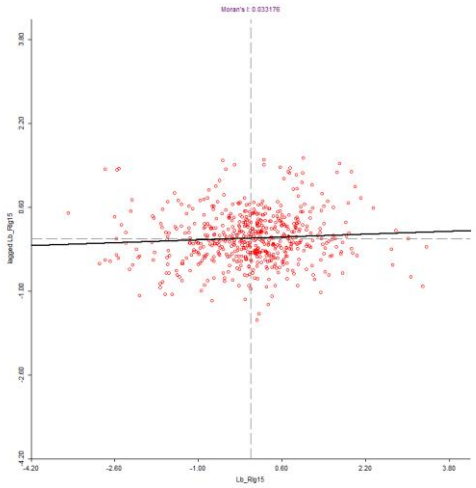

Figure AB.1. Global Moran's scatterplot for the 2017 spatial lag model predicting Labour vote shares: spatially lagged Labour standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

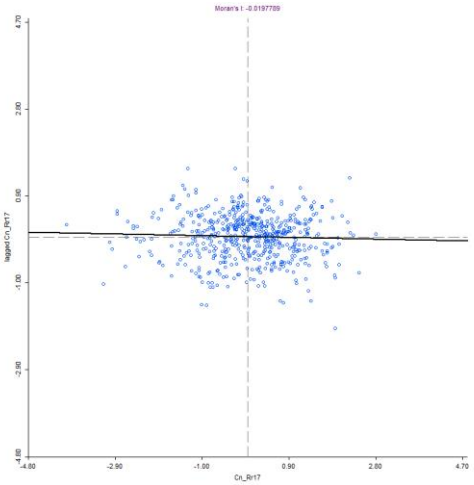

Figure AB.1. Global Moran's scatterplot for the 2017 spatial error model predicting Conservative vote shares: spatially lagged Conservative standardised residuals are on the y-axis and the Labour standardised residuals are on the x-axis.

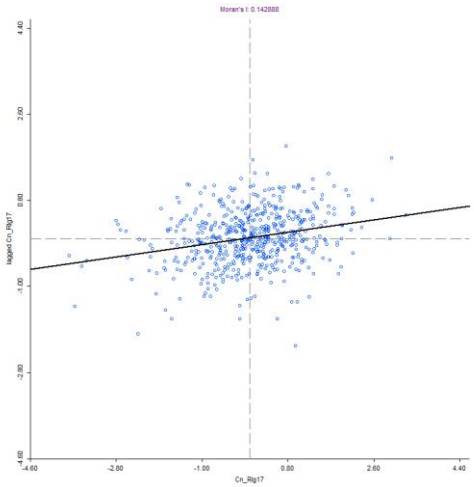

Figure AB.1. Global Moran's scatterplot for the 2017 spatial lag model predicting Conservative vote shares: spatially lagged Conservative standardised residuals are on the y-axis and the Conservative standardised residuals are on the x-axis.

Appendix AC. LISA cluster maps of residuals in spatial models (Chapter 8)

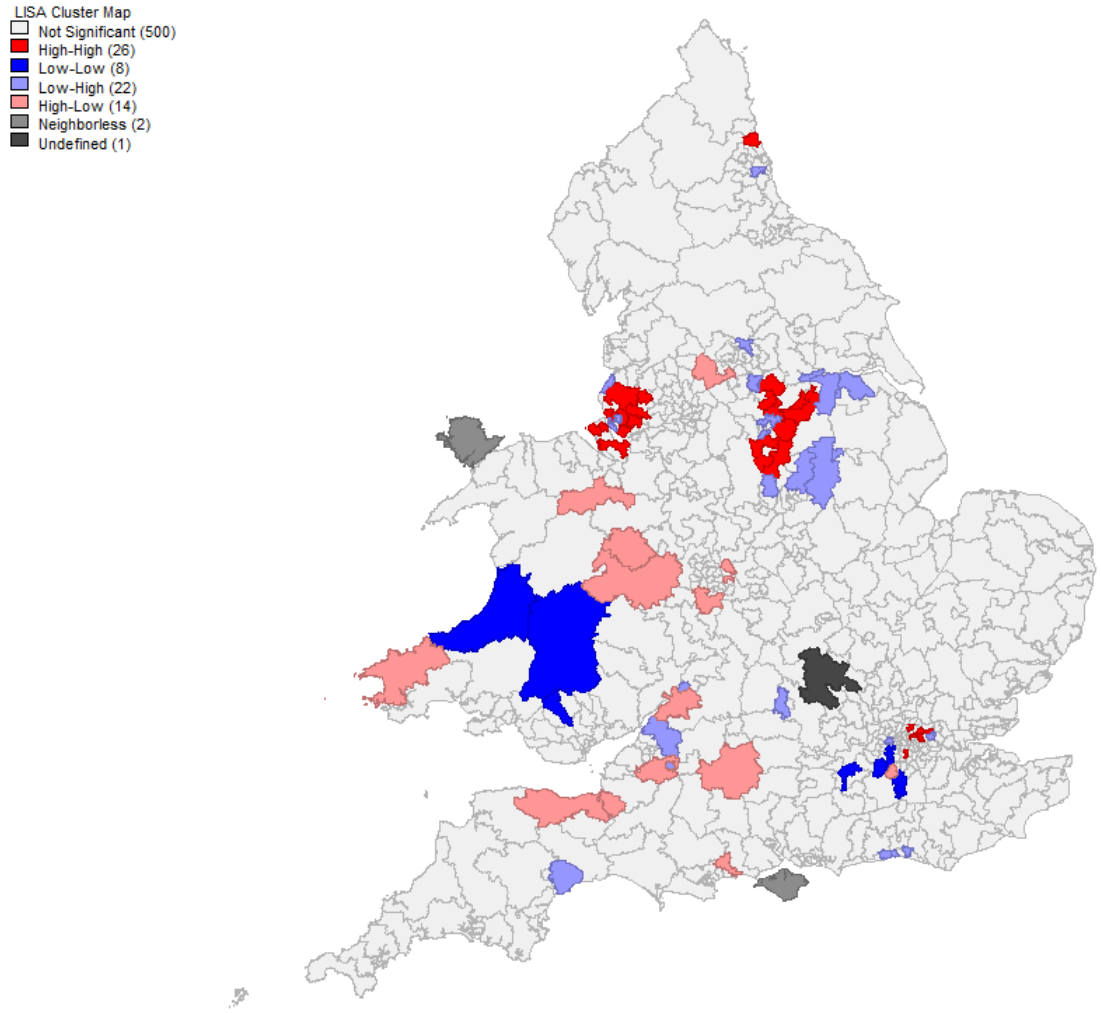

Figure AC.1. LISA cluster map of the residuals from the 2015 spatial error model predicting Labour vote shares

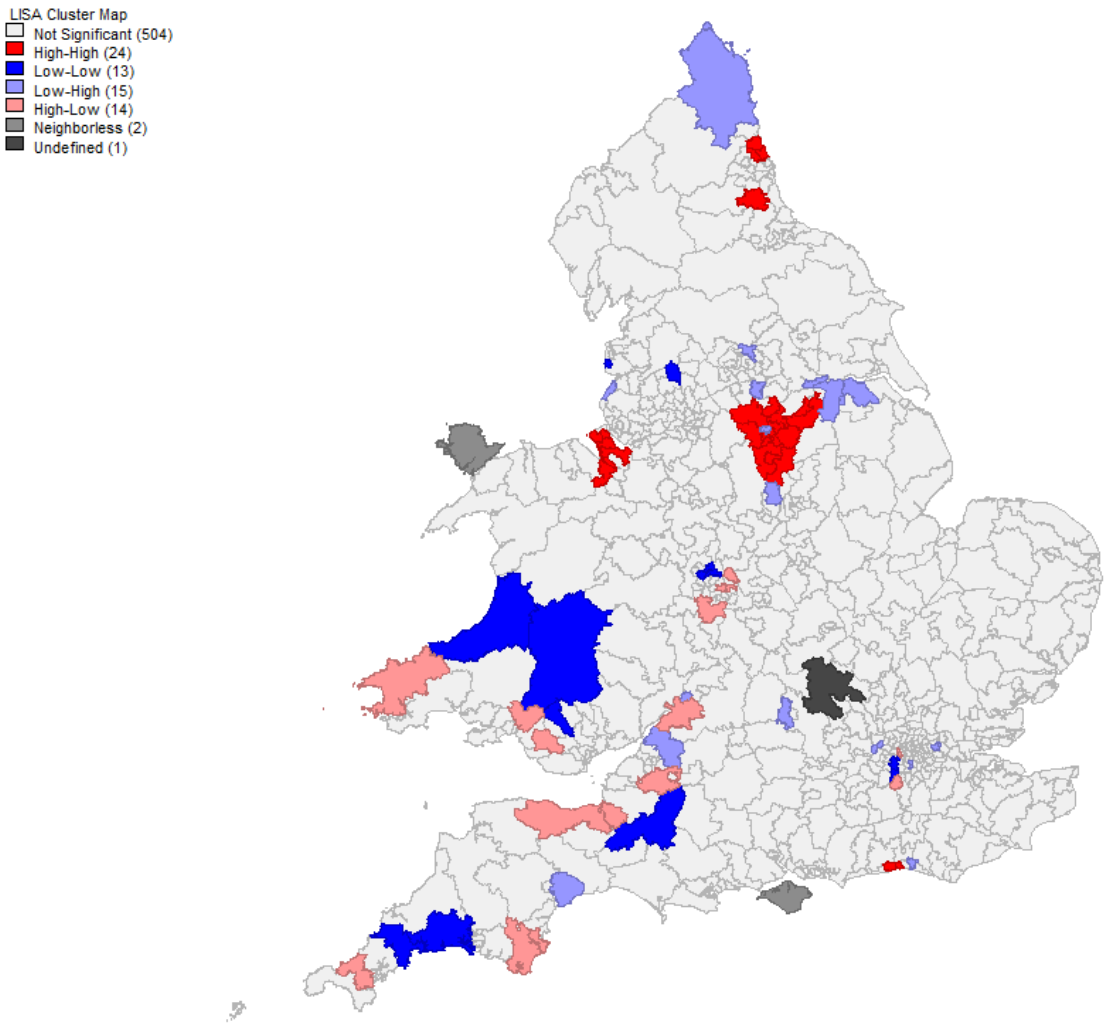

Figure AC.2. LISA cluster map of the residuals from the 2015 spatial lag model predicting Labour vote shares

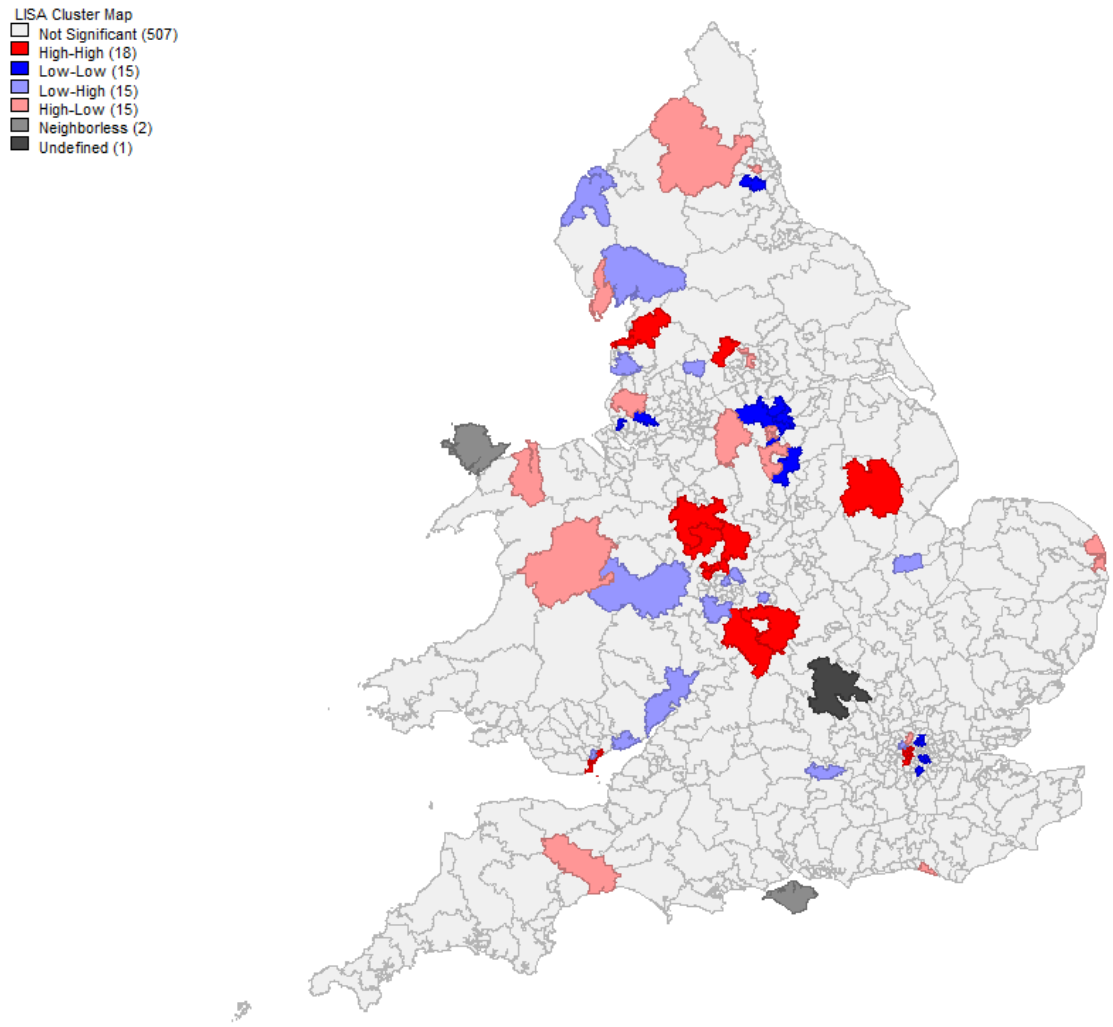

Figure AC.3. LISA cluster map of the residuals from the 2015 spatial error model predicting Conservative vote shares

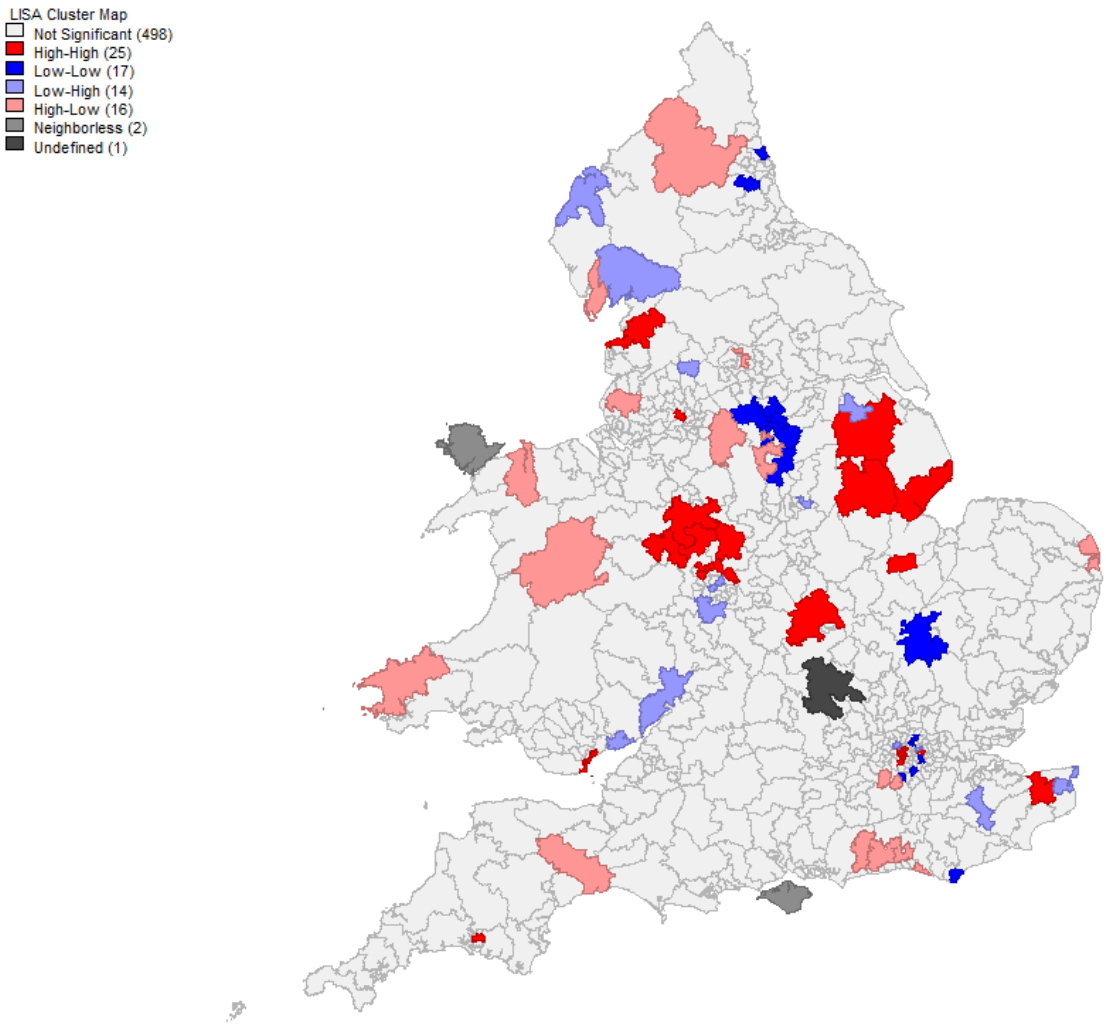

Figure AC.4. LISA cluster map of the residuals from the 2015 spatial lag model predicting Conservative vote shares

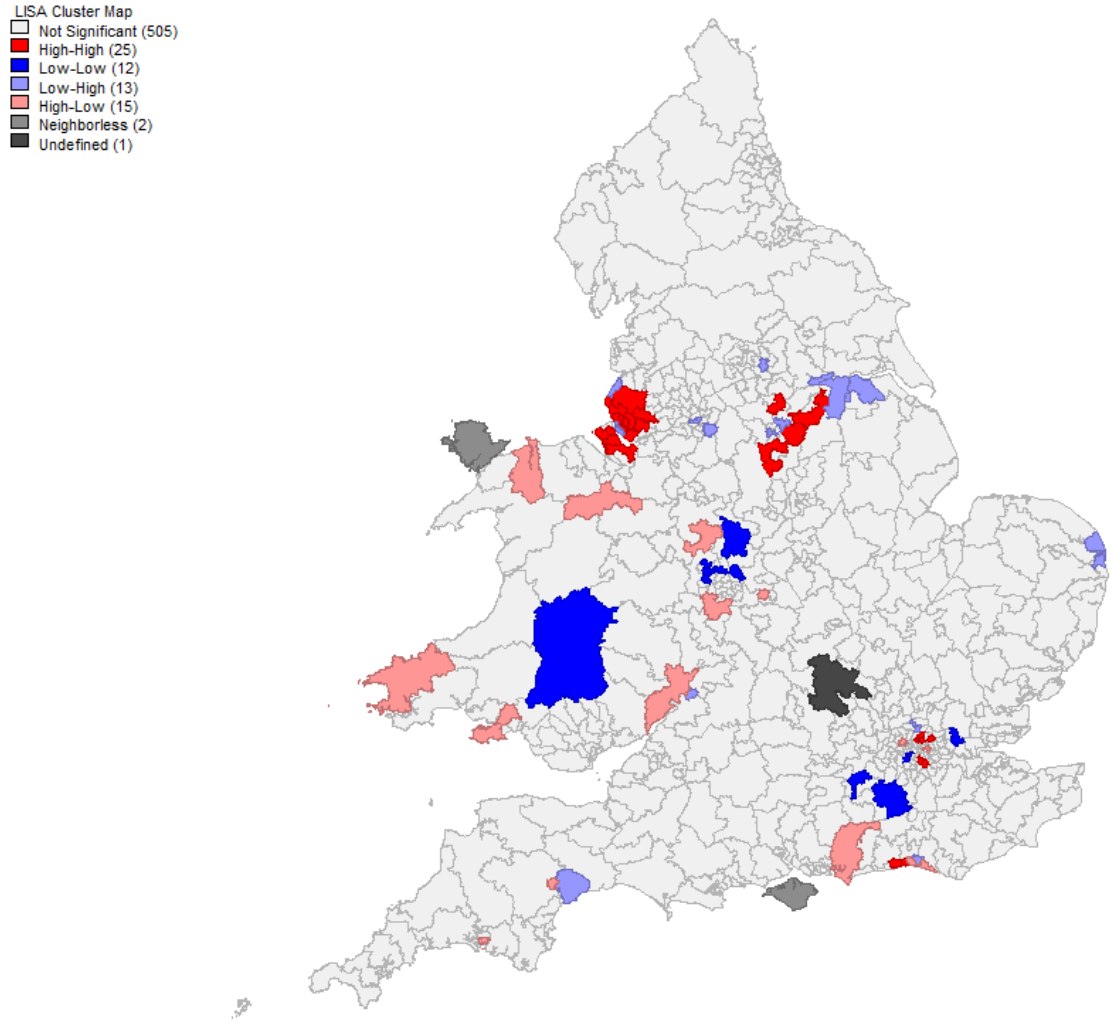

Figure AC.5. LISA cluster map of the residuals from the 2017 spatial error model predicting Labour vote shares

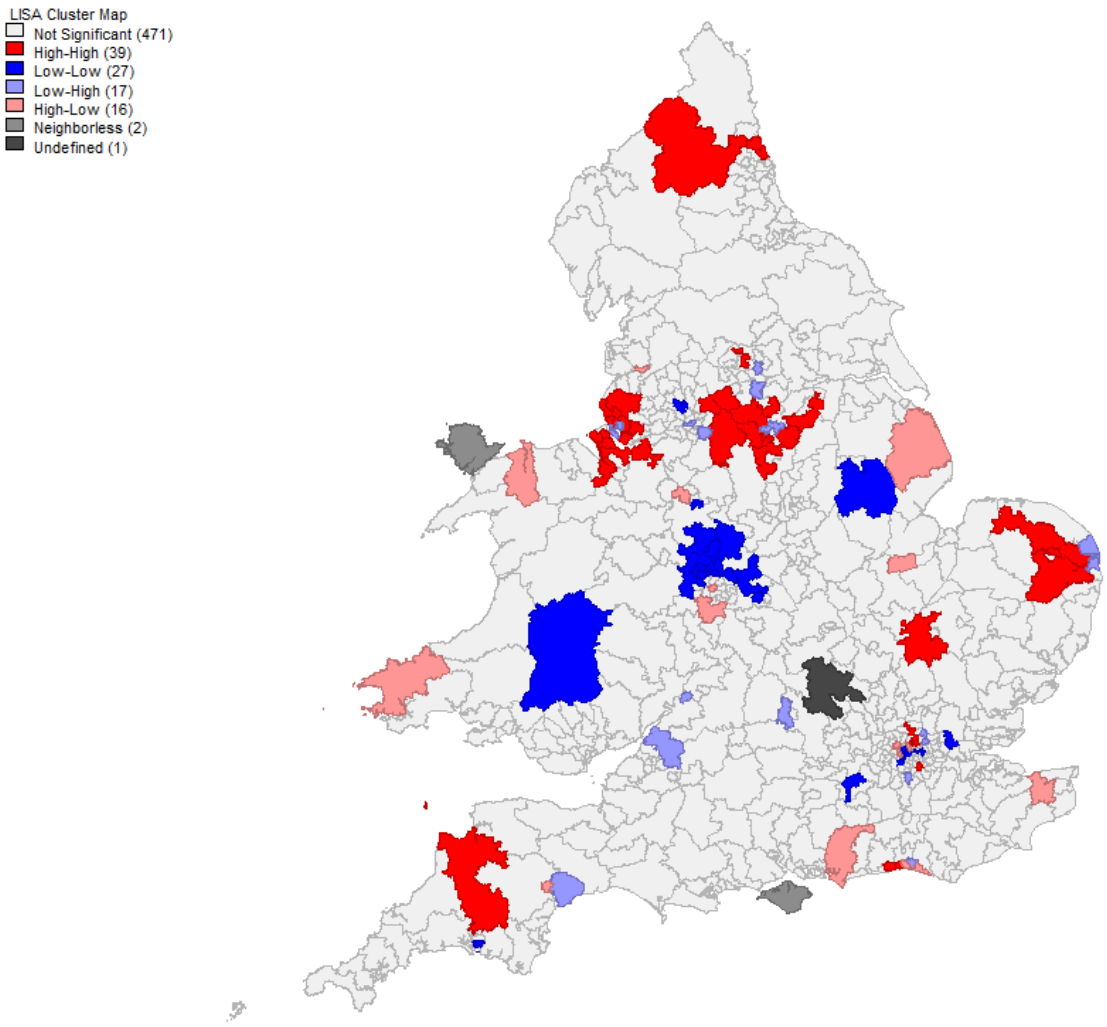

Figure AC.6. LISA cluster map of the residuals from the 2017 spatial lag model predicting Labour vote shares

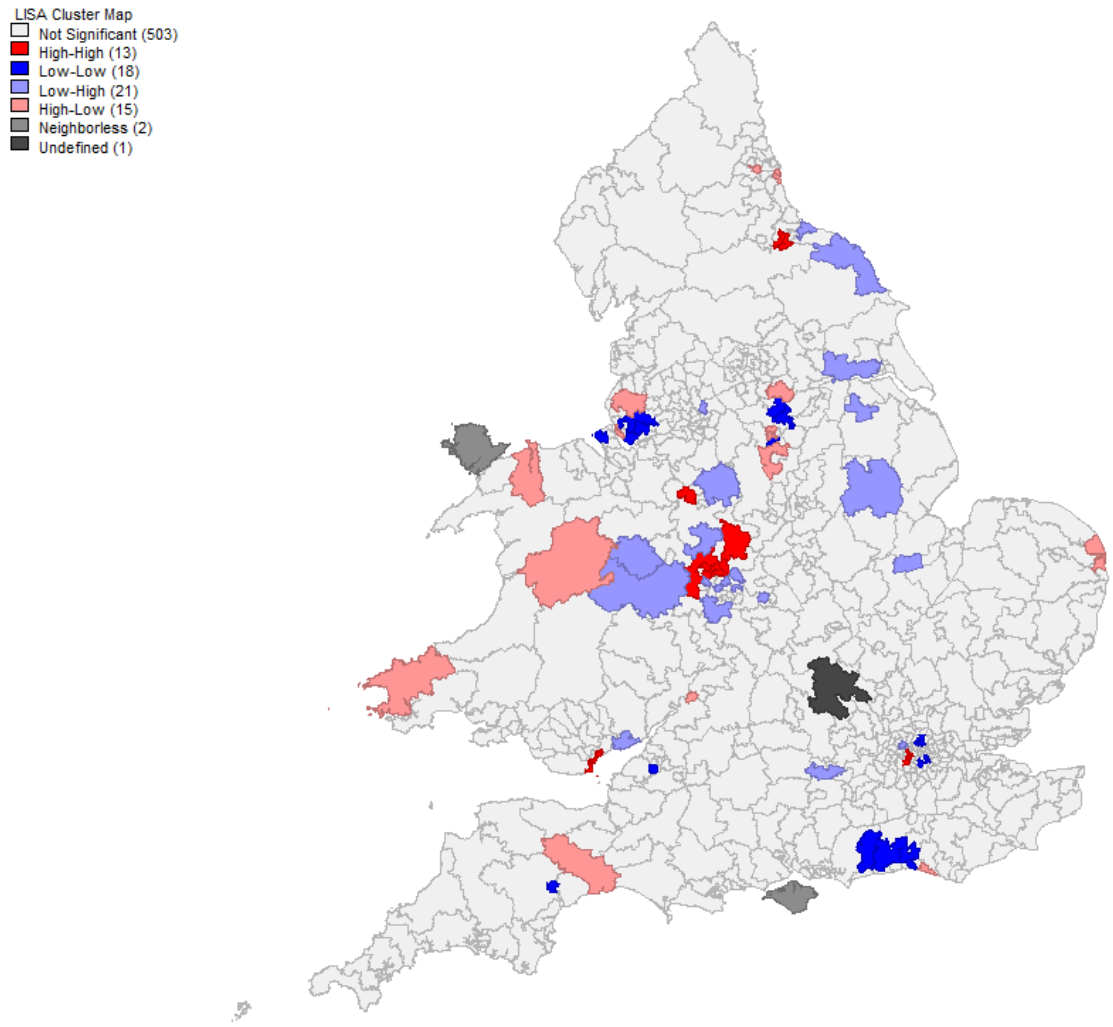

Figure AC.7. LISA cluster map of the residuals from the 2017 spatial error model predicting Conservative vote shares

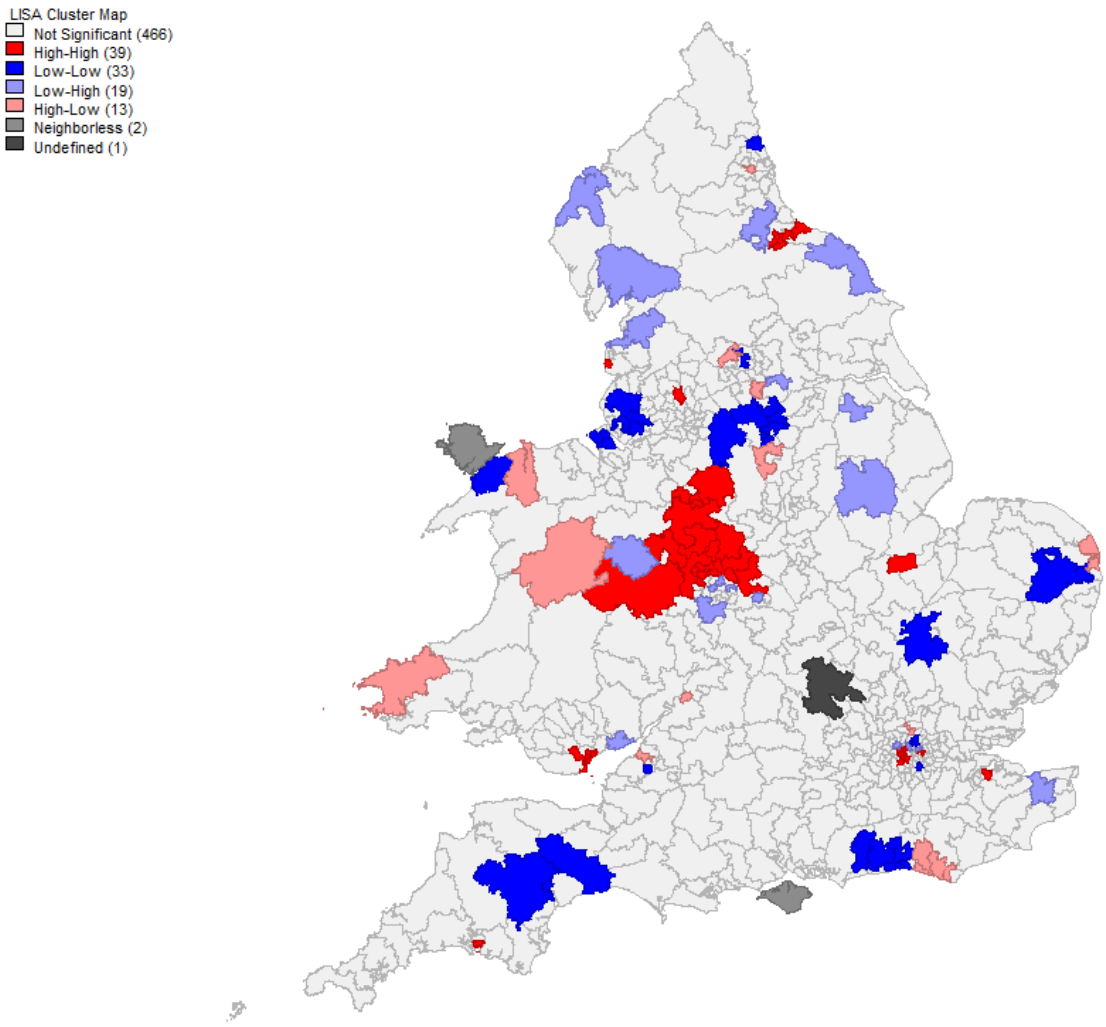

Figure AC.8. LISA cluster map of the residuals from the 2017 spatial lag model predicting Conservative vote shares

Appendix AD. Interview discussion guides, consent form and participant information sheet (Chapter 9)

INTERVIEW DISCUSSION GUIDE: MERSEYSIDE

INTRODUCTIONS

OVERVIEW

- Explain context first: Labour dominance, particularly recently, is against the trend. Affluent, suburban, middle-class area, but also not particularly 'cosmopolitan'. Liverpool city in 1950s: more Conservative than Labour MPs.

- How do you think the Labour Party have come to dominate electoral politics in Merseyside, even in places you wouldn't expect?
- Why do you think the Conservatives have done poorly here recently?

HISTORY

- What, if anything at all, do you think makes Merseyside historically unique?
- How might the local history have had an impact on the politics of the local area?

DEMOGRAPHICS

- Perhaps there is some demographic trends that my models are missing? Explain models and see what they think.
- How can an area with such high levels of home ownership be moving towards Labour?
- Demographic history: are there any factors? Irish migration for example?

POLITICS

- Why do you think this constituency moved to Labour in 1997?
- What political factors do you think have caused it to remain Labour ever since?
- How do you think national politics has played a role?
- How do voters go from Thatcher to Blair to Corbyn?
- Prompt: decline of Militant in Liverpool, decline of Lib Dems

POLITICAL CAMPAIGNING

- To what extent do you see any difference in the way that parties campaign in the local area?
- How might Labour have been more or less effective on this front?

GEOGRAPHY

- How do you see the relationship between this area and Liverpool city?
- How do you think this had changed over time?
- Prompt: Merseyrail, Liverpool city regeneration, expanding suburbs

CULTURE

- To what extent is there something unique about the culture of Merseyside/Liverpool?

- How does the culture of Liverpool differ from, say, Leeds or Manchester?
- And the suburbs too?

INTERVIEW DISCUSSION GUIDE: LINCOLNSHIRE

INTRODUCTIONS

OVERVIEW

- Explain context first: Conservative dominance, particularly recently, is greater the expected. Socio-demographically: 'middle-of-the road'. A bit more rural, older but also quite high deprivation, poverty, social housing. Yet Conservatives completely dominate.

- How do you think the Conservatives have dominated electoral politics in Lincolnshire, even in areas that 'should' be more even?
- Why do you think Labour have done poorly here?

HISTORY

- What, if anything at all, do you think makes Lincolnshire historically unique?
- How might the local history have had an impact on the politics of the local area?

DEMOGRAPHICS

- Perhaps there is some demographic trends that my models are missing? Explain models and see what they think.
- Demographic history: are there any factors?

POLITICS

- Why do you think this constituency stayed with Conservatives against the trend in 1997?
- What political factors do you think have caused it become an even safer Conservative seat since?
- How do you think national politics has played a role?

POLITICAL CAMPAIGNING

- To what extent do you see any difference in the way that parties campaign in the local area?
- How might Conservatives have been more or less effective on this front?

GEOGRAPHY

- How do you see the relationship between this area and the rest of the country / London / metropolitan areas?
- How do you think this had changed over time?
- Prompt: commuting patterns, where do people work?

CULTURE

- To what extent is there something unique about the culture of Lincolnshire
- How does the culture of Liverpool differ from other similar counties that maybe haven't voted so strongly Tory?

CONSENT FORM – Interview participants

Study title: Britain's Changing Electoral Geography, 1979-2017: Varieties of 'left-behindedness'

Researcher name: James Furlong
ERGO number: 42490

Please initial the boxes if you agree with the statement(s):

I have read and understood the information sheet (dated 5th July 2018 Version 2) and have had the opportunity to ask questions about the study.	
I agree to take part in this research project by participating in an interview and agree for my data to be used for the purpose of this study.	
I understand my participation is voluntary and I may withdraw at any time up to four weeks after the interview date for any reason without my rights being affected.	
I understand that I will be quoted directly in reports of the research and that my name will be used unless I request otherwise.	
I understand that my interview will be audio recorded.	

Data Protection
I understand that information collected about me during my participation in this study will be stored on a password protected computer and that this information will only be used for the purpose of this ethically approved research study.

Name of participant (print name)……

Signature of participant……

Date……..
……

Participant Information Sheet

Study title: Britain's Changing Electoral Geography, 1979-2017: Varieties of 'left-behindedness'

Researcher name: James Furlong

ERGO number: 42490

Please read this information carefully before deciding to take part in this research. It is up to you to decide whether or not to take part. If you are happy to participate you will be asked to sign a consent form.

What is the research about?

This research forms a section of my work towards a PhD qualification, which looks at Britain's changing electoral geography between 1979 and 2017. The broad objective of the research is to understand how the relationship between different types of places, as captured by their sociodemographic composition, and the Labour and Conservative Party, have changed over time. In addition to quantitative research that models election results in this time period, I am conducting interviews in two areas of the country that do not conform to overall trends across England and Wales: areas of Merseyside where Labour perform much better than expected and Lincolnshire where the Conservatives perform much better than expected, given their sociodemographic composition. The funding for this PhD project comes courtesy of the Economic and Social Research Council South Coast Doctoral Training Partnership.

Why have I been asked to participate?

You have been chosen because you are considered as somebody that works in or represents an area of Merseyside of Lincolnshire and are considered to be a public figure who is likely to be particularly knowledgeable about the local area, its culture, history, sociodemographic composition and its political leanings.

What will happen to me if I take part?

Your participation in the project will involve being interviewed by me for approximately thirty to sixty minutes, although this time-frame can be adjusted according to your needs or requirements. This will take place in a convenient location of your choosing, such as a local café or your work office. I will ask you to a set of questions about your understanding of how the culture, history, geography and perceptions of the local area have affected the relative success or failures of the Labour and Conservative parties. The interview will be audio-recorded for

transcription later. You will be given the opportunity to have a break if you require at any point. Furthermore, if at any point up to four weeks after the interview date you decide you no longer wish to participate in the research, you will be allowed to terminate the interview without any repercussions. There is a small chance that I may contact you again post-interview in order to clarify any points that you made. Otherwise, your involvement in the project will only be to participate in one interview.

Are there any benefits in my taking part?

Your participation in this research will add to current knowledge about the way in which local and regional environments impact upon people's voting behaviour in elections.

Are there any risks involved?

Discussion will mostly focus on the local culture, history and politics and will generally steer clear of any personal or especially sensitive topics. Therefore, there are very few significant and likely risks to being involved in the research. There is, nevertheless, a very small chance that you may feel uncomfortable or embarrassed answering certain questions. In addition, as a public figure in research, anything you do say will be attributable to you, and could be written in the PhD document or any subsequent articles. Should you feel, therefore, that it would be beneficial to be granted anonymity, this will be arranged without any penalty. There is a very small risk that a member of the public could read the document and be hostile towards you for anything that is written.

In any case during the interview in which you feel uncomfortable or no longer wish to participate, there is no obligation to answer the question and you will always be granted the possibility to terminate the interview at any point without any consequences.

Will my participation be confidential?

Your participation in this research project will not automatically anonymised or confidential, because in most cases, your position as a public figure (which makes it possible to identify you) is of interest to the reader of the research and will be stated in the research. Nonetheless, if you wish to be granted anonymity in the research, this can be arranged. If you are uncomfortable taking part in such a research project where you may be identifiable and subsequently wish to terminate your participation in the research at any stage, this possibility will always be granted up to four weeks after the interview without consequences. In addition, you will always have the right, upon request, to check any quotation to which you have been attributed in the research prior to any publication. Any or all data can be withdrawn up to four weeks after the interview process has been completed.

Regarding access to the data, this will only be granted to the supervisors of this project – both of whom are well-respected academics. The recording and any documents will be stored on a computer and will be password-protects so that they cannot be accessed by anyone other than the interviewer. Information will be kept secure in line with the Data Protection Act and the policy of the University of

Southampton. Finally, your contact details will not be retained after the interview is completed, nor will they be shared with anyone.

What should I do if I want to take part?

If you do wish to take part in this research and agree to the terms laid out in the consent form, please sign the form accordingly and inform me that you consent to your participation in the interview.

What happens if I change my mind?

You have the right to withdraw from the interview and the research project at any time up to four weeks after the interview date without penalty or consequences. Within this timeframe, you can withdraw the rights to use the data you provide in the interview after the interview has been completed. In this case, or in the case that the interview is terminated prior to conclusion, the data will be destroyed.

What will happen to the results of the research?

The results of this research will be written up as a PhD project and potentially published in academic articles. You will receive, by email or post, a summary and subsequently a copy of any piece of work that is completed using data from this research. Subject to regulations from the University of Southampton, the research data from the interviews will be stored for a minimum of 10 years, though this may be extended further where required or in the public's interest.

Where can I get more information?

If you have any further questions after reading this information sheet or desire more information, please get in contact with me using the following details:

Jamie Furlong

University of Southampton, UK

E: J.Furlong@soton.ac.uk T: 07400921835

What happens if something goes wrong?

If you have any concerns or complaints about the way in which this research is conducted, you may contact the Head of Research Governance who is independent of the study:

Head of Research Governance,

University of Southampton,

rgoinfo@soton.ac.uk

023 8059 5058

Thank you.

Thank you for taking the time to read the information provided and for considering taking part in this research.

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