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The local roots of the participation gap: Inequality and voter turnout☆

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ABSTRACT

It is generally accepted that the rich are more likely to participate in politics than the poor. It is also generally accepted that the probability than an individual will participate in elections is influenced by the gap between the rich and the poor. There is little agreement, however, about whether inequality across time and space increases or decreases participation. In this paper we examine the impact of inequality across space. We suggest that the impact of inequality depends crucially on whether it is defined in terms of variations between geographical units ('segregation') or within geographical units ('heterogeneity'). Evidence to support this argument is drawn from multi-level British data. Heterogeneity has a mildly positive effect on participation but this effect seems to be outweighed by the negative impact of segregation. The effect of segregation, moreover, is most pronounced among the poorer sections of the population, indicating that geographical isolation among the poor ('ghettoization') leads to lower turnout among these groups.

1. Introduction

Political equality is central to contemporary understandings of democracy (Dahl, 2006).1 Citizens should not only have equal right to participate in collective decision-making, they should exercise those rights by participating in the selection of their representatives. Active participation in the political process is desirable because it produces better citizens (Mill, 1861). Participation is also desirable because it produces more representative decisions (Bartels, 2008; Enns and Wlezien, 2011). Indeed, without participation, the claim that democracy is essentially an exercise in self-government rings hollow.

Freedom is also central to democracy. This is usually held to include freedom to keep what one earns, freedom to inherit and freedom to simply enjoy one's luck (Welch, 1999; Nozick, 2001). It is sometimes argued that inequality provides incentives for work, self-reliance and thrift. It is also argued that inequality must be tolerated because it reduces poverty as prosperity 'trickles down' to the poorest (c.f Chang, 2003). And it is finally suggested that inequality must be accepted because programmes to correct it would give the state too much power (Hayek, 2001). Whatever argument is deployed, some degree of inequality is often supposed to be the price of a free society.

In recent years there has been a general fall in the level of political participation across a number of established western democracies. In many of these countries this reduction in participation has roughly coincided with an increase in economic equality. Both the decline in participation and rise in inequality have individually caused concern among policy-makers (Putnam, 2000; Dalton, 2008; Whiteley, 2012; Dorling, 2015; Wilkinson and Pickett, 2009; Gilens, 2005, 2012; Jacobs and Skocpol, 2005; Stiglitz, 2012; Verba et al., 2004). The coincidence of these phenomena, however, has led some to speculate that there may be a causal relationship between the two.[1]

Decades of electoral behaviour research in numerous established democracies have demonstrated that there is a general tendency for people on higher incomes to vote more regularly than

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[1] It might be noted that the Pearson's R correlation between turnout at UK general elections and the income based measure of the Gini coefficient produced by the Institute for Fiscal Studies between 1964 and 2010 is −0.78 (N = 13).

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those at the bottom (Wolfinger and Rosenstone, 1980; Verba et al., 1995; Leighley and Nagler, 2013). The relationship between inequality and participation, however, is far from clear. This is, in part, because inequality is a relational concept. If inequality were to increase over time because more people were getting rich, for example, we might expect to see a rise in turnout levels, whereas if inequality were increasing because more people were getting poor, turnout would be expected to fall. If both phenomena occurred at once – the rich getting richer and the poor getting poorer – then these changes would offset each other. The relationship between inequality and turnout depends crucially on precisely how inequality is measured. Similarly, we argue that the impact of inequality between areas ('segregation') differs from inequality within areas ('heterogeneity'). If we are to appreciate its role in shaping behaviour, 'inequality' needs clarifying to reflect the subtle patterns of socio-economic differentiation (Atkinson, 1970; Jenkins and Van Kerm, 2009).

The paper examines the impact of spatial inequality.[2] Section 1 lays our theoretical expectations about the relationship between spatial inequality and turnout. Section 2 discusses our data and section 3 outlines the statistical models that are used to estimate the effects of inequality on the probability that an individual will vote. Section 4 outlines our findings. Section 5 briefly discusses the broader implications of our findings.

2. Theoretical expectations

The vast majority of research on political participation focuses on identifying those social and psychological characteristics that distinguish voters from non-voters (Wolfinger and Rosenstone, 1980; Leighley and Nagler, 2013). Among the many variables that identify non-voters, few have received as much attention as socio-economic status (Crewe, 1981). The 'civic voluntarism' model, for example, suggests that richer individuals are more likely to vote because they have both the motivation and ability to participate in politics (Verba et al., 1995). For purely compositional reasons, therefore, political engagement and participation are expected to be higher in more affluent areas.

The 'who votes?' approach makes a great deal of sense; indeed, any analyses that omitted reference to the personal characteristics of the individual would be found wanting. Yet human beings are social animals (Goodin and Tilly, 2008). They are naturally influenced by their social context, even if they are not conscious of it (Wilson, 2002). To be sure, many people are suspicious of aggregates and believe them to be abstractions. Yet the individual is, according to at least one way of thinking, every bit as much an abstraction as any group. Over time, we are influenced by movements of the collective herd (Stimson, 1999, p.2). And across space we are all influenced by 'others' who inhabit the same places (MacKuen, 2002, p. 306). Accordingly, spatial context should have an impact on individual participation over and above any compositional effect (Huckfeld and Sprague, 1995).

It is increasingly recognized that individuals are influenced by their social context. There is little agreement, however, about the relationship between inequality participation. Some maintain that inequality should exert a demobilizing effect (Goodin and Dryzek, 1980; Horn, 2011; Jaime-Castillo, 2009; Solt, 2008). Others maintain that it should exert a mobilizing effect (Oliver, 1999, 2001). We argue that the impact of inequality depends on who is being compared. The number of possible comparisons is virtually limitless. Nevertheless, some are more 'obvious' and influential than others. As Lippmann noted:

> For the most part we do not first see, and then define, we define first and then we see. In the great blooming buzzing confusion of the out world we pick out what our culture has already defined for us (Lippman, 1997, pp.54-5).

Political activity occurs in contexts – 'areas', 'places' or 'neighbourhoods' (Huckfeld and Sprague, 1995). Our notion of place or context is typically a shared one based on administrative or geographical units: wards, towns or counties (Therborn, 2008). These institutions provide a structure for attitudes, perceptions and provide frames for comparison (Sniderman, 2000, p. 75). They also influence notions of 'representation'.

In this paper we argue that it is important to distinguish between differences in affluence *between* and differences in affluence *within* places. Sharp differences between places can produce 'distinct and homogeneous clusters of unequal social privilege and political influence, intensifying the social and political isolation and polarization of neighbourhoods' (Soss and Jacobs, 2009, p. 100). Such 'segregation' reduces the probability the rich and poor interact in a shared spaces and shared institutions such as shops and churches or civic amenities such as leisure centres, parks and so on. This reduces participation for three reasons. First, social-psychological studies suggest that exposure to 'out' groups can make 'in' group membership more accessible and heighten the individual's 'in' group identity (Smith and McKie, 2000). Accordingly, the less contact there is between rich and poor, the weaker the sense of 'in group' identity and the weaker the 'out group' threat.[3] These effects will dampen perceptions of competition and conflict for both groups and exert a demobilizing effect. Second, segregation influences access to social capital: 'living in deeply disadvantaged neighbourhoods both imposes harsh conditions and removes critical communities and networks in schools, religious organizations, and other bodies that might bolster skills and opportunity for enterprising individuals' (Soss and Jacobs, 2009, p. 122; Quillian, 2014, p. 464). By contrast, those who live in more affluent areas are able to draw on social networks and acquire information more readily (Cook, 2014).[4] Third, the representatives of more affluent areas may be thought to be better at achieving their political goals than those in poorer areas. Even if it is incorrect, this belief may enhance voters' perceptions of political efficacy in affluent areas and reduce it in poorer areas (Goodin and Dryzek, 1980). Those living in affluent areas expect their voices to be heard and responded to. Those living in poorer areas, on the other hand, may conclude that there is little point in participating, as their views are unlikely to be taken into account by decision-makers (Quillian, 2014, p. 471).

For these reasons, our first hypothesis is:

H1. Ceteris paribus socio-economic segregation between geographical units ('segregation') reduces the probability than an individual will vote.

Our expectations about the effect of inequality within shared

[2] It is worth emphasising that inequality influences participation across both space and time. In an ideal research design we would have data on the evolution of turnout and spatial inequality over time. Unfortunately, there is simply not enough data on the spatial distribution of income that would enable us to undertake such a study.

[3] Self-selection poses a threat to inference. The more affluent who choose to live in socially mixed areas may exhibit different behaviour from otherwise matched individuals.

[4] It has also been suggested residence in poor neighbourhoods contributes to poverty and joblessness as a result of a lack of role models, a lack of contact with employed people and limited parental monitoring. See Wilson (1996).

contexts or place – as a result of heterogeneity – are different. Inequality within places increases the probability that rich and poor interact in a shared space. This is likely to heighten both the sense of 'in' group identity and 'out' group threat. It may also stimulate a sense of personal grievance, resentment or fear that provides a further spur to participation (Fiske, 2002; Brady, 2004, p.697). The stronger the individual's group identity, moreover, the more likely they are to experience emotions on behalf of their groups, since the group becomes part of the 'self' (Smith and McKie, 2000, p. 196). These emotions are likely to further stimulate participation. Second, interaction between people in different socio-economic positions may lead to a 'sharing' of social capital that can be deployed to achieve common goals. Those who are relatively poor in social capital may, therefore, be able to draw on the resources of those who are relatively rich, increasing the probability that they will vote (Putnam, 2000). Third, elite-led mobilization is easier in more homogeneous settings. It has long been recognized that local campaign activity influences turnout (Denver and Hands, 1997; Goldstein and Ridout, 2002; Rosenstone and Hansen, 1993). To be sure, parties tend to focus their campaign activities in marginal constituencies. Nevertheless, they find it easier to mobilize people in those areas that contain a high proportion of their supporters and active members. (Schier, 2000).[5]

Accordingly, our second hypothesis is:

H2. Ceteris paribus socio-economic heterogeneity within geographical units ('heterogeneity') increases the probability than an individual will vote.

Most existing analyses pay little attention to the geographic unit at which the causal processes operate. Yet geographical scale clearly structures the relationship between inequality and participation. Inequality is – after all – a relational concept. In order to specify its effects, therefore, it is necessary to identify the set of individuals it relates and the relevant social space in which they interact (Tunstall et al., 2000). Elections are also a relational affair: individuals vote for a common representative within a geographically defined area. It is also necessary to establish the most appropriate level of geographic aggregation.

Identifying the most appropriate level raises the statistical issue of bias (Openshaw, 1984; Lobao and Hooks, 2007; Irwin, 2007). It also raises a socio-political issue since there is likely to be some variation in the way that people interact within geographical units and their perception of their context will depend on how they experience inequality. The analyses above suggest that inequality and segregation at the level of the neighbourhood or locality are likely to have a greater impact than the same variables at the more remote regional- (or national-) level. Local-level inequality is a more immediate phenomenon – it is part of the lived experiences of individuals in the domains of employment, consumption and civic activity. Accordingly, our third hypothesis is that:

H3. Segregation and heterogeneity will have greater effects on individual voting behaviour at lower levels of aggregation.

There also appear to be good reasons to expect that the impact of inequality will depend on the personal characteristics of the individual. In particular, it seems plausible to suggest that the poor – with less education, wealth and income – will not have the personal resources to offset the effects of segregation or heterogeneity on group identities, social capital and political efficacy. Accordingly, we also hypothesize that:

H4. Segregation and heterogeneity will have greater effects on those on lower incomes.

We test these four hypotheses using appropriate data in section 4 below. Before we do so, however, we introduce our data and methods.

3. Data

We draw on data from Great Britain, a political system that has frequently been used to illustrate contextual effects on political preferences, evaluations and party choice (Jones et al., 1992; Tunstall et al., 2000). The data for this study are drawn from waves 1–2 of the Understanding Society survey conducted by the Institute for Social and Economic Research (ISER) at the University of Essex.[6] The survey provides invaluable evidence about the experiences, behaviours and attitudes of approximately 54,597 adults residing in the United Kingdom. The sample used in our paper is smaller because we used an interim release of the second wave. Moreover, we only considered data collected after general election day on 6 May 2010. Even after imposing this condition, the sample contains approximately 10000 observations – more than enough to test our hypotheses.[7]

The dependent variable used in the current study comes from the responses to the voting question 'Did you vote in this (past) year's general election?' We exclude those respondents who were not eligible to vote at the 2010 general election and use self-reported vote. Given the well-documented tendency to over-report vote we would ideally have preferred to have data on validated votes. No vote validation was carried out for this study. Previous studies have noted over-reporting responses due to social desirability and false memories. Research, however, suggests that the exaggeration is not substantial (Swaddle and Heath, 1989). Moreover, individual-level models using reported and validated vote produce very similar estimates (Clarke et al., 2004).

Since our primary interest is to assess the impact of inequality at different geographical scales, we matched survey respondents with macro-level data for three types of geographical unit: the parliamentary constituency, local authority and region.[8] We estimated the impact of economic segregation and heterogeneity for each of those units.

There are significant challenges associated with creating these measures since there is little data on incomes within small areas. The UK population census – the major source of social data – does not collect data on either household or individual incomes. This limitation required us to develop alternative strategies to obtain information on income dispersion within small geographical units. In the event, we relied on income estimates obtained through a process of spatial micro-simulation.[9] These estimates were created using 2001 Census data together with the Family Resources Survey

[5] To be sure, parties tend to focus their campaign activities in marginal constituencies but the point remains that mobilization is far easier in socially homogeneous contexts.

[6] Specifically, we used the third edition of the survey (February 2012). This is an interim release that provided early access to data from Understanding Society for the general population sample component. The release of the full Wave 2 data was in late 2012. Full details of the survey can be obtained from the project website: https://www.understandingsociety.ac.uk/.

[7] Understanding Society is a longitudinal study, but we used it as a cross-sectional dataset.

[8] We used the English Government Offices for the Regions (GORs), with the six Metropolitan counties (Greater Manchester, Merseyside, South Yorkshire, Tyne and Wear, West Midlands and West Yorkshire) separated out and Inner and Outer London. This sub-division was proposed by Johnston and colleagues. See Johnston et al. (1998).

[9] The small-area estimates were generated through spatial simulation by Ben Anderson.

for 2008-9 and a spatial micro-simulation process.[10] More specifically, we used the estimated number of households in each £5k gross income bracket for all Lower Super Output Areas (LSOAs) in England.[11]

With these data to hand, we use as our measure of heterogeneity the commonly-employed Index of Qualitative Variation (IQV) in household income. Since LSOAs are one of the lowest administrative or geographical units, we could calculate the IQV of different areas by aggregating LSOAs. The index is obtained by the following formula:

$$IQV = \frac{1 - \sum_{i=1}^{k} p_i^2}{(k-1)/k}$$

where k is the number of categories of the income variable (seven categories in our case) and pi is their relative frequency. The IQV expresses the degree to which the cases are dispersed over different categories of the variable. The scores range from 1 (maximum dispersion, that is, in the cases where the relative frequencies are equal for all categories of the variable), to 0 (no dispersion, that is, when one hundred per cent of the cases are concentrated in a single variable value). IQV represents one of several ways in which heterogeneity can be measured and provides a good estimate of geographic dispersion.

We also examine the impact of economic segregation, understood as the spatial distribution of wealth or deprivation within areas. For this purpose, we employed the Isolation Index of Segregation (IIS). The data for building this measure were gathered by the Department for Work and Pensions and correspond to the total working age population who were receiving any state benefit at May 2010.[12] We calculated three indices at different geographical scales: the index of isolation within constituencies (wards over constituencies), the index of isolation within local authorities (wards over local authorities) and the index of isolation within regions (local authorities over regions). The formula is:

$$IIS = \sum \left[\left(\frac{x_{il}}{X_l} \right) \cdot \left(\frac{x_{il}}{t_{il}} \right) \right]$$

where x_{il} is the population who received any benefit in the area i (in our case, wards or local authorities) in the large geographic entity l (in our case, local authorities, constituencies or regions); t is the total population aged 16–64 in the area; and X corresponds to the total benefit claimant population in the large geographic entity (Bell, 1954; White, 1986). The higher the index, the greater the degree of segregation.

The individual level control variables include 'the usual suspects': age and age squared, sex (coded 1 if male, 0 otherwise), marital status (coded 1 when married or living with partner, 0 otherwise), five dummies for the highest educational qualification attained: degree, other higher degree, A-level, GCSE and other qualifications (no qualifications being the base category), four dummies for housing tenure (owned outright, owned with mortgage, housing association rented and rented from employer and privately) setting the local authority tenancy as the reference category and gross total income in the month before interview for individuals in the household.[13] We also included dummies for party supporters, those who had undertaken voluntary activity in past twelve months and those who were members of a trade union. We finally included self-reported interest in politics.

In addition to this battery of individual-level controls, we added aggregate controls to reduce the potential for an omitted variable bias. The macro-level variables (derived from the 2001 census) are: the proportions of the population from an ethnic minority and working in agriculture; as well as the natural logarithm of the total population. Finally, we controlled for the affluence of the particular geographical unit. We created this measure using the median income estimates at LSOA level.[14] This value is calculated for each local authority, constituency and region by taking the average of the median income for all the LSOAs comprising the larger geographical units.

4. Methods

The basic premise of this paper is that political behaviour is a product of both individual attributes and social context (Huckfeld and Sprague, 1995). In principle, this can be assessed using a regression model that contains both social context and individual-level characteristics.[15] Controlling for the individual's social context reduces the risk of committing the individualist fallacy: that individual behaviour is purely a matter of individual attributes, social, psychological and political characteristics (Subranian et al., 2009). Equally, controlling for the individual's characteristics reduces the risk of committing the ecological fallacy and supposing that individual behaviour can be predicted from aggregate data (Robinson, 1950). Our multi-level approach recognizes that behaviour is shaped by both individual and contextual influences.

When working with grouped data, observations in each group may have similar characteristics, implying that we may fail to meet the assumption of independence required for classical regression methods. We therefore acknowledge the hierarchical nature of the data and clustered the standard errors at the respective geographical unit. To further address the issue that observations are not independently drawn, we fitted multilevel models using GLLAMM routine, the generalized linear latent and mixed model estimation procedure provided by STATA 12 (Rabe-Hesketh et al., 2001).

Since the dependent variable is binary (reported vote = 1, non-vote = 0) we estimate the models using logistic regression (Aldrich and Nelson, 1984). In our tables we report the exponentiated logit coefficients (or odds ratios). When there is a positive relationship between the independent and dependent variable, the exponentiated coefficients take a value greater than one. When there is a negative relationship between the independent and dependent variable, the coefficients are less than one. The substantive effects of independent variables on the dependent variable are more difficult to understand than in ordinary least squares because logistic regression models are inherently non-linear and non-additive (Liao, 1994). Accordingly, we convey the substantive effects by producing plots showing how the probability of turning out to vote varies with levels of segregation or heterogeneity for 'typical' individuals (King, 1998).

Previous research has expressed some concern about the assumption that individuals with a probability of 0.5 of choosing the two alternatives are most sensitive to changes in the

[10] A more detailed explanation of this estimation technique can be found in Anderson (2013).

[11] Since we only obtained income dispersion estimates for England, we dropped survey observations from Scotland and Wales.

[12] Data on benefit claimants for different geographical units and supplementary information can be found at http://www.dwp.gov.uk/.

[13] This includes some imputed data. Further details can be found in Understanding Society, 2012, p. 36.

[14] These estimates were also generated through the exercise of spatial micro-simulation.

[15] See Achen (1982) on the assumptions that are required to draw causal inferences from cross-sectional data.

independent variables. Accordingly, we also estimated the models with scobit (Nagler, 1991, 1994). The sign and significance of the coefficients are unchanged. This provides some reassurance that our findings do not depend on a particular statistical technique.

5. Empirical results

Our empirical models shed light on nature of the relationship between inequality and electoral participation. Table 1 displays the estimated exponentiated logit coefficients for variables when we enter the individual- and aggregate-level controls described above, together with the measure of segregation (IIS) but without the other measure of inequality relating to heterogeneity (IQV). Table 2 displays the coefficients estimated when we enter our measure of heterogeneity (IQV) along with the controls but without the measure of segregation (IIS). Finally, Table 3 displays the coefficients when both indicators of inequality are simultaneously entered along with the control variables.

The coefficients for IIS in Table 1 are all less than 1 and statistically significant at $p = 0.05$ or less. This suggests that segregation significantly depresses turnout at the local authority, constituency and regional levels, controlling for all other variables. Collectively, these findings provide support for H1: the greater the segregation, the lower the probability that any given individual will turn out and vote on election-day.

For all the three models in Table 1, we computed the predicted probabilities of voting in order to facilitate the interpretation of the results. The marginal effects represent the impact of a one unit change in our independent variables on the probability of turnout for a 'typical' individual with average (mean or modal) characteristics.

Figs. 1–3 plot the predicted probabilities of voter turnout for the full range of the IIS for each of the geographical units under consideration. The negative effect is clear from the downward slopes. These indicate that as economic isolation increases, the probability of voting goes down. In substantive terms, controlling for the effect of all other explanatory variables in the regression, a ten unit increase in the IIS index is associated with declines of 10 percentage points in the case of local authorities, 16 points in the case of constituencies and 5 points in the case of regions.

All the coefficients for heterogeneity (IQV) displayed in Table 2 are greater than one and all but one are statistically significant at the $p < 0.05$ threshold. The coefficient for the constituency level is also significant at the more statistically generous threshold of $p < 0.10$. These findings collectively provide support for H2: economic heterogeneity within areas increases the probability that any given individual will turn out and vote.

Again, the predicted marginal probabilities for a 'typical' individual help us to understand the relationship between the dependent and independent variables. The flatter slopes in Figs. 4–7 suggest that the impact of heterogeneity is not as sharp as segregation. Nevertheless, economic diversity within geographical units generates moderately positive effects on the probability that the 'typical' individual will turn out and vote of between 6 and 7 per cent for a one unit increase in IQV.

These findings confirm our hypothesis that segregation and heterogeneity exert different effects and offset each other to some extent.[16] Not surprisingly, therefore, models in Table 3, which contain variables representing both segregation and heterogeneity,

Table 1
Exponentiated logistic regression coefficients of the effect of segregation on turnout at three levels of aggregation (Whole sample).

Voted in last general election	LA	CONS	REG
Individual-level			
Ethnic minority	0.989	0.972	0.956
	(0.134)	(0.136)	(0.115)
Age	1.063***	1.063***	1.061***
	(0.011)	(0.012)	(0.010)
Age sq.	1.000**	1.000**	1.000***
	(0.000)	(0.000)	(0.000)
Male	0.817**	0.817**	0.901+
	(0.054)	(0.055)	(0.054)
Married	1.508***	1.470***	1.595***
	(0.110)	(0.109)	(0.103)
Education			
Higher degree	2.355***	2.491***	1.805***
	(0.296)	(0.321)	(0.199)
Other degree of higher educ.	1.847***	1.919***	1.765***
	(0.243)	(0.255)	(0.209)
A-level	1.567***	1.628***	1.534***
	(0.178)	(0.188)	(0.158)
GCSE	1.159	1.158	1.114
	(0.122)	(0.124)	(0.105)
Other qualification	0.945	0.975	0.881
	(0.139)	(0.145)	(0.112)
Home tenure			
Own outright	1.756***	1.647***	1.697***
	(0.221)	(0.212)	(0.190)
Owned with mortgage	1.752***	1.668***	1.551***
	(0.214)	(0.206)	(0.167)
Private rented	0.797+	0.761*	0.898
	(0.106)	(0.104)	(0.105)
Housing association	0.978	0.934	0.928
	(0.150)	(0.144)	(0.124)
Household income	1.000	1.000	1.000+
	(0.000)	(0.000)	(0.000)
Party support	4.700***	4.635***	4.445***
	(0.437)	(0.434)	(0.382)
Interest in politics	2.361***	2.365***	2.296***
	(0.094)	(0.097)	(0.083)
Subjective future financial situation			
Better off	0.871+	0.840*	0.824**
	(0.071)	(0.070)	(0.061)
Worse than now	1.210*	1.231*	1.153+
	(0.111)	(0.116)	(0.097)
Subjective current financial situation			
Living comfortably	1.521*	1.703**	1.593**
	(0.277)	(0.316)	(0.270)
Doing alright	1.348+	1.506*	1.397*
	(0.234)	(0.266)	(0.226)
Just about getting by	1.397+	1.530*	1.453*
	(0.240)	(0.268)	(0.233)
Quite difficult	1.338	1.369	1.294
	(0.258)	(0.268)	(0.229)
Macro-level			
Share of ethnic minority pop.	1.006	1.005	1.002
	(0.009)	(0.008)	(0.017)
Total population (log)	1.019	0.888+	1.011
	(0.077)	(0.058)	(0.081)
Share of pop. work. in agri.	0.988	1.006	0.993
	(0.041)	(0.032)	(0.092)
Overall income	0.997	0.998	0.996**
	(0.002)	(0.002)	(0.001)
Index of isolation	0.928***	0.948***	0.954*
	(0.018)	(0.015)	(0.020)
Constant	0.137	0.133	0.128
	(0.151)	(0.130)	(0.215)
Observations	9963	9963	9963
Groups	304	436	16
Log Likelihood	−3570	−3561	−3794

+ 0.10 * 0.05 ** 0.01 *** 0.001.

[16] The two measures of inequality are strongly – but not perfectly – correlated. The Pearson's R between IIS and IQV at the constituency and local authority levels is −0.79, while the correlation at the regional level is −0.82. This collinearity increases the size of the standard errors and may raise concerns as to whether it is possible to identify the unique impact of the two measures of inequality. Nevertheless, the two IIS coefficients for local authorities and constituencies in Table 3 are statistically significant and consistent with theory.

Table 2
Exponentiated logistic regression coefficients of the effect of heterogeneity on turnout at four levels of aggregation (Whole sample).

Voted in last general election	WARD	LA	CONS	REGION
Individual-level				
Ethnic minority	0.868	0.977	0.958	0.961
	(0.137)	(0.132)	(0.134)	(0.116)
Age	1.059***	1.063***	1.062***	1.062***
	(0.013)	(0.011)	(0.012)	(0.010)
Age sq.	1.000*	1.000**	1.000**	1.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Male	0.751***	0.810**	0.814**	0.902+
	(0.055)	(0.054)	(0.055)	(0.054)
Married	1.506***	1.518***	1.468***	1.598***
	(0.126)	(0.110)	(0.109)	(0.103)
Education				
Higher degree	2.544***	2.367***	2.542***	1.797***
	(0.362)	(0.296)	(0.328)	(0.198)
Other degree of higher educ.	1.831***	1.866***	1.956***	1.762***
	(0.269)	(0.245)	(0.259)	(0.209)
A-level	1.654***	1.570***	1.654***	1.534***
	(0.211)	(0.178)	(0.190)	(0.158)
GCSE	1.162	1.165	1.174	1.113
	(0.139)	(0.123)	(0.126)	(0.105)
Other qualification	0.945	0.958	0.979	0.875
	(0.159)	(0.142)	(0.146)	(0.111)
Home tenure				
Own outright	1.906***	1.758***	1.674***	1.710***
	(0.280)	(0.223)	(0.215)	(0.192)
Owned with mortgage	1.888***	1.743***	1.691***	1.563***
	(0.268)	(0.213)	(0.208)	(0.168)
Private rented	0.739+	0.804	0.781+	0.907
	(0.115)	(0.108)	(0.106)	(0.106)
Housing association	0.925	0.991	0.937	0.927
	(0.164)	(0.153)	(0.145)	(0.124)
Household income	1.000	1.000	1.000	1.000+
	(0.000)	(0.000)	(0.000)	(0.000)
Party support	5.352***	4.660***	4.616***	4.436***
	(0.549)	(0.434)	(0.432)	(0.381)
Interest in politics	2.590***	2.365***	2.367***	2.295***
	(0.119)	(0.094)	(0.097)	(0.083)
Subjective future financial situation				
Better off	0.829*	0.872+	0.842*	0.822**
	(0.077)	(0.071)	(0.070)	(0.061)
Worse than now	1.175	1.195+	1.222*	1.155+
	(0.122)	(0.110)	(0.116)	(0.097)
Subjective current financial situation				
Living comfortably	1.592*	1.527*	1.720**	1.588**
	(0.326)	(0.277)	(0.318)	(0.269)
Doing alright	1.458+	1.351+	1.520*	1.395*
	(0.285)	(0.234)	(0.268)	(0.226)
Just about getting by	1.442+	1.399*	1.543*	1.440*
	(0.279)	(0.239)	(0.269)	(0.231)
Quite difficult	1.360	1.343	1.388+	1.292
	(0.294)	(0.257)	(0.271)	(0.229)
Macro-level				
Share of ethnic minority pop.	1.007	0.998	1.003	1.015
	(0.006)	(0.009)	(0.007)	(0.015)
Total population (log)	0.995	1.014	0.880+	0.959
	(0.078)	(0.065)	(0.060)	(0.089)
Share of pop. work. in agri.	0.997	1.002	1.005	1.074
	(0.011)	(0.039)	(0.029)	(0.095)
Overall income	1.000	0.999	0.999	0.994***
	(0.001)	(0.002)	(0.002)	(0.002)
Index of qualitative variation	1.034*	1.051*	1.041+	1.071**
	(0.017)	(0.024)	(0.023)	(0.025)
Constant	0.000	0.000	0.000	0.0000
	(0.001)	(0.001)	(0.002)	(0.000)
Observations	9963	9963	9963	9963
Groups	1510	304	436	16
Log Likelihood	−3432	−3572	−3564	−3793

+ 0.10 * 0.05 ** 0.01 *** 0.001.

Table 3
Exponentiated logistic regression coefficients of the effect of both segregation and heterogeneity at three levels of aggregation (Whole sample).

Voted in last general election	LA	CONS	REGION
Individual-level			
Ethnic minority	0.988	0.970	0.961
	(0.134)	(0.136)	(0.116)
Age	1.063***	1.063***	1.062***
	(0.011)	(0.012)	(0.010)
Age sq.	1.000**	1.000**	1.000***
	(0.000)	(0.000)	(0.000)
Male	0.817**	0.817**	0.902+
	(0.054)	(0.055)	(0.054)
Married	1.509***	1.469***	1.600***
	(0.110)	(0.109)	(0.104)
Education			
Higher degree	2.355***	2.491***	1.801***
	(0.296)	(0.321)	(0.198)
Other degree of higher educ.	1.848***	1.921***	1.766***
	(0.243)	(0.255)	(0.209)
A-level	1.567***	1.628***	1.532***
	(0.178)	(0.188)	(0.158)
GCSE	1.159	1.158	1.113
	(0.122)	(0.124)	(0.105)
Other qualification	0.945	0.973	0.876
	(0.139)	(0.145)	(0.112)
Home tenure			
Own outright	1.756***	1.647***	1.708***
	(0.221)	(0.212)	(0.191)
Owned with mortgage	1.752***	1.670***	1.564***
	(0.214)	(0.206)	(0.168)
Private rented	0.798+	0.762*	0.905
	(0.106)	(0.104)	(0.106)
Housing association	0.978	0.935	0.930
	(0.150)	(0.144)	(0.125)
Household income	1.000	1.000	1.000+
	(0.000)	(0.000)	(0.000)
Party support	4.697***	4.633***	4.446***
	(0.437)	(0.434)	(0.383)
Interest in politics	2.361***	2.366***	2.295***
	(0.095)	(0.097)	(0.083)
Subjective future financial situation			
Better off	0.871+	0.840*	0.823**
	(0.071)	(0.070)	(0.061)
Worse than now	1.209*	1.230*	1.153+
	(0.111)	(0.116)	(0.097)
Subjective current financial situation			
Living comfortably	1.522*	1.707**	1.585**
	(0.278)	(0.317)	(0.269)
Doing alright	1.349+	1.508*	1.391*
	(0.235)	(0.267)	(0.225)
Just about getting by	1.397+	1.532*	1.440*
	(0.240)	(0.268)	(0.231)
Quite difficult	1.338	1.370	1.291
	(0.258)	(0.268)	(0.229)
Macro-level			
Share of ethnic minority pop.	1.006	1.004	1.020
	(0.009)	(0.008)	(0.018)
Total population (log)	1.019	0.888+	0.964
	(0.078)	(0.058)	(0.089)
Share of pop. work. in agri.	0.989	1.006	1.079
	(0.043)	(0.032)	(0.100)
Overall income	0.997	0.997	0.994***
	(0.002)	(0.002)	(0.002)
Index of qualitative variation	1.005	1.011	1.046
	(0.030)	(0.026)	(0.036)
Index of isolation	0.930**	0.951**	0.973
	(0.022)	(0.018)	(0.031)
Constant	0.0867	0.0506	0.00119*
	(0.262)	(0.124)	(0.004)
Observations	9963	9963	9963
Groups	304	436	16
Log Likelihood	−3570	−3561	−3793

+ 0.10 * 0.05 ** 0.01 *** 0.001.

produce somewhat weaker results. The only significant effects are negative relationships between IIS and turnout at the local authority and parliamentary constituency levels. The IQV measures of heterogeneity are no longer significant in any three of the models

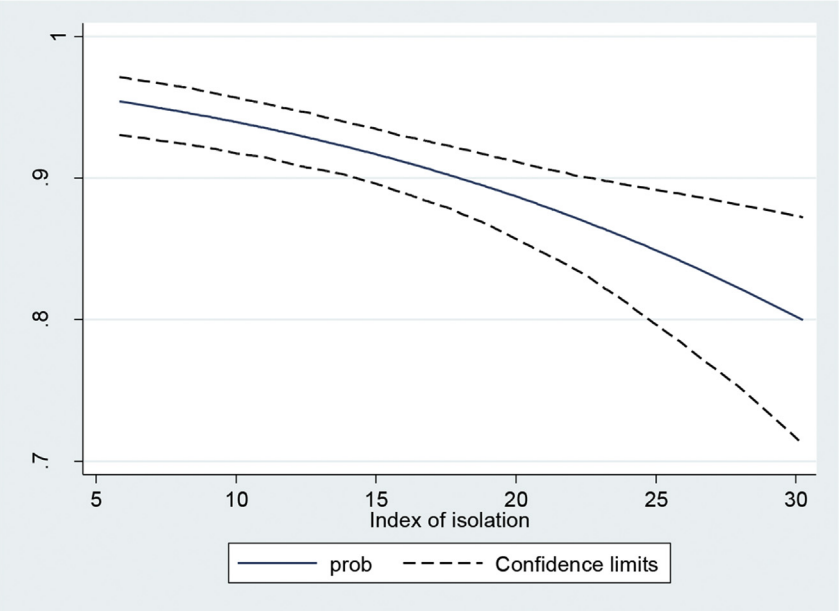

Fig. 1. Predicted probability of turnout (with 95% confidence limits) by segregation for local authority level (All respondents).

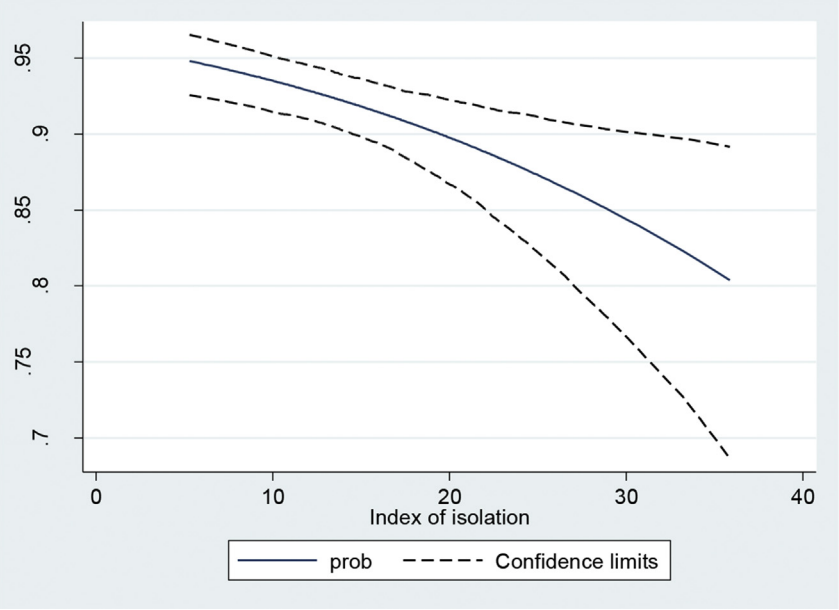

Fig. 2. Predicted probability of turnout (with 95% confidence limits) by segregation for constituency level (All respondents).

of Table 3. Thus, in the 'tournament' between two indicators of inequality, segregation apparently trumps heterogeneity as a predictor of individual turnout. The net effect of these two inequalities, however, is to reduce electoral participation.

These findings naturally cause one to suspect that some sort of interaction effects might be present that suppress the effect of variables (Friedrich, 1982). Further analyses, however, suggest that there are no significant interactions between the two indicators of inequality.[17]

A comparison of the coefficients for inequality at the different levels of aggregation provides limited support for H3: the proposition that inequality has greater effects at smaller levels of aggregation. As we depicted in the plots of predicted probabilities of the index of isolation, the impact of segregation at the electoral constituency level is actually smaller than the local authority level (which is typically a larger geographic area). In partial conformity with our expectations, the impact of segregation is least pronounced at the regional level. The models in Table 2 suggest that the impact of heterogeneity neither increases nor decreases at the higher levels of aggregation. The models in Table 3 provide the strongest evidence in support of H3. While heterogeneity exerts no significant effect, the impact of segregation is evident at the smallest geographical units of the constituency and local authority, but the same variable is not significant at the regional level.

[17] This is, of course, a consequence of the high correlation between IIS and QV (see fn.17).

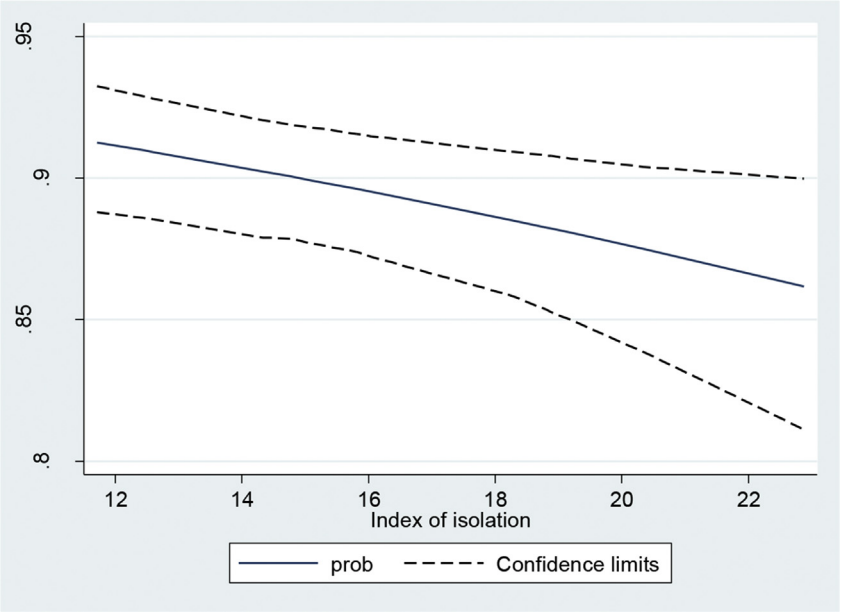

Fig. 3. Predicted probability of turnout (with 95% confidence limits) by segregation for regional level (All respondents).

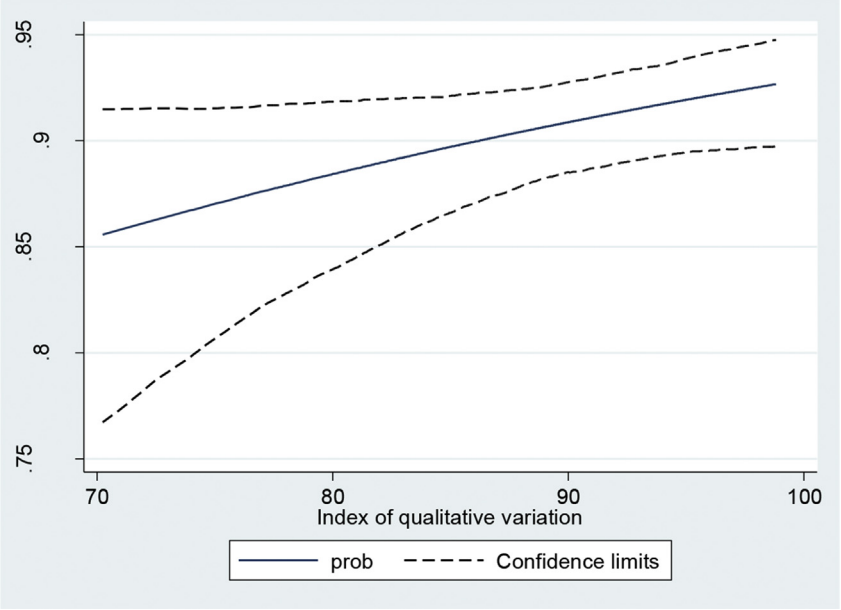

Fig. 4. Predicted probability of turnout (with 95% confidence limits) by heterogeneity for ward-level (All respondents).

H4 suggests that the impact of inequality is greater on those individuals at the lower end of the socio-economic ladder. In order to assess this, we divided the sample by income, generating two subsets – one of individuals above the median income in the sample and one of those below the median income. We then re-estimated the models in Tables 1–3 for the income sub-groups. These additional analyses allow us to examine the effects of heterogeneity and economic isolation on turnout in different portions of the electorate.

In these analyses we applied exactly the same controls as in Tables 1–3 The coefficients for the indicators of inequality are displayed in Table 4. On this occasion, however, we do not report the full regression results in order to facilitate direct visual comparison between the above and below median income groups.[18]

The coefficients reported in Table 4 suggest that the effects of the inequality are stronger for those individuals with below-average incomes. The exponentiated logistic regression coefficients for the IIS variables in the model that contains controls (but not IQV) are all statistically significant and less than 1. This again suggests that the probability of turnout declines with increased segregation for this group. By contrast, only one of the IIS coefficients (for the regional level) are statistically significant for

[18] Full details on request.

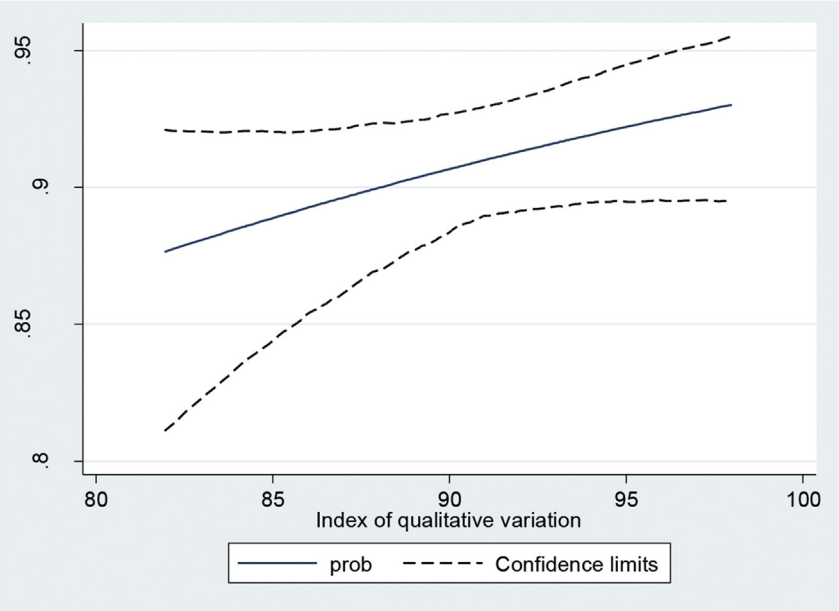

Fig. 5. Predicted probability of turnout (with 95% confidence limits) by heterogeneity for local authority level (All respondents).

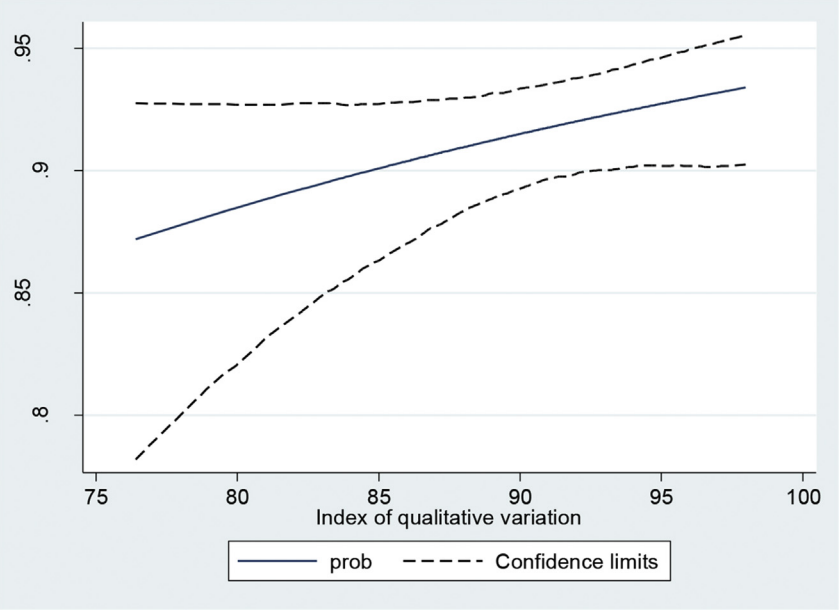

Fig. 6. Predicted probability of turnout (with 95% confidence limits) by heterogeneity for constituency level (All respondents).

the above median income group. Similarly, the coefficients for the models containing IQV (but not IIS) are significant and greater than 1 for those with below median levels of income at all four levels of geographical aggregation. This again suggests that turnout decreases with increased heterogeneity. By contrast, IQV has a statistically significant effect on turnout in the above-median-income sample only in one of the four levels of geographical aggregation (the regional level).

To make these findings more comprehensible, we again plot the probability a typical citizen would turn out and vote. In relation to the effect of economic segregation among those in the group of below-average income respondents, the set of probabilities plotted in Figs. 8–10 show clear descending line in all the geographical units. As we move from the minimum scores of economic segregation to the maximum scores there is a corresponding decrease of 30 percentage points at constituency level, 26 points at local authority level and 11 points at the regional level. Similarly, heterogeneity plays a significant role in lessening the probability of vote among the lower income respondents as the IQV scores increase it by 15 percentage points at ward level, 19 points at constituency level, 13 points at local authority level and 11 points at regional level (see Fig. 11,12,13,14).

We have already discussed the possibility of a stronger influence of our key contextual variables measured at the lowest geographical levels on the individuals' decision to vote (H4). We have suggested that potential voters may be more motivated to vote when

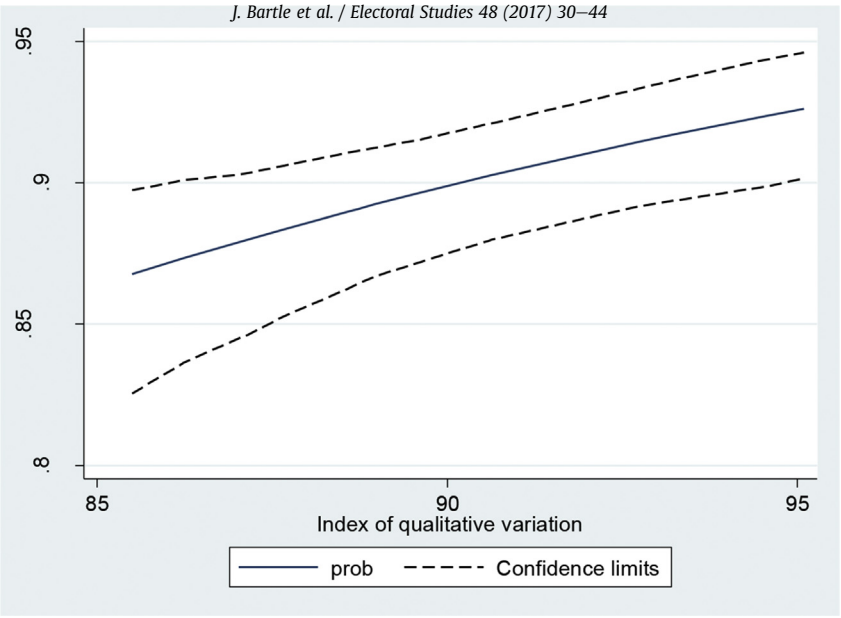

Fig. 7. Predicted probability of turnout (with 95% confidence limits) by heterogeneity for regional level (All respondents).

Table 4
Exponentiated logistic regression coefficients for segregation and heterogeneity for those above and below median income.

Voted in general election	Ward	Local Authority	Constituency	Region
Segregation				
Above median		1.009	1.004	0.917*
Below median		0.931***	0.926***	0.939**
Heterogeneity				
Above median	1.022	0.983	1.003	1.107*
Below median	1.041*	1.058+	1.061*	1.076*
Both				
Segregation				
Above median		1.002	1.008	0.944
Below median		0.937**	0.931**	1.017
Heterogeneity				
Above median		0.985	1.009	1.049
Below median		1.018	1.013	1.090

Note. The same battery of controls ae applied as in Tables 1–3.

they perceive that the immediate environment is more economically divided. Regarding the impact of economic segregation, data seem to indicate that potential voters from the lower income group withdraw from participating in the election when they experience spatial isolation. In other words, the impact of the geo-economic isolation is considerably stronger when measured at local and constituency levels than when it is calculated at regional level. In contrast, our non-spatial measure of economic inequality, the IQV, does not provide definitive evidence to support H4.

As stated above, the degree of economic segregation and heterogeneity at the lowest levels of geographical aggregation have no statistically significant effects on the decision to vote among those in the above-average income group (Table 4). However, we observe that regional economic segregation and heterogeneity exert a statistically significant influence on voter turnout. To further illustrate these results, Figs. 15 and 16 present predicted probabilities of voting as generated by the models.

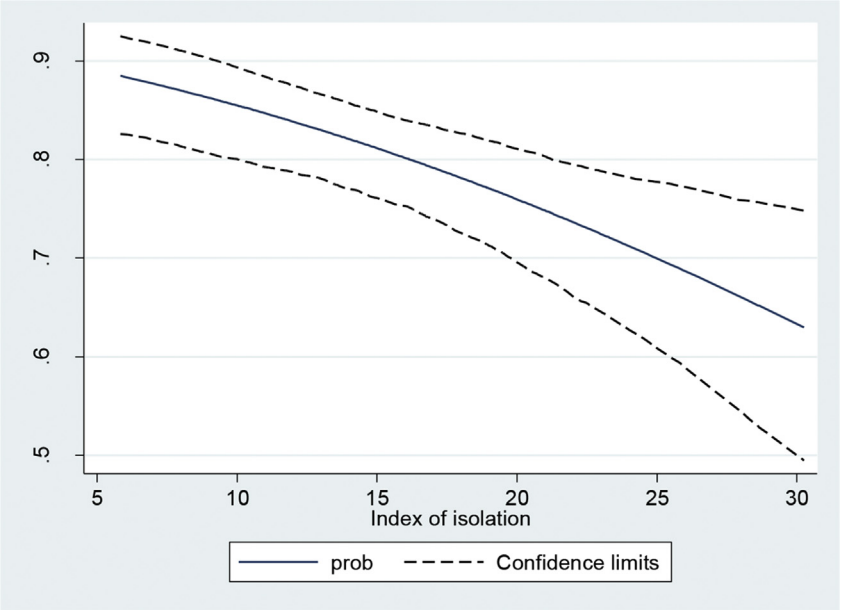

Fig. 8. Predicted probability of turnout (with 95% confidence limits) by segregation at local authority level (Below median income respondents).

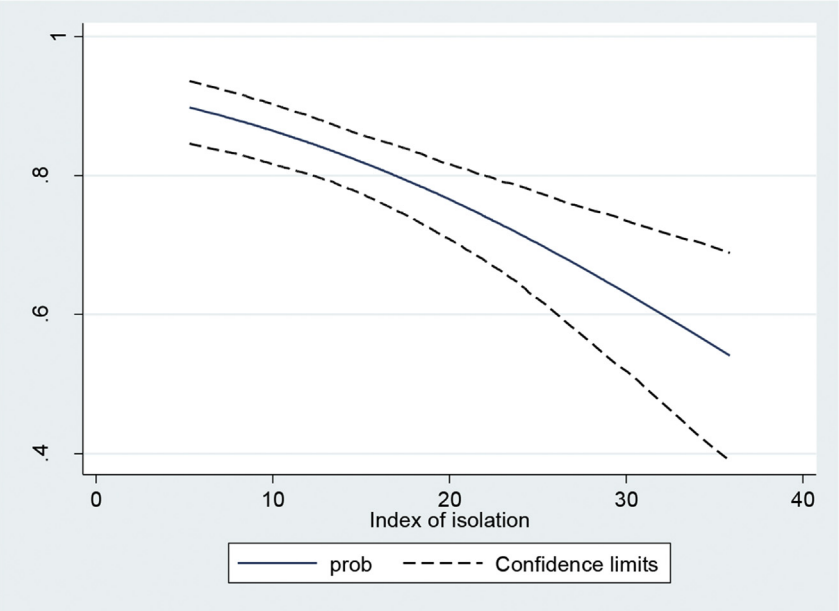

Fig. 9. Predicted probability of turnout (with 95% confidence limits) by segregation at constituency level (Below median income respondents).

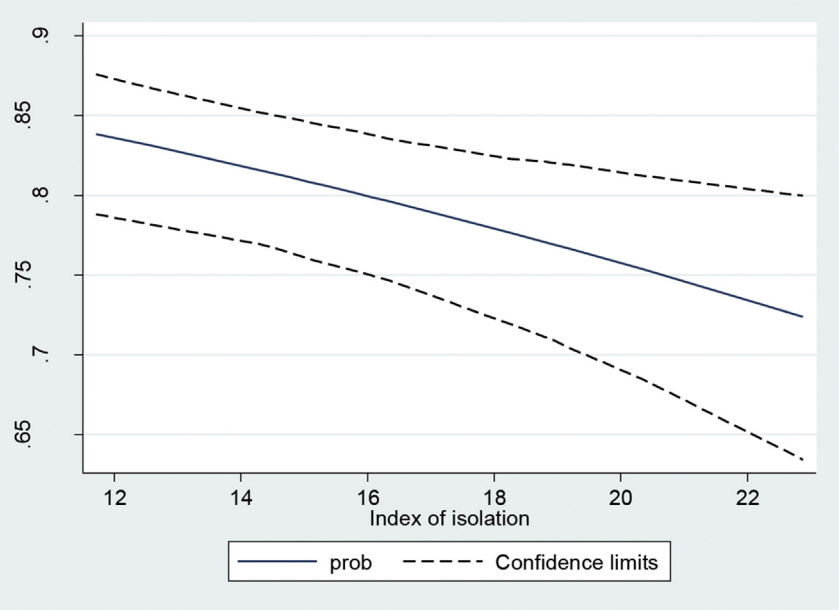

Fig. 10. Predicted probability of turnout (with 95% confidence limits) by segregation at regional level (Below median income respondents).

Simulating a change from lowest to highest segregation scores decreases the probability of voting from about 0.94 to about 0.84, or by about 10 probability points. A change from lowest to highest regional economic heterogeneity increases the same probability from about 0.70 to about 0.85, that is, by about 15 points. Nevertheless, it is worth noting that when both measures of inequality are included in the same regression the coefficients lose statistical significance (see Table 4).

The net result of our analysis is that though economic segregation between areas and heterogeneity within areas both affect electoral participation, they do so in distinct ways, and that when these two effects are taken into consideration jointly, the depressive effect of segregation trumps the positive effect of heterogeneity, especially among less affluent individuals. In other words, social isolation of economically marginalized groups – 'ghettoization' – generates the most significant impact on rates of electoral participation, and this impact is a negative one.

6. Discussion and conclusion

This paper has gone some way toward expanding our understanding of the causal mechanisms through which economic differentiation affects electoral participation. We have found evidence to support both a 'mobilizing' and a 'demobilizing' effect of

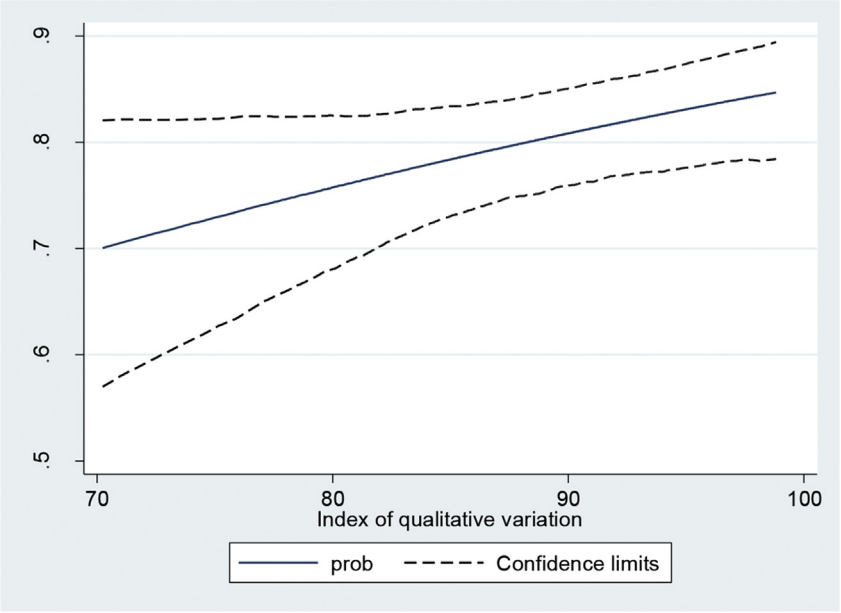

Fig. 11. Predicted probability of turnout (with 95% confidence limits) by heterogeneity at ward level (Below median income respondents).

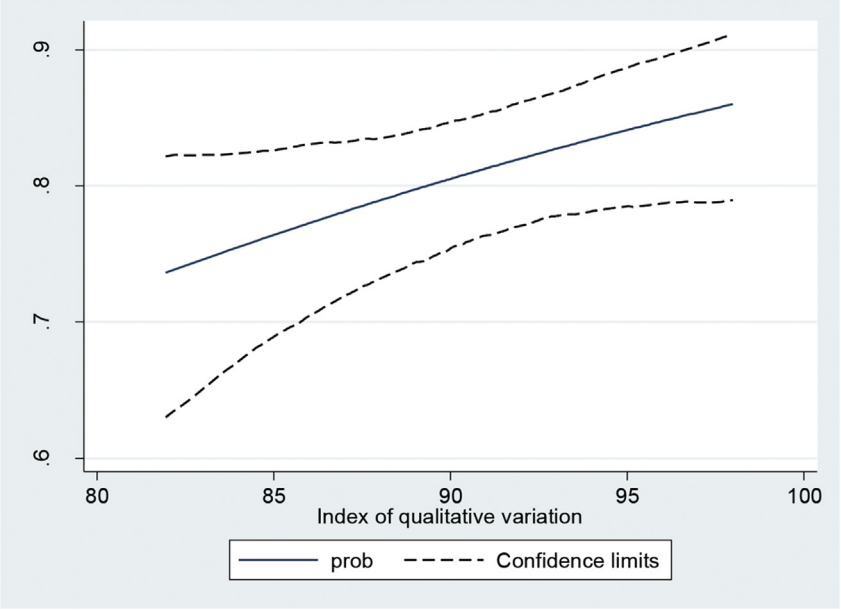

Fig. 12. Predicted probability of turnout (with 95% confidence limits) by heterogeneity at local authority level (Below median income respondents).

inequality on electoral participation. Economic heterogeneity within areas is associated with greater propensity to participate in elections, while segregation between areas appears to depress the likelihood that an individual will go to the polls, all else being equal. Moreover, when the two effects are considered together at a given level of aggregation, our findings suggest that segregation between areas outweighs heterogeneity within areas, such that the overall impact of inequality is negative.

These findings have implications for our understanding of both participation and inequality. They confirm the relevance of contextual effects on voting behaviour, but they suggest that context may affect people's propensity to vote in a variety of different ways simultaneously. Specifically, it seems that social interaction among the poor appears to reinforce norms of non-participation. By contrast, interaction between people from different social groups seems to have a mobilizing effect. Thus inequality is a complex and multifaceted phenomenon with distinct spatial aspects to it. This observation indicates the need for scholars of inequality to specify clearly – both conceptually and operationally – the type of inequality they expect to impact on the phenomena they analyse, in as much as different forms of inequality can, as this analysis has demonstrated, have diametrically opposed effects.

Future research could usefully explore in greater depth the

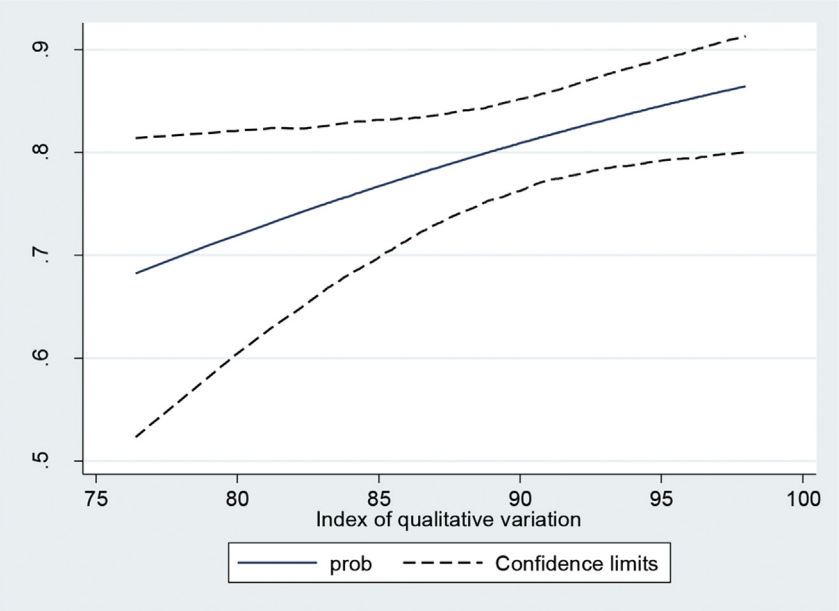

Fig. 13. Predicted probability of turnout (with 95% confidence limits) by heterogeneity at constituency level (Below median income respondents).

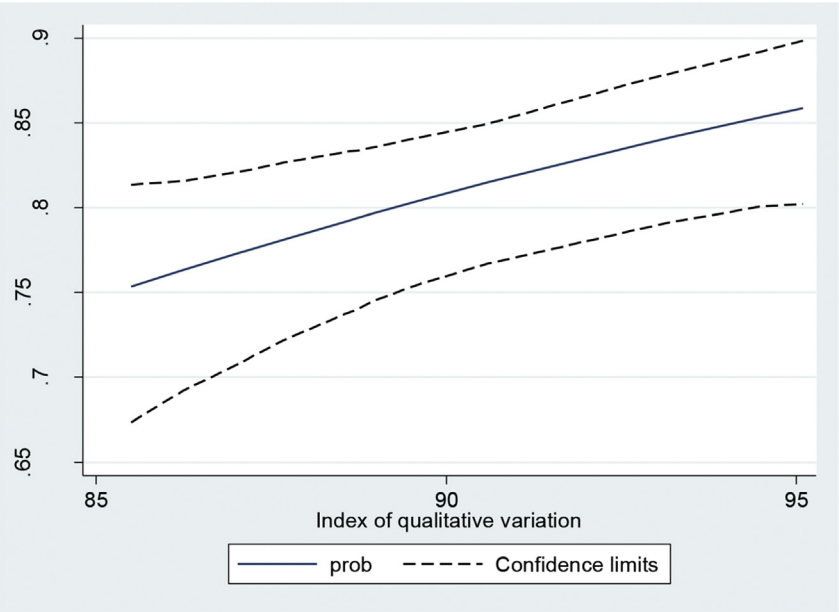

Fig. 14. Predicted probability of turnout (with 95% confidence limits) by heterogeneity at regional level (Below median income respondents).

micro-causal mechanisms behind the findings presented here. We may speculate that when individuals live with others who are relatively similar in socio-economic terms, they will have limited experience of inequality in the places that they traverse in their daily routines. They are likely to have little face-to-face contact with people far from them in the socio-economic spectrum rather they will tend to respond to subtle cues in their immediate neighbourhoods and social networks as to the desirability of electoral participation (Cho and Rudolph, 2008; Abrams et al., 2011). If they are aware of inequality it will be through the media or through a general sense within their community that their area is disadvantaged in comparison to other areas. Their experience of inequality will therefore be indirect rather than direct. This lower level of immediacy in the way inequality is experienced in relatively homogeneous neighbourhoods may account for the role of segmentation is shaping participation.

We recognise that this emphasis on social interaction – while plausible and consistent with the data – is speculative and that other mechanisms may be in play. Future research should also examine the relationship between inequalities and the mobilization efforts of political parties and other institutions. Parties have incentives to exploit the opportunities associated with inequality in both – or indeed all – its forms (Denver and Hands, 1997). Differential turnout by party supporters can tip an election one way or another. Inequality should therefore predict variations in the intensity of party campaigns. It should be possible to establish if inequality exerts any net effect controlling for this variable. These findings would go some way to understanding the causal

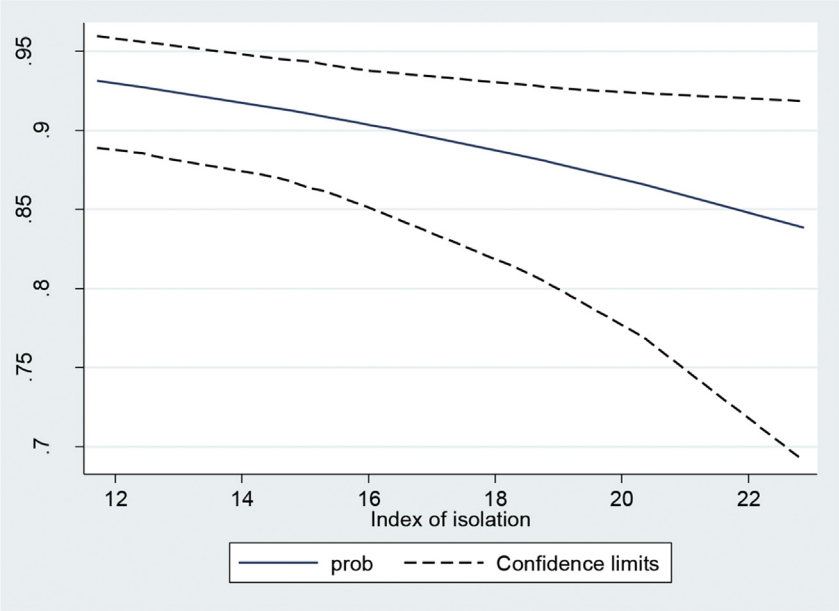

Fig. 15. Predicted probability of turnout (with 95% confidence limits) by segregation at regional level (Above median income respondents).

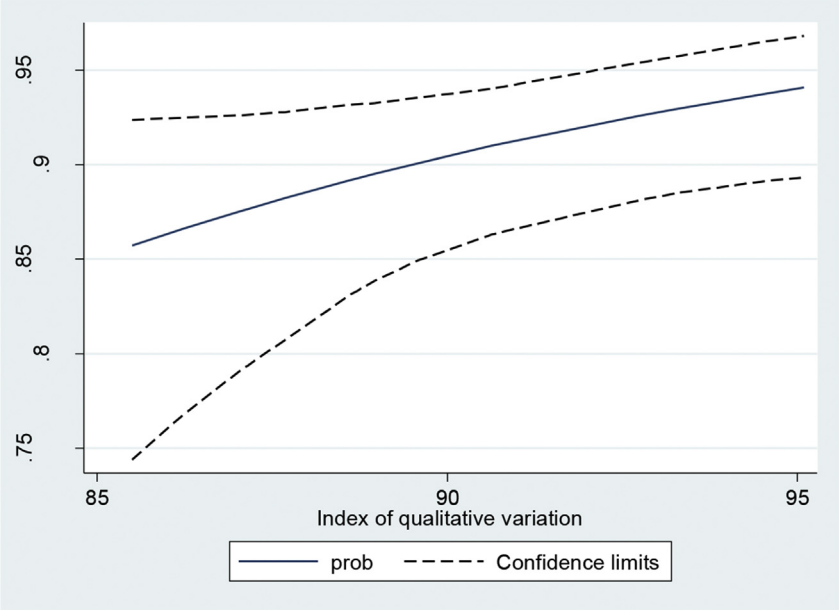

Fig. 16. Predicted probability of turnout (with 95% confidence limits) by heterogeneity at regional level (Above median income respondents).

mechanisms by which inequality influences participation both across space and through time.

References

Abrams, S., Iversen, T., Soskice, D., 2011. Informal social networks and rational voting. Br. J. Political Sci. 41 (2), 229–257.
Achen, C.H., 1982. Interpreting and Using Regression. Sage University Paper Series on Quantitative Applications in Social Sciences No. 29-1. Sage, Beverley Hills, California.
Aldrich, J., Nelson, F.D., 1984. Linear Probability, Logit and Probit Models. Sage University Paper Series on Quantitative Applications in Social Sciences No. 45-1. Sage, Beverley Hills, California.
Anderson, B., 2013. Estimating small area income deprivation: an iterative proportional fitting approach. In: Edwards, K., Tanton, R. (Eds.), Spatial Microsimulation: a Reference Guide for Users. Springer, New York, pp. 49–67.
Atkinson, A.B., 1970. On the measurement of inequality. J. Econ. Theory 2 (2), 244–263.
Bartels, L., 2008. Unequal Democracy: Politics in a Gilded Age. Princeton University Press, Princeton, N.J.
Bell, W., 1954. Probability model for the measurement of ecological segregation. Soc. Forces 32 (4), 357–364.
Brady, H.E., 2004. Political inequality: what do we know about it? In: Neckerman, K. (Ed.), Social Inequality. Russell Sage Foundation, New York.
Chang, H.J., 2003. Kicking Away the Ladder: Development Strategy in Historical Perspective: Policies and Institutions for Economic Development in Historical Perspective. Anthem Books, London.
Cho, W.K.T., Rudolph, T.J., 2008. Emanating political participation: untangling the spatial structure behind participation. Br. J. Political Sci. 38 (2), 273–289.
Clarke, H.D., Sanders, D., Stewart, M., Whiteley, P., 2004. Political Choice in Britain. Oxford University Press, Oxford.
Cook, K.S., 2014. Social capital and inequality: the significance of social connections. In: McLeod, J.D., Lawler, E.J., Schwalbe, M. (Eds.), Handbook of Social Psychology of Inequality. Springer, New York.

Crewe, I., 1981. Electoral participation. In: Butler, D., Penniman, H.E., Ranney, A. (Eds.), Democracy at the Polls. American Enterprise Institute, Washington D. C.
Dahl, R., 2006. On Political Equality. Yale University Press, Yale.
Dalton, R.J., 2008. Citizen Politics: Public Opinion and Political Parties in Advanced Industrial Democracies. CQ Press, Washington.
Denver, D., Hands, G., 1997. Modern Constituency Electioneering: Local Campaigning in the 1992 General Election. Frank Cass, London.
Dorling, D., 2015. Injustice: Why Social Inequality Still Persists. Policy Press, London.
Enns, P.K., Wlezien, C. (Eds.), 2011. Who Gets Represented?. Russell Sage Foundation, New York.
Fiske, S.T., 2002. What we know about bias and inter-group conflict: the problem of the century. Curr. Dir. Psychol. Sci. 11 (4), 123–128.
Friedrich, R.J., 1982. In defense of multiplicative terms in multiple regression equations. Am. J. Political Sci. 26 (4), 797–833.
Gilens, M., 2005. Inequality and democratic responsiveness. Public Opin. Q. 69 (5), 778–896.
Gilens, M., 2012. Affluence and Influence: Economic Inequality and Political Power in America. Princeton University Press, Princeton, N. J.
Goldstein, K.M., Ridout, T.N., 2002. The politics of participation: mobilization and turnout over time. Polit. Behav. 24 (1), 3–29.
Goodin, R., Dryzek, J., 1980. Rational participation: the politics of relative power. Br. J. Political Sci. 10 (3), 273–292.
Goodin, R.E., Tilly, C. (Eds.), 2008. The Oxford Handbook of Contextual Political Analysis. Oxford University Press, Oxford.
Hayek, F.A., 2001. The Road to Serfdom. Routledge Classics, London.
Horn, D., 2011. Income inequality and voter turnout. Gini Discuss. Pap. 16 (2011). Amsterdam Institute for Advanced Labour Studies. www.gini-research.org.
Huckfeld, R., Sprague, J., 1995. Citizens, Politics and Social Communication: Information and Influence in an Election Campaign. Cambridge University Press, Cambridge.
Irwin, M.D., 2007. Territories of inequality: an essay on the measurement and analysis of inequality in grounded place settings. In: Lobao, L.M., Hooks, G., Tickamyer, A.R. (Eds.), The Sociology of Spatial Inequality. State University of New York Press, Albany, New York, pp. 85–110.
Jacobs, L.R., Skocpol, T. (Eds.), 2005. Inequality and American Democracy: what We Know and what We Need to Learn. Russell Sage Foundation, New York.
Jaime-Castillo, A., 2009. Economic Inequality and Electoral Participation: a Cross-country Evaluation. Paper presented at the Comparative Study of Electoral Systems Conference, Toronto 6 September.
Jenkins, S.P., Van Kerm, P., 2009. The measurement of economic inequality. In: Salverda, W., Nolan, B., Smeeding, T.M. (Eds.), The Oxford Handbook of Economic Inequality. Oxford University Press, Oxford.
Johnston, R.J., Pattie, C.J., Allsopp, J., 1998. A Nation Dividing? the Electoral Map of Great Britain, 1979-1987. Longman, London.
Jones, K.R., Johnston, R.J., Pattie, C.J., 1992. People, places and regions: exploring the use of multi-level modelling in the analysis of electoral data. Br. J. Political Sci. 22, 343–380.
King, G., 1998. Unifying Political Methodology: the Likelihood Theory of Statistical Inference. University of Michigan Press, Ann Arbor.
Leighley, J.E., Nagler, J., 2013. Who Votes Now? Demographics, Issues, Inequality, and Turnout in the United States. Princeton University Press, Princeton.
Liao, T.F., 1994. Interpreting Probability Models: Logit, Probit and Other Generalised Linear Models. Sage University Series on Quantitative Applications in Social Sciences No. 101-1. Sage, Berverley Hills.
Lippman, W., 1997. Public Opinion. Free Press, New York.
Lobao, L.M., Hooks, G., 2007. Advancing the sociology of spatial equality: spaces, places and the subnational scale. In: Lobao, L.M., Hooks, G., Tickamyer, A.R. (Eds.), The Sociology of Spatial Inequality. State University of New York Press, Albany New York, NY.
MacKuen, M., 2002. Political psychology and the micro-macro gap in politics. In: Kuklinski, J.H. (Ed.), Thinking about Political Psychology. Cambridge University Press, Cambridge.
Mill, J.S., 1861. Considerations on Representative Government. Parker, Son and Bourn, London.
Nagler, J., 1991. The effect of registration laws and education on United-States voter turnout. Am. Political Sci. Rev. 85 (4), 393–405.
Nagler, J., 1994. Scobit: an alternative estimator to logit and probit. Am. J. Political Sci. 38 (1), 230–255.
Nozick, R., 2001. Anarchy, State and Utopia. Wiley-Blackwell, London.
Oliver, J.E., 1999. The effects of metropolitan economic segregation on local civic participation. Am. J. Political Sci. 43 (1), 186–212.
Oliver, J.E., 2001. Democracy in Suburbia. Princeton University Press, Princeton, N. J.
Openshaw, S., 1984. The Modifiable Areal Unit Problem. Geo Books, Norwich.
Putnam, R.D., 2000. Bowling Alone: the Collapse and Revival of American Democracy. Simon and Schuster, New York.
Quillian, L., 2014. Social psychological processes in studies of neighbourhoods and inequality. In: McLeod, J.D., Lawler, E.J., Schwalbe, M. (Eds.), Handbook of Social Psychology of Inequality. Springer, New York.
Rabe-Hesketh, S., Pickles, A., Skrondal, A., 2001. GLLAMM: a general class of multilevel model and a stata program. Multilevel Model. Newsl. 13.1, 17–23.
Robinson, W.S., 1950. Ecological correlations and the behavior of individuals. Am. Sociol. Rev. 15 (3), 351–357.
Rosenstone, S.J., Hansen, J.M., 1993. Mobilization, Participation, and Democracy in America. Macmillan, New York.
Schier, S.E., 2000. By Invitation Only: the Rise of Exclusive Politics in the United States. University of Pittsburgh Press, Pittsburgh.
Smith, E.R., McKie, D.M., 2000. Social Psychology. Psychology Press, Philadelphia, PA.
Sniderman, P.M., 2000. Taking sides: a fixed choice theory of political reasoning. In: Lupia, A., Matthew, D., McCubbins, Popkin, Samuel L. (Eds.), Elements of Reason: Cognition, Choice, and the Bounds of Rationality. Cambridge University Press, Cambridge, 2000.
Solt, F., 2008. Economic inequality and democratic political engagement. Am. J. Political Sci. 52 (1), 48–60.
Soss, J., Jacobs, L.R., 2009. The place of inequality: non-participation in the American polity. Political Sci. Q. 124 (1), 95–125.
Stiglitz, J.E., 2012. The Price of Inequality. Penguin, London.
Stimson, J.A., 1999. Public Opinion in America: Moods. Cycles and Swings Westview Press, Boulder.
Subranian, S.V., Jones, K., Kaddour, A., Krieger, N., 2009. Revisiting Robinson: the perils of individualistic and ecologic fallacy. Int. J. Epidemiol. 38 (2), 1–19.
Swaddle, K., Heath, A., 1989. Official and reported turnout in the British general election of 1987. Br. J. Political Sci. 19 (4), 537–551.
Therborn, G., 2008. Why and how place matters. In: Goodin, R., Tilly, C. (Eds.), The Oxford Handbook of Contextual Political Analysis. Oxford University Press, Oxford, pp. 509–533.
Tunstall, H., Rossiter, D.J., Pattie, C.J., McAllister, I., Johnston, R.J., Dorling, D.F.L., 2000. Geographical scale, the 'Feel-Good factor' and voting at the 1997 general election in England and Wales. Trans. Inst. Br. Geogr. 25 (1), 51–64.
Verba, S., Schlozman, K.L., Brady, H.E., 2004. Political equality: what do we know about it? In: Neckerman, K. (Ed.), Social Inequality. Russell Sage Foundation, New York, pp. 635–666.
Verba, S., Schlozman, K.L., Brady, H.E., 1995. Voice and Equality: Civic Voluntarism in American Politics. Harvard University Press, Harvard, MA.
Welch, F., 1999. In defence of inequality. Am. Econ. Rev. 89 (1), 1–17.
Wilkinson, R., Pickett, K., 2009. The Spirit Level: Why More Equal Societies Almost Always Do Better. Penguin, London.
Wilson, T.D., 2002. Strangers to Ourselves: Discovering the Adaptive Unconscious. Harvard University Press, Harvard.
Wilson, W.J., 1996. Why Work Disappears: the World of the New Urban Poor. Knopf, New York.
Whiteley, P., 2012. Political Participation in Britain: the Decline and Revival of Civic Culture. Macmillan, Basingstoke.
White, M., 1986. Segregation and Diversity measures in population distribution. Popul. Index 52 (2), 198–221.
Wolfinger, R., Rosenstone, S., 1980. Who Votes? Yale University Press, New Haven.