Quantifying substantive representation of ethnic minorities in the House of Commons, 2010-2020

Geography and substantive representation of ethnic minorities under single-member plurality electoral rules

Owen Winter ·

Abstract Under single-member district electoral systems, geography is paramount. This is particularly so for minority groups, for whom geographic concentration mediates the ability to secure representation. In Britain, some have argued that relative concentration of ethnic minorities has increased their ability to achieve descriptive representation. However, this concentration also dilutes the size of minority groups in most districts. This paper shows how the presence or absence of ethnic minorities in a constituency is one of the most important factors affecting whether an MP will substantively represent ethnic minorities in Parliamentary speeches.

1 Introduction

Since 2018, a series of events transformed discussion about the representation of ethnic minorities in the UK. The Windrush scandal, the Grenfell Tower disaster, the uneven impact of the COVID-19 pandemic and death of Belly Mujinga, the murder of George Floyd and Black Lives Matter protests thrust ethnic inequalities into the spotlight and raised questions about politicians' willingness and ability to represent Britain's ethnic minorities (*BBC News: UK* 2021, 2019; White 2021; Dray 2021). In Parliament, more speeches mentioned ethnic minorities and the issues affecting them in 2020 than any year since at least 2010 (Figure 5). This paper considers the factors affecting MPs' substantive representation of ethnic minorities in Parliamentary speeches.

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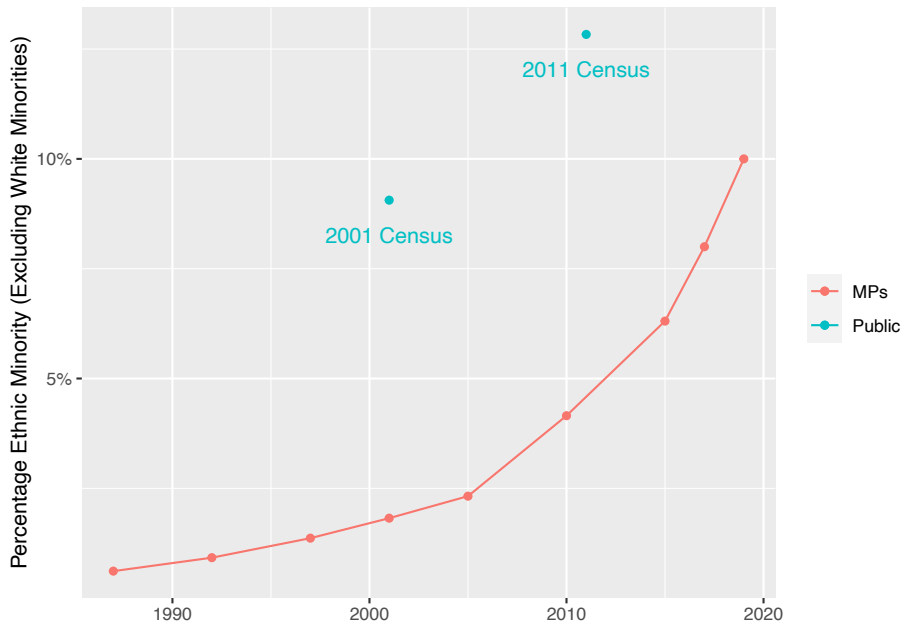E-mail: owen.winter.2021@bristol.ac.uk

Fig. 1 Ethnic minorities as percentage of MPs and the general public

The descriptive under-representation of ethnic minorities in political systems is a prominent issue across Western democracies. In the UK, around 13% of the population was a member of an ethnic minority (excluding white minorities) in the 2011 census, compared with 4% of MPs in the same year (Figure 1). Their substantive representation, however, and the link between the two, is much more difficult to untangle. For some, the substantive and descriptive representation of ethnic minorities is inextricable (Mansbridge 1999). While for others, mistaking descriptive representation for substantive undermines representation by ethnic majority legislators and essentialises ethnic minorities (Fieldhouse and Sobolewska 2013).

This debate also underlies a conversation about geography and its effect on representation, especially under majoritarian electoral systems (Lublin 1997). For those who prioritise descriptive representation, geographic concentration combined with single member districts can help ethnic minorities elect a representative of their own choice, to represent issues affecting that community. For those who prioritise substantive representation, meanwhile, geographic concentration can dilute ethnic minorities voting power across the legislature, reducing substantive representation.

In this paper, local ethnicity data is paired with labelled MP speeches to show that constituency ethnic minority population is the most important factor affecting the likelihood of an MP substantively representing ethnic minorities in their parliamentary speeches. This effect is reconceptualised as being a result of both socialisation and electoral incentives, rather than solely a

product of MP vote-seeking. Other key factors include MP ethnicity, although this effect is less pronounced than one might expect; public opinion, measured using Ipsos Mori's Issues Index; MP gender and Parliamentary positions.

2 Literature Review

There is a broad literature on the descriptive under-representation of ethnic minorities, both in the UK and across democracies in the global north (Crewe 1983; Norris and Lovenduski 1994; Saggar 2000; Bird, Saalfeld, and Wüst 2010; Bloemraad and Schönwälder 2013; Fieldhouse and Sobolewska 2013; Kulich, Ryan, and Haslam 2014). Norris and Lovenduski (1994) divide the issues affecting descriptive representation of minorities into demand-side and supply-side.

Demand-side issues include direct discrimination - positive or negative - and imputed discrimination, with elites anticipating how voters might react to minority candidates. Kulich, Ryan, and Haslam (2014), for example, argue that the perceived "competence" versus "warmth" of certain ethnic groups may lead to ethnic minority candidates being disproportionately selected in less winnable constituencies, either because of the direct discrimination of party elites or because of their presumptions about voters. Party elites' fears about voter discrimination may be partially justified, with some evidence of a "backlash effect" among white voters (Le Lohé 1998; Stegmaier, Lewis-Beck, and Smets 2013; Zingher and Farrer 2016). However, imputed discrimination is likely to be based on limited evidence and in congruence with direct discrimination. There is also some limited evidence of a turnout bonus for ethnic minority candidates among voters of the same ethnicity (Stegmaier, Lewis-Beck, and Smets 2013; Martin 2016).

Supply-side issues, meanwhile, relate to resources (including time, money and experience) or motivation (including ambition, drive or interest). Bloemraad and Schönwälder (2013), for example, identify how immigrants and their children lack contacts and networks, even over multiple generations, which are a significant resource for political careers. Sobolewska, Fieldhouse, and Cutts (2013) argue that minorities tend to live in areas with higher deprivation, resulting in lower political mobilisation. Government policies relating to citizenship and integration more broadly are also likely to have a significant effect (de Wit and Koopmans 2005).

These supply and demand-side factors act directly on the descriptive representation of ethnic minorities but are also mediated by broader institutional factors. The "new institutionalism" approach emphasises the interaction of individual and collective actors with institutional and cultural contexts (Norris 2009; Kriesi 2008; Bloemraad and Schönwälder 2013). It is this institutional context, especially the interaction of social geography and the electoral system, that this paper seeks to address.

2.1 Electoral Systems

There is a consensus that electoral systems have significant implications for minority representation (Togeby 2008; Lublin 2014; Hughes 2016). However, the direction and magnitude of these implications are contested. In general, more proportional electoral systems better represent minorities, whether political or social (Norris 1997). Multi-member districts under proportional systems moderate the effect of imputed discrimination because a wide range of candidates are believed to broaden the number of voters represented by the party, as opposed to the more risk-averse and majoritarian instincts associated with single member (SMP) elections such as in the UK. As Bird, Saalfeld, and Wüst (2010) argue, if each party's candidates represent their districts, the party is unlikely to represent minority groups nationwide. Moreover, as Crewe (1983) argues, there are few seats up for election and given that most MPs in safe seats easily secure re-nomination and re-election, a lack of descriptive representation is likely to perpetuate itself. The majoritarian nature of SMP voting, with high barriers to new parties, also precludes the possibility of a separate party to represent ethnic minority voters.

However, Moser (2008) uses evidence from Russia to argue that the supposed benefits of proportional systems are highly contingent on demographic and institutional factors including group size, geographic concentration, ethnic federalism, and cultural assimilation.

2.2 Geography and Representation

Social geography is key to understanding the effects of the UK's SMP electoral system on representation of ethnic minorities. It also reveals a significant divide between consideration of descriptive versus substantive representation. The question hinges on whether geographic concentration proves to be advantageous for minority representation, or not. As Figure 2 shows, the UK's non-white ethnic minorities are highly segregated, with dissimilarity index scores between 0.57 (Indian) and 0.80 (Bangladeshi) indicating that these groups are highly concentrated (Duncan and Duncan 1955). For context, this compares to an average black/white dissimilarity index of 0.62 in the United States, with the most segregated state being New York (0.78) ("Residential Segregation - Black/White in U.S | 2021 Annual Report" 2022).

On the one hand, it could be argued that geographic concentration improves descriptive representation, with a larger number of districts where ethnic minorities form a critical portion of the electorate. This is the logic of redistricting efforts in the United States, where ethnic minorities are grouped into 'majority-minority' districts to allow those groups to elect a candidate of their choice (Lublin 1997). Indeed, if ethnic minorities were to vote as a bloc for a single 'ethnic minority' party, based on the work of Calvo and Rodden (2015), we would expect that party to perform best if it was geographically concentrated. Lublin (2017) finds that ethnic diversity results in party pro-
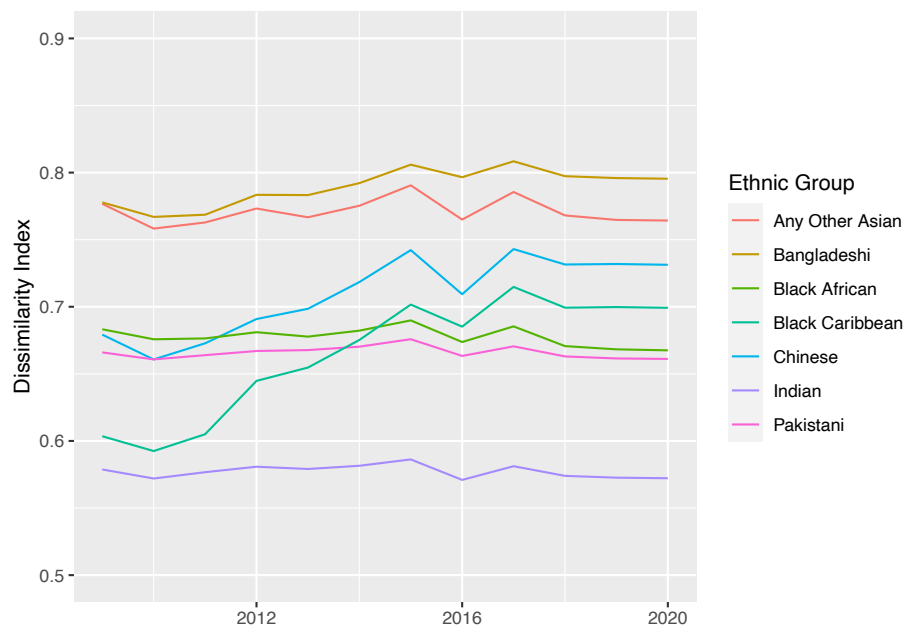
Fig. 2 Index of Dissimilarity of ethnic groups by LSOA 2009-2020, using CDRC data

liferation in majoritarian systems when ethnic minorities are concentrated. Given that most ethnic minority MPs, especially before 2010, were elected in constituencies with a significant ethnic minority population, there seems to be logic to this perspective.

On the other, in the paradox identified by Lublin (1997), the benefits to descriptive representation of ethnic minorities being concentrated in certain districts may undermine those groups' substantive representation. A skewed distribution across districts results in a higher absolute number of MPs with a majority of ethnic minority constituents but reduces the number of MPs with a significant ethnic minority community in their constituency. Nationally, this disincentivises MPs and national political leaderships from prioritising policies supported by ethnic minority voters. As Fieldhouse and Sobolewska (2013) identify, ethnic minorities' "specific geographical concentration in larger than average, deprived urban constituencies where Labour holds the balance of power without much real electoral competition."

In England and Wales, where a clear majority of ethnic minorities vote for Labour and live in Labour-dominated areas, this means significantly fewer ethnic minority voters in competitive constituencies where campaigning predominantly happens. This likely compounds the mistaken view that ethnic minority voters exhibit lower volatility (Martin 2019). Meanwhile, ethnic minorities outside constituencies with substantial ethnic minority populations are significantly less likely to be targeted by political parties (Sobolewska, Fieldhouse, and Cutts 2013). This phenomenon feeds into a broader trend,

identified by Rodden (2019), that parties preferred by urban (often ethnically diverse) voters are systematically underrepresented in SMP systems.

2.3 Substantive representation

This paradox over geographic distribution speaks to the important theoretical differences between descriptive and substantive representation. As Fieldhouse and Sobolewska (2013) set out, the link between the two is contested for three reasons. Firstly, the assumption that only descriptive representation can lead to substantive representation undermines representation of ethnic minorities by non-ethnic minority MPs. Secondly, it is not clear that ethnic minority representatives should or do prioritise representing their "descriptively matched" constituents. As Catalano (2009) argues, by assuming that descriptive representation substantially changes the debate, we are at risk of essentialising those groups being represented. Thirdly, there are the significant difficulties associated with the measurement of substantive representation, especially in parliamentary systems where roll-call votes are not a useful measure of legislator opinion.

Considering the effect of the electoral system on substantive representation, we should include both representation of ethnic minorities by descriptively matched MPs and by other MPs. As Saalfeld and Bischof (2013) argue, the factors affecting representation can be broadly grouped as "socialisation" or "electoral incentives." The ethnic identity of the MP (and therefore descriptive representation) is theorised to increase substantive representation due to socialisation - and in particular the weight of responsibility that a person of a certain social group has to represent that group. There are many other important socialisation factors, which affect MPs' behaviour across a wide range of issues (Baumann, Debus, and Müller 2015). For example, Labour Party MPs are found to be significantly more likely to represent ethnic minority group issues in written questions, possibly because the internal organisation of the Labour Party encourages the articulation of group interests (Saalfeld and Bischof 2013; Garbaye 2005).

Electoral incentives, meanwhile, relate to the view that MPs can cultivate support at an election through representing their constituents. With a parliamentary system and the closed-list-of-one SMP system, there are limited incentives for cultivating a 'personal vote' (John M. Carey and Shugart 1995). However, MPs may have an outsized view of their own electoral significance. Unlike for the representation of women, ethnic minority populations vary significantly in size across constituencies, so the potential rewards of cultivating a personal vote among minority groups in particular is highly varied.

One difficulty estimating the relative sizes of socialisation versus electoral effects is the relationship between variables, many of which could affect both socialisation and electoral incentives. In their consideration of parliamentary questions, for example, Saalfeld and Bischof (2013) include "Percentage of 'non-whites' in MP's constituency" as a variable in their electoral-incentives

model, despite the fact that local patterns of ethnic group populations likely *also* have a significant effect on socialisation: through local political organisations, MP-constituent communication, and even the interaction of MPs and different ethnic groups in social settings (Fenno 1978; Enos 2017).

3 Theoretical Approach

The literature review above informs a theoretical framework which seeks to explain variation in substantive representation of minority ethnic groups. In this framework, we consider the probability that MP_m on $Date_d$ will represent ethnic minorities. This framework draws from the distinction, made by Saalfeld and Bischof (2013), between sociological institutionalism and rational-choice explanations for MP behaviour. As they discuss, this division rests on assuming that actors follow either a 'logic of appropriateness' (sociological institutionalism) or a 'logic of consequences' (rational choice) (March and Olsen 2009).

The main theoretical innovations over Saalfeld and Bischof (2013) are threefold. Firstly, the theorised effect of local populations of ethnic minorities is included as a mechanism for "socialisation." As Enos (2017) argues, the presence or absence of ethnic minorities in an area changes the perspective of those who live in that area. Alongside many MPs living in their constituencies, contact with constituents occurs through casework and surgeries. Fenno (1978) shows how this affects legislator behaviour in the United States. While seeking to "fulfil the obligations encapsulated in a role" (March and Olsen 2009, 3), following the logic of appropriateness, MPs with significant numbers of ethnic minority constituents will feel an obligation to substantively represent those ethnic minorities. The lack of consideration of this form of socialisation may explain why Saalfeld and Bischof (2013) find that the size of ethnic minority population has a significant effect on substantive representation irrespective of constituency electoral competitiveness. This mechanism is additionally conceptualised as being dependent on ethnic minority geographic segregation within the constituency, with a greater socialisation effect on MPs with constituencies where ethnic minority populations are both large and highly integrated, again following the argument of Enos (2017).

Secondly, the effect of electoral incentives are broadened to include incentives attached to political parties in a broader sense than in each constituency. This partisan effect is an inextricable combination of MPs' rational choices, seeking the career progression made possible by their own party forming a government, and socialisation, with a commitment to pursuing the aims of the party even when there is little personal incentive. As Strøm, Müller, and Bergman (2004) argue, political parties are incentivised to make MPs behave as though they are always under threat of losing an election (Müller 2000). Evidence suggests MPs in parliamentary systems act as though they have personal electoral incentives, even when they do not (John M. Carey 1996).

Thirdly, the effect of partisan electoral interest is theorised as acting on all MPs who are members of a political party, based on that party's competitive seats and the public opinion nationwide. Individual electoral incentives, by contrast, are mediated by seat marginality and proximity to an election, and apply only to MPs standing for reelection. One example of how this might affect ethnic minority representation is efforts by the Conservative Party to diversify their support under David Cameron's leadership (Martin 2019; Sobolewska, Fieldhouse, and Cutts 2013). Conservative MPs, even those representing predominantly white constituents or "safe" seats, might choose to represent ethnic minorities as a way to improve the image of the Conservative Party as a whole.

The following section sets out the three main theoretical components of substantive representation: socialisation, individual electoral incentives, and partisan electoral incentives.

3.1 Socialisation

$$Socialisation_{dm} = Party_{dm} + Cohort_m +$$

$$Gender_m + Position_{dm} + Seniority_{dm} + Ethnicity_m +$$

$$MinorityPopulation_{dm} + EthnicSegregation_{dm}$$

The causal mechanism for the sociological institutionalism model is socialisation. In this case, socialisation is used as a broad term to refer to processes acting on MPs because of social conditions, shaping their impressions of appropriate behaviour (March and Olsen 2009). In this account, MPs seek to fulfill their role according to social expectations. These expectations are embedded both in Parliament - among other MPs, within MPs' personal social networks, and in their constituencies, where most MPs spend a significant amount of time.

In this theoretical model, each MP_m on $Date_d$ is considered to be nested within social collectivities including their own ethnic identity ($Ethnicity_m$), political party ($Party_{dm}$), year of first election ($Cohort_m$), ministerial or select committee position ($Position_{dm}$), and gender ($Gender_m$) Saalfeld and Bischof (2013). Number of years in Parliament ($Seniority_{dm}$) is also likely to affect socialisation over time.

Finally, socialisation occurs within constituencies (Fenno 1978). Here, the key variable is the size of ethnic minority population. The geographic segregation of the ethnic minority population is also expected to have an effect, with MPs theorised to better represent ethnic minorities when they are less segregated (Enos 2017).

3.2 Local Electoral Incentives

$$LocalElectoralIncentives_{dm} = MinorityPopulation_{dm} + MinorityResources_{dm}$$

Electoral incentives, meanwhile, are the explanation for legislative behaviour in rational choice theories. In this case, substantive representation may be seen as a method used by MPs to increase their 'personal vote' with constituents. By this theory, MPs will seek to substantively represent their constituents in proportion to the voting power they have in their constituency. In this case, this is the proportion of the population who are ethnic minorities ($MinorityPopulation_{dm}$). It is also possible that this effect is mediated by the relative wealth of those ethnic minorities, given that wealthier communities tend to have higher engagement in politics and more resources to bring to bear in political decision-making ($MinorityResources_{dm}$) (Sobolewska, Fieldhouse, and Cutts 2013). These individual electoral incentives are mediated by competitiveness of the MPs' constituency and proximity to the election and they only apply to MPs seeking reelection (Poyet and Raunio 2021).

3.3 Partisan Electoral Incentives

$$PartisanElectoralIncentives_{dm} = ImmigrationConcern_d \cdot Party_{dm} +$$
$$RaceConcern_d \cdot Party_{dm} + MinorityPopulationPartyMarginals_{dm}$$

In addition to individual electoral incentives, partisan incentives act on all MPs, regardless of their constituency or their intention to stand for reelection (John M. Carey 1996; Müller 2000; Strøm, Müller, and Bergman 2004). This is theorised as depending on public opinion, including the proportion of the population who says immigration ($ImmigrationConcerns_d$) or race relations ($RaceConcern_d$) are one of the most important issues facing the country, as well as the population of ethnic minorities in that party's competitive seats ($MinorityPopulationPartyMarginals_d$) (English 2022). For example, the Labour Party had significantly more racially diverse competitive seats (majority under 10%) between 2010 and 2015 than the SNP, Liberal Democrats and Conservatives (Figure 3). This meant that ethnic minorities had significantly more influence over the fate of the party nationwide, which may have encouraged Labour MPs to speak to ethnic minority concerns.

3.4 Theoretical Model

$$Representation_{dm} = Socialisation_{md} +$$
$$ElectionProximity_d \cdot Marginality_m \cdot LocalElectoralIncentives_{md} +$$
$$Spokesperson_{md} \cdot NationalElectoralIncentives_{md}$$

If MP_m is standing down at next election:

$$LocalElectoralIncentives_{md} = 0$$

If MP_m sits in Parliament as an independent:

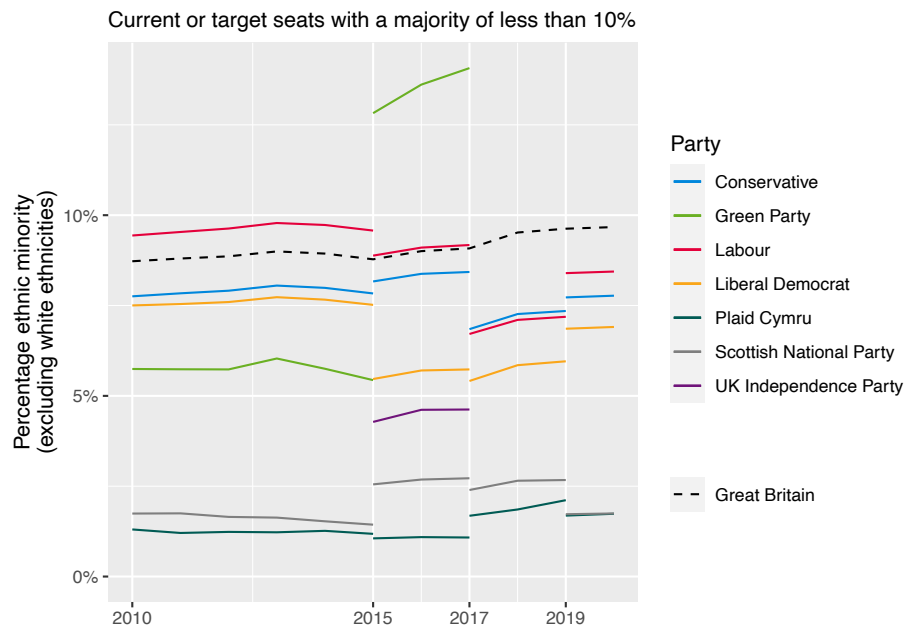$$PartisanElectoralIncentives_{md} = 0$$

Current or target seats with a majority of less than 10%

Fig. 3 Percentage ethnic minority in competitive seats for the Conservatives, Labour, Liberal Democrats, Green Party, UKIP, Plaid Cymru and SNP

4 Methods and Data

To consider the question of substantive representation, data is collated on parliamentary behaviour (Odell 2020), MPs' personal and professional characteristics (Watson et al. 2022), ethnic minority populations (van Dijk et al. 2020), election results (Norris 2019) and public opinion (Skinner 2013). Bayesian inference with Stan is used to fit multilevel regression models for components of the theoretical model and a fully combined model (*Stan User's Guide* 2022).

The aim of this quantitative analysis is not to maximise the explained variation in data but to consider some of the mechanisms that are theorised as acting on MPs, with regard to the substantive representation of ethnic minorities. In contrast to Saalfeld and Bischof (2013), who take a Weberian approach, considering 'ideal type' models, this paper focuses on the complex interplay of theorised causal mechanisms and context (Ekström 1992; Bhaskar 2008). Multilevel models are particularly useful for this, as they allow for considering known mechanisms while modelling uncertainty caused by latent factors (K. Jones 2010). With a large number of potential explanatory variables that are often correlated, 'ideal type' models can lead to spurious effects. While more complex Bayesian mixed models might have less statistical power, they are better able to situate potential causal mechanisms in their context (Pawson and Tilley 1997).

4.1 Parliamentary Speeches

The data used to represent instances of substantive representation is spoken interventions in House of Commons debates. This form of Parliamentary participation is chosen because the vast majority of roll-call votes in the House of Commons are along party lines, whereas MPs' speeches reflect their personal views. It is also the most public form of participation, with House of Commons sittings televised and often shared on traditional and social media. Politicians expect debates to have significant public scrutiny (Barnett 2002). As Catalano (2009) argues, "debates on the floor [are] most fitting because they require direct, vocal, and public participation."

Every speech in the House of Commons is recorded in Hansard, the official report of Parliamentary debates. These speeches have been compiled into a dataset by Odell (2020), including the text of the speech alongside metadata. This dataset includes millions of entries between 1979 and 2020. For this project, speeches longer than 5 words from MPs excluding the Speaker between 2009 and 2020 are used. This amounts to 728,128 speeches. A human-in-the-loop machine learning approach is taken to label speeches which feature substantive representation of ethnic minorities. This is validated using a randomly sampled validation set of 2,000 speeches.

4.1.1 Labeling Criteria

Manual labeling was undertaken using criteria for classification as "substantive representation." Due to the small number of speeches discussing ethnic minorities and the prevalence of speeches which reference multiple ethnic groups, this analysis requires significant aggregation. Ethnic groups are subject to varying definitions, so for this analysis the groups considered are: "Asian or Asian British," "Black, Black British, Caribbean or African" and "Mixed or multiple ethnic groups," which are combined into a single category: "ethnic minority (excluding white minorities)." A significant limitation of this approach is that it excludes consideration of Jews and those from Roma, Gypsy or Irish Traveller backgrounds. The representation of these groups should be considered in future research.

Speeches were labeled as 'representation' if they included reference to the specific impact of a policy or event on ethnic minorities, efforts to tackle racism, or the specific views or preferences of ethnic minorities. This excludes consideration of immigration, aside from where the specific impact of immigration policy on ethnic minorities was discussed (for example references to the Windrush scandal). It also excludes references to specific individuals of ethnic minority backgrounds, general references to the diversity of a place, or general expressions of opposition to racism, e.g. "I am not a racist" (not representation), as opposed to "we need to do more to tackle racism" (representation).

For the purposes of this analysis, faith groups predominantly associated with ethnic minorities were also included, aside from when discussion was related to faith issues in isolation. This is because many faiths in the UK,

particularly those associated with South Asian communities, are used interchangeably with the ethnic groups they are associated with.

4.1.2 Human-in-the-loop Labeling

The randomly sampled validation dataset included 11 cases of representation, implying that we should expect the full dataset (N=7,281,128) to include cases of representation within 95% CI [13,146 50,928]. The very small proportion of cases poses a challenge for producing a training set. This is resolved using human-in-the-loop labeling.

A small number of positive cases of representation (N=179) are identified by searching the dataset for key terms (including "ethnic minority," "BAME," "racism") and combined with randomly sampled null cases to train an initial classification model. This initial model is used to identify further cases of representation. The training set is constructed iteratively by randomly sampling a small proportion of the full dataset, generating modelled probabilities of representation, and manually labelling cases. A combination of uncertainty sampling and diversity sampling is used, with cases for which the model is *most* and *least* confident being manually considered, labelled and added to the training set.

4.1.3 Lasso Regression

The classification model is logistic LASSO regression (J. H. Friedman, Hastie, and Tibshirani 2010; Tibshirani et al. 2012). LASSO is a regularisation technique which uses shrinkage to avoid overfitting and for variable selection. In this case, each coefficient corresponds to the frequency of a given word or bigram (consecutive pair of words) appearing in the speech, weighted using term frequency–inverse document frequency (TF-IDF) (K. S. Jones 1972; Robertson 2004). Bigrams are used to add contextual information to the relatively naive model. For example, "ethnic" is very positively associated with substantive representation, while "ethnic cleansing" is not. The same is true of "black" versus "black country," "black hole," "black market" etc.

Given the extremely high number of variables (words/bigrams) considered, overfitting is likely. Cross-validation using multiple training folds is used to set the level of shrinkage. This shrinkage is applied to all coefficients based on the magnitude of their z-scores, meaning more confident coefficients are shrunk the least while many variables are removed from the model entirely. This leads to a more replicable and interpretable model.The variables used in the final LASSO model are shown in Figure (4).

The final LASSO model proved to be effective at suggesting speeches for manual labelling but due to the significant inbalance in the dataset, it was not effective at labelling entries itself. On the validation dataset, the model did not have an F1 score exceeding 0.32. In response, the final labels used for analysis were created by taking the manually labelled positive cases with a random sample of unlabelled speeches. Although this necessarily means that a
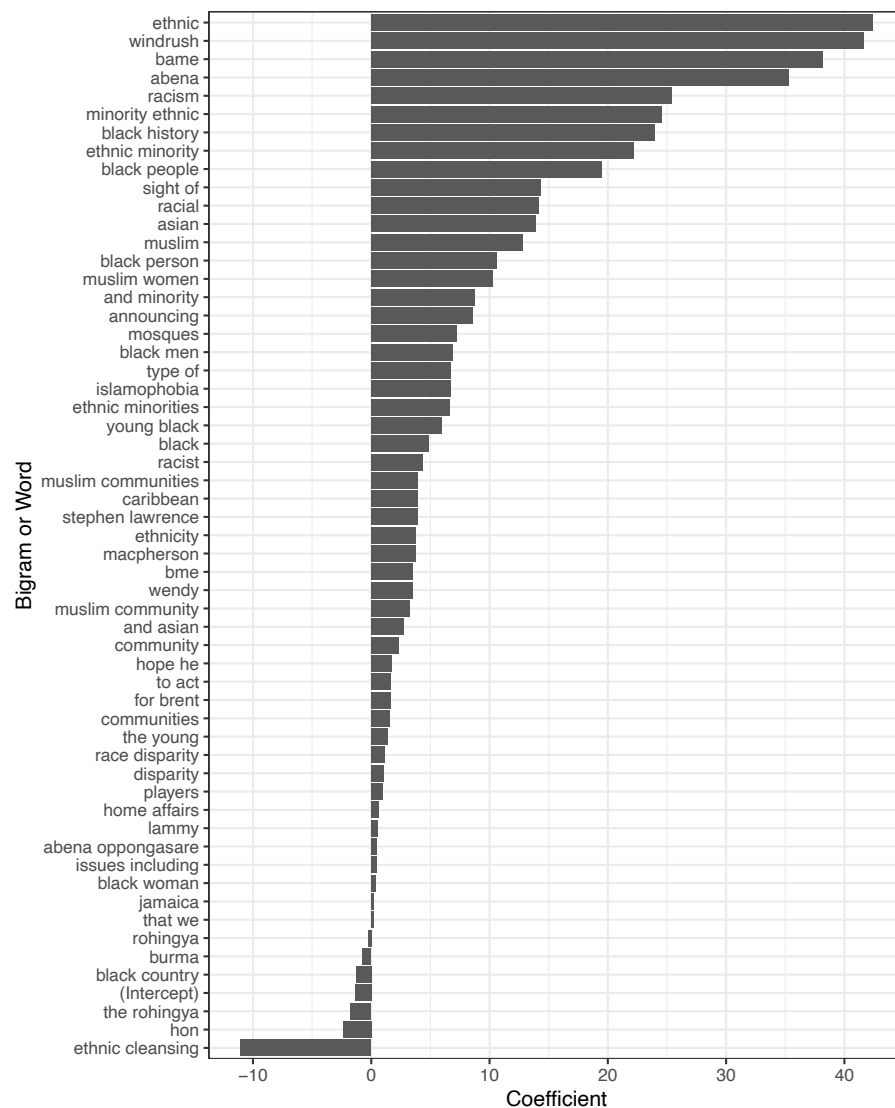
Fig. 4 Coefficients from LASSO Regression model for detecting instances of substantive representation of ethnic minorities

small number of 'true positives' are likely to be mislabelled, in the final models this difference should be contained within the intercept, rather than biasing the coefficients.

The overall numbers of labelled speeches over time are shown in Figure 5. This shows a marked increase in the number of speeches over time, with spikes in 2018, 2019 and particularly 2020. In total, 1,451 positive cases of substantive representation were labelled, corresponding to 1,104 MP-Days.

Fig. 5 Labelled speeches featuring substantive representation of ethnic minorities over time

4.2 Ethnic Group Populations

Another key dataset used for this paper is the Consumer Data Research Centre's (CDRC) modelled ethnicity proportions, at LSOA (Lower Super Output Area) level (van Dijk et al. 2020). The CDRC uses electoral roll and consumer register data to estimate ethnicity proportions based on the most common ethnic groups selected by forename and surname. These estimates are produces for LSOAS between 1997 and 2020.

4.2.1 Interpolation

To generate ethnic group population estimates at the Parliamentary constituency level, LSOAS are matched to constituencies. The vast majority (98.5%) of LSOAS are wholly contained within a single parliamentary constituency. For those which are not, estimates are made at the OA (Output Area) level using a logistic regression model, with scaled 2011 census ethnicity data as a predictor. The estimates of this model are then rescaled to match the CDRC LSOA predictions.

4.2.2 Index of Dissimilarity and Deprivation Difference

For each constituency, ethnic group population estimates are used to calculate Index of Dissimilarity and deprivation difference values. Index of Dissimilarity is a measure of geographic segregation, effectively defined as the proportion

of the minority ethnic group which would need to move to another area to achieve perfect integration (Forest 2005; Peuquet n.d.).

The deprivation difference, meanwhile, is a proxy for the relative economic position of economic groups. It is measured using the difference between the percentage of people not facing any form of deprivation in the average LSOA inhabited by a white person versus a person from an ethnic minority (excluding white minorities) (National Statistics 2017).This measure is susceptible to ecological fallacy, but it is still a useful indication of the types of neighbourhoods in which white versus ethnic minority residents live.

These measures are calculated using the following formulas:

$$Index\ of\ Dissimilarity_c = \frac{1}{2} * \sum_{i=1}^{n} \left| \frac{m_i}{M_c} - \frac{w_i}{W_c} \right|$$

$$Deprivation\ Difference_c = \sum_{i=1}^{n} d_i * \left[\frac{m_i}{M_c} - \frac{w_i}{W_c} \right]$$

Where:
   n = Number of LSOAs in Constituency
   m_i = Ethnic minority population in LSOA
   w_i = White population in LSOA
   M_c = Total ethnic minority population in constituency
   W_c = Total white population in constituency
   d_i = Percentage 'not deprived' in LSOA

4.3 Ipsos Issues Tracker

To gauge public interest in issues relating to the representation of ethnic minorities, the longitudinal Ipsos Mori Issues Tracker is used (Skinner 2013). The Issues Tracker allows respondents to name the three issues they feel are most important for the country. The two key issues of interest in this case are immigration/immigrants and race relations.

Until January 2015, the two issues were aggregated into one category. This is likely to be because the number of people responding 'race relations' was too low to register as a category in its own right. To deal with this in the models, data is simulated. The number of people answering 'race relations' is theorised to be distributed $Beta(5, 245)$. This distribution is chosen to produce simulated values with a mean of 2%, purposefully lower than the average 3.8% for the first year that the numbers are reported, but allowing for significant variation. This number is uncorrelated from the aggregated figures, variation in which is likely to be driven by changes in immigration concern, the more significant political issue at that time.

4.4 Bayesian Generalised Linear Regression

Three models are fitted to correspond with components of the theoretical model: socialisation (1), local electoral (2) and partisan electoral (3) incentives. A fourth (4) is fitted to represent the theoretical model with a simplified, linearised model. These models are fitted using `rstanarm` (Gelman and Hill 2006; Muth, Oravecz, and Gabry 2018). In some cases, variables which might be better conceptualised as random effects are included as fixed effects to account for the additional computing expense of multi-level structures and to ensure convergence. Some theorised interaction effects are not included to avoid multicollinearity.

5 Results

The results of the four Bayesian generalised linear mixed models from Section 4.4 are presented in Table 1.

In model (1), the fixed effects for which the 95% highest density interval (HDI) does not include 0 are constituency minority population, MP gender, MP ministerial positions and the parliamentary term. In model (2), this is true only for constituency minority population. In model (3), this is the case for Ipsos Immigration concern and Ipsos race relations concern. Finally, in model (4) the fixed effects for which the 95% HDI does not include 0 are constituency minority population, MP gender, the 2019 onwards parliamentary term, and Ipsos Race Relations concern.

In the theoretical model, the local electoral incentives for representing ethnic minorities are theorised as being mediated by proximity to the election and seat competitiveness. Figure 6 shows estimated coefficients using the mean posterior estimates as a predictor of representation in a simple generalised linear model, for 10% bins of MP majorities. A comparable relationship was not found for election proximity. In model (4), where an interaction effect with MP majority are included, no substantial relationship is found.

Random slopes and intercepts for difference political parties are reported in Table 2. The random effects are very small and vary between the three models for which party effects are included.

6 Discussion

The results from Table 1 show many of the theorised relationships from the theoretical model set out in Section 3. To give a sense of the relative effects of variables, standardised coefficients from model (4) along with 95% credible intervals are shown in Figure 7. Here we can see that all variables have relatively wide credible intervals, due to the small sample of known substantive representation.

Table 1 Bayesian Generalised Linear Regression Results

	Dependent variable:			
	MP represents ethnic minorities on given day			
Mean Coefficient	(1)	(2)	(3)	(4)
[95% Highest Density Interval]	Socialisation	Local Electoral	Partisan	Combined
Constant	−2.428	−1.973	−1.339	−2.571
	[−5.13, 0.39]	[−3.69, −0.15]	[−3.53, 0.72]	[−6.33, 1.18]
Constituency Minority Population	6.409	5.809		5.981
	[4.67, 8.08]	[4.54, 7.16]		[3.21, 8.55]
Constituency Dissimilarity Index	0.791			0.167
	[−0.77, 2.39]			[−1.35, 1.68]
Seniority	−0.148			−0.109
	[−0.40, 0.09]			[−0.33, 0.14]
MP Minority	1.562			1.482
	[−0.61, 3.60]			[−0.48, 3.33]
MP Gender (M)	−0.677			−0.657
	[−1.09, −0.24]			[−1.05, −0.27]
MP Government Minister	2.467			2.198
	[1.85, 3.11]			[−0.45, 4.45]
MP Opposition Spokesperson	0.682			0.462
	[0.23, 1.15]			[−1.98, 2.90]
Parliament 2015-2017	0.739			0.653
	[0.16, 1.30]			[−0.08, 1.30]
Parliament 2017-2019	1.072			0.634
	[0.56, 1.57]			[−0.06, 1.37]
Parliament 2019-	3.079			1.795
	[2.40, 3.80]			[0.78, 2.69]
Deprivation Difference		−3.085		−4.266
		[−7.62, 0.92]		[−9.26, 0.84]
Party Marginals Minority Population			3.629	3.232
			[−6.60, 13.85]	[−19.47, 31.39]
Ipsos Immigration Concern			−3.340	−1.295
			[−5.28, −1.02]	[−4.63, 2.12]
Ipsos Race Relations Concern			16.334	11.649
			[12.63, 20.34]	[4.52, 19.08]
MP Majority				−0.072
				[−1.66, 1.57]
MP Majority*Constituency Minority Population				−0.577
				[−9.57, 7.49]
	Random Effects σ^2			
Date	3.514			3.224
MP	1.743	1.954	3.389	1.551
Cohort	0.062			0.048
Party (Intercept)	0.127		0.084	0.396
Party (Immigration Concern)			0.150	0.477
Party (Race Relations Concern)			0.186	0.553
Spokesperson (Intercept)			1.079	0.974
Spokesperson (Immigration Concern)			1.683	0.892
Spokesperson (Race Relations Concern)			1.697	1.019
Spokesperson (Party Marginals)			1.853	1.154
Ethnicity	0.899			0.692
Equalities Brief	1.929			1.851
Equalities Committee	0.839			0.681
Election Period		1.943	1.242	0.984
Observations	2,553	2,604	2,905	2,768
Log Posterior	−3,594.774	−2,323.193	−2,587.600	−3,955.299

Coefficient of model (2) mean posterior at different MP majorities
Representation = A + B*(Local Electoral Model (2)) for MP Majority in [X,X+10%]
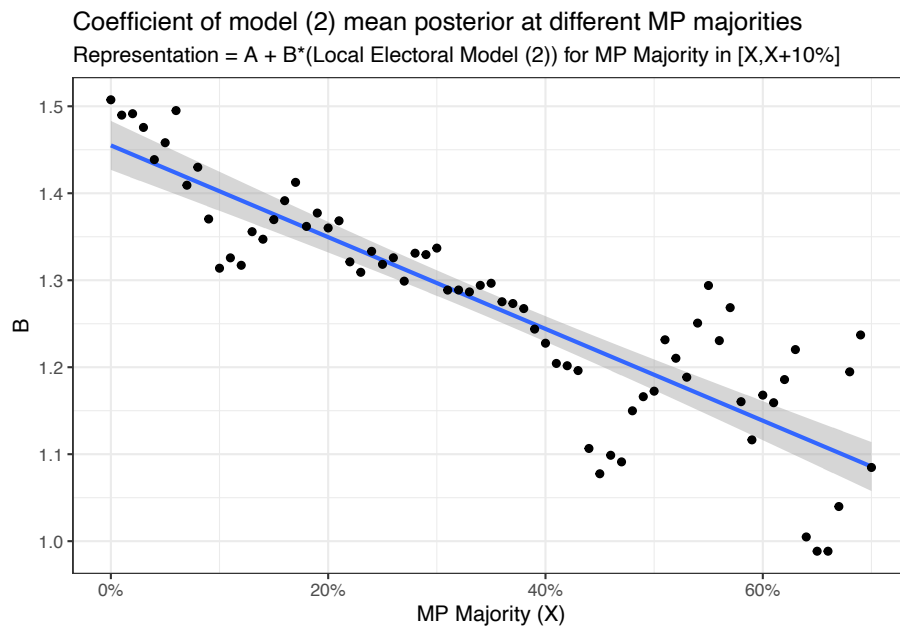
Fig. 6 Local electoral incentives model effect for differing MP majorities
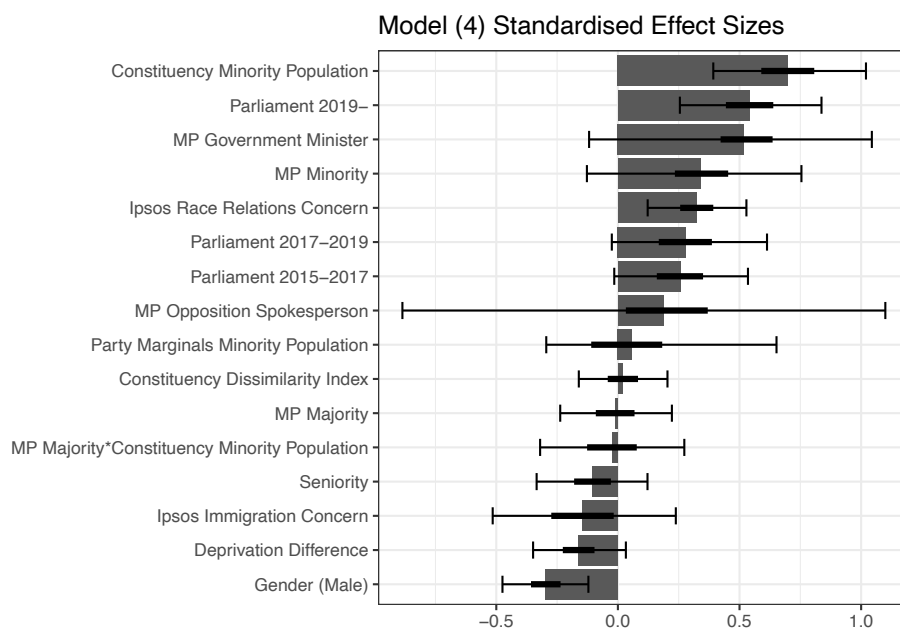
Model (4) Standardised Effect Sizes

Fig. 7 Standardised effect sizes from model (4)

Table 2 Random Effects for Conservatives, Labour, Liberal Democrats and SNP

Random Effect (Coefficient)	Intercept	Ipsos Immigration Concern	Ipsos Race Relations Concern
		Model (1)	
Conservative	−0.031		
	(−2.480)		
Labour	−0.030		
	(−2.515)		
Liberal Democrat	0.035		
	(−2.450)		
SNP	0.067		
	(−2.418)		
		Model (3)	
Conservative	−0.112	−0.014	0.000
	(−1.474)	(−3.392)	(16.338)
Labour	0.068	0.007	−0.000
	(−1.295)	(−3.371)	(16.337)
Liberal Democrat	0.007	0.002	0.006
	(−1.356)	(−3.377)	(16.344)
SNP	0.004	0.008	−0.003
	(−1.358)	(−3.370)	(16.335)
		Model (4)	
Conservative	−0.095	−0.049	0.007
	(−2.665)	(−1.339)	(11.604)
Labour	−0.126	−0.002	−0.022
	(−2.697)	(−1.288)	(11.575)
Liberal Democrat	0.062	0.017	−0.011
	(−2.508)	(−1.273)	(11.608)
SNP	0.117	0.035	0.002
	(−2.452)	(−1.255)	(11.599)

6.1 Constituency Ethnic Minority Population

The most consistently large effect, across the three models for which it was included, was constituency ethnic minority population. In models (1), (3) and (4), this effect was greater than zero in the HDI, with mean coefficients between 5.8 and 6.4, indicating that a 10% increase in the ethnic minority population of a constituency almost doubles the likelihood of an MP representing ethnic minorities on a given day (1.84 with 95% HDI of [1.38 2.35]).

This is consistent with the theoretical framework and the results of Saalfeld and Bischof (2013). As discussed in Section 3, there is no reason to assume that this effect is solely the result of electioneering (rational choice). Following the logic of appropriateness, MPs feel a responsibility to represent their constituents and as minority groups increase as a proportion of their constituents,

MPs will feel a responsibility to represent those groups in particular. Constituency minority populations also act on MPs through socialisation, with MPs in diverse constituencies being much more likely to come into contact with people from ethnic minorities.

6.2 Individual Electoral Incentives

That said, there is also a clear electoral logic to MPs representing the groups with largest populations in their constituencies (model (2)). We expect electoral effects to be mediated by the MP's majority and proximity to the election. In this case, the MP's majority does have a small negative effect in interaction with the constituency ethnic minority population. However, the HDI for this coefficient is very wide [−9.57, 7.49], so should be interpreted cautiously.

This limited effect runs counter to the evidence of Figure 6, which shows how the local electoral incentives model (2) appears to be significantly correlated to MPs' majorities. However, the coefficients for MPs of different majorities shown in this figure are all greater than 1, indicating that the variables included in model (2) have an effect even on those MPs with the safest seats. This might be true of electoral incentives, or indicate that other explanations are more relevant.

All three models which included a random effect for the election period (6 months before scheduled election, in 2015, and after the announcement of an election, 2017 and 2019), showed a moderately sized negative effect. The mean effect was −0.189 in model (2), −0.786 in model (3) and −0.330 in model (4). Unfortunately the sample sizes for these time periods is not enough to test random slopes for electoral incentives, so it is not possible to say whether the reduction in representation in the runup to elections is a mediating factor of electoral incentives, or an effect felt across MPs.

6.3 Index of Dissimilarity and Deprivation Difference

On top of constituency ethnic minority population, segregation within the constituency was theorised to have a negative effect on representation, due to its limiting effect on socialisation (Enos 2017). This was not borne out by the data. Instead, in both model (3) and model (4), the Index of Dissimilarity has a small positive effect, with 0 included in the HDI. This may be because segregation acts as an effect in interaction with other variables, for example MP ethnicity. Or it could be that geographic concentration makes ethnic minority groups more visible, encouraging greater representation. Research from the UK and US has shown the ethnicity gap in contact from political campaigns shrinks in areas of high concentration, for example (Leighley 2001; Sobolewska, Fieldhouse, and Cutts 2013).

Meanwhile, evidence for an effect of deprivation difference, the relative levels of deprivation in white versus ethnic minority neighbourhoods (Section

4.2.2), is more compelling, in congruence with the theorised relationship. In both model (2) and model (4), deprivation has a substantial negative coefficient, although the HDI for both narrowly includes 0. This suggests a negative impact when ethnic minorities live in more deprived LSOAs, particularly the case in the area between Blackburn, Bolton, Bradford and Barnsley. And a positive effect where ethnic minorities live in less deprived LSOAS, particularly in the central belt of Scotland and the North East of England. This is consistent with the research of Sobolewska, Fieldhouse, and Cutts (2013).

6.4 Public Opinion

While the evidence of MPs acting in the interests of their local electoral prospects is limited, there is a clear relationship between public concern about race relations and representation. As the number of people listing race relations as a top issue facing Britain rises, the likelihood of MPs substantively representing ethnic minorities rises. By contrast, as the number of people naming immigration as a top issue rises, MPs are less likely to represent ethnic minorities, although the HDI of this coefficient includes 0.

The extent to which MPs responding to public opinion falls into socialised or electoral explanations for representation is difficult to parse. Rising public interest in race relations may encourage MPs to represent ethnic minorities because of a sense that the role of MPs is to represent the public. It may also be attached to the electoral fates of their political parties, with MPs acting as representatives of their parties, hoping to present an image of their parties in touch with the country at large. However, there is little evidence that party spokespeople are more likely to respond to public opinion.

The effect of public opinion is also subject to an endogeneity problem, with both MPs and public opinion responding to current events. In the wake of the murder of George Floyd in May 2020 and during the following Black Lives Matter protests, for example, public concern about race relations spiked along with MPs' raising ethnic minority concerns in parliament. It may be that MPs were responding to public pressure, or that events affected both public opinion and MPs' behaviour.

6.5 Party Effects

In contrast to the findings of Saalfeld and Bischof (2013), the party membership of MPs did not play a substantial role in any of the four models. This was a very striking finding, not in line with theoretical expectations. Table 2 shows the very small effects that party membership has in each of the three models that include it as a random effect. The difference in effect is small for both random intercepts and random slopes in models (3) and (4). While there is a significant difference between parties, this is mostly explained by the fact that Labour has both more ethnic minority MPs and disproportionately represents more diverse areas.

6.5.1 Party Marginal Seats

While the membership of parties has virtually no effect, once other factors are controlled for, there is some limited evidence that MPs respond to their party's marginal seats. In both model (3) and model (4), this effect is small and has a HDI which includes 0. Figure 3 show how the SNP, Plaid Cymru and the Liberal Democrats have consistently lower minority populations in their marginal seats. Aside from between 2017 and 2019, Labour has had more diverse marginal seats than the Conservatives. This data may go some way to explaining the partisan variation found by Saalfeld and Bischof (2013), albeit by a very different causal mechanism. Across the time series, marginal seats are consistently less diverse than the country as a whole, probably driven by the concentration of ethnic minorities in a small number of urban, Labour-leaning constituencies.

6.5.2 Spokespeople

Contary to the theorised relationship, spokespeople do not appear to be swayed by partisan effects more than backbench MPs. In models (3) and (4), spokespeople are marginally less negatively affected by immigration concern, marginally more positively affected by race relations concern and marginally less positively affected by party marginal ethnic minority populations. This mixed bag does not suggest a clear positive relationship between partisan electoral incentives and the position of party spokespeople.

Part of this can be explained solely by the structure of parliamentary debates. Ministers have to respond to backbench MPs' questions, even if they would not choose to raise ethnic minority concerns themselves, while opposition spokespeople are charged with responding to events in Parliament. Considering the relationships above, for example, we might conclude that spokespeople are more likely to represent ethnic minorities when external events encourage a response (when public concern about race relations is high). In the day-to-day business of Parliament, too, spokespeople may cover ethnic minority issues as part of their brief, while backbenchers are dissuaded by public concern about immigration.

Further evidence of this effect can be seen in the strong, positive, fixed effect of being a Government minister. Many of the cases of representation by Government ministers is in responding to questions by backbenchers, or giving updates on Departmental work relating to ethnic minorities. This is still substantive representation, and should be coded as such, but a minister does not have a free hand to discuss solely issues or groups of personal interest, or personal electoral salience.
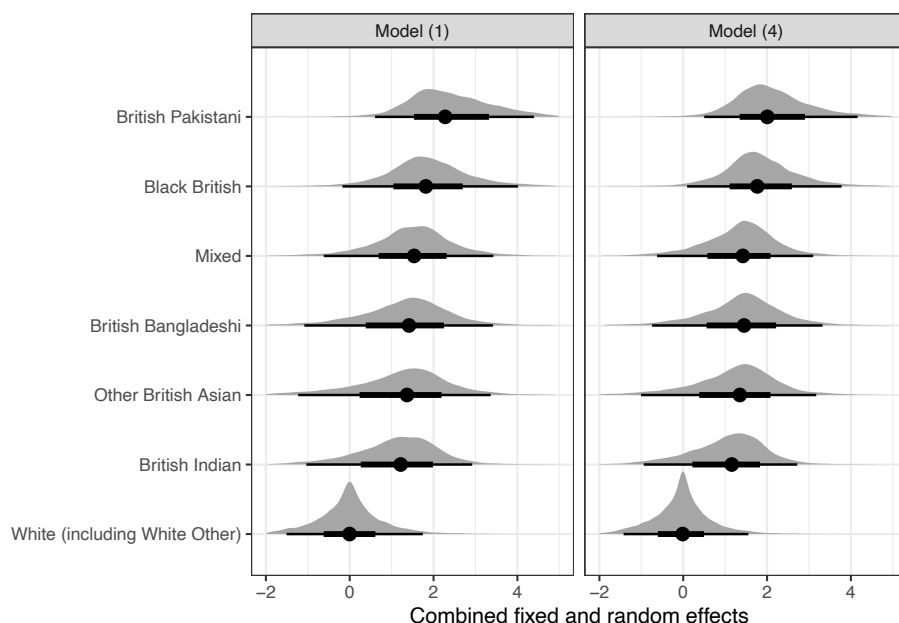
Fig. 8 Modelled effect of different MP ethnicities on likelihood to substantively represent ethnic minorities

6.6 Ethnicity

Anther key variable is MP ethnicity. However, the effect of MP ethnicity is less certain than one might expect. In the two models in which the MP minority binary fixed effect is included, it has an estimated effect of over quadrupling the likelihood of an MP substantively representing ethnic minorities. However, this effect has a wide credible interval, with the HDI in both models including 0. This is partly a function of sample size, but also a result of the ethnicity random effect, which effectively re-estimates the effect of an MP being white.

Figure 8 shows the estimated effect sizes for different ethnic groups, combining both the binary fixed effect with random intercepts for ethnicity subgroups. Here we can see how in both models, British Indians and Other British Asians are less likely than Black British and British Pakistani MPs to represent ethnic minorities, although this effect is subject to wide credible intervals. The relatively small sample of MPs from different ethnic groups in parliament mean that these differences might be better considered using other data sources or with qualitative research.

6.7 Temporal Elements

As already shown in Figure 5, the number of speeches including substantive representation increased rapidly in the late 2010s into 2020. Analysing the date

and time effects from models (1) and (4) show that this effect is not wholly explained by MP-level factors. In (1) and (4), date effects are captured with a date random effect and a parliamentary term fixed effect.

The fact that these have a significant effect, especially in the parliamentary term beginning in December 2019, shows that other factors are affecting speeches over time. This may be due to a contagion effect, with cases of representation not being truly independent as MPs respond to one another. As instances of representation increase, perhaps due to the increasing number of ethnic minority MPs (Figure 1) or public opinion, the culture of Parliament as a whole shifts towards more substantive representation of ethnic minorities. A future model might include the percentage of MPs from an ethnic minority across Parliament as a socialisation variable, alongside MPs' individual characteristics.

6.8 Gender

A final striking finding was a significant gender gap. The effect of an MP being a woman was to almost double their likelihood of representing ethnic minorities. There are a number of possible explanations for this effect. Female MPs themselves identify practicing a 'feminised' style of politics, which may be more accommodating of the substantive representation of ethnic minorities (Childs 2004). It is possible that female MPs, especially those from ethnic minorities, are more aware of the intersections between issues particularly affecting women and ethnic minorities (Crenshaw 1990–1991). Mügge, van der Pas, and van de Wardt (2019) find that ethnic minority women MPs in the Netherlands are more likely to represent the interests of ethnic minority women than ethnic minority male MPs or ethnic majority female MPs. Further research might consider the interaction effect between the ethnicity and gender of MPs, not included here to avoid overloading the models.

7 Conclusion

The analysis above identifies key variables which predict MPs' propensity to substantively represent ethnic minorities. As expected, MPs' personal characteristics have a significant impact. However, this includes some surprising results. MP ethnicity has a large effect, but with significant uncertainty and variation among ethnic groups. The effect of MP ethnicity should not be assumed to be uniform across Parliament, with ethnic minority MPs varying their speeches depending on personal, constituency and professional circumstances. Alongside ethnicity, gender is found to have a substantial effect on MP behaviour, raising important questions for future research. MPs also respond to public opinion, with public concern about race relations highly correlated with substantive representation, and a smaller negative effect associated with immigration concern. The direction of causality here is difficult to determine,

with multiple possible confounding effects causing an endogeneity problem, but it is likely that MPs at least have an awareness of the most important issues for the general public.

Finally, the most significant factor considered is the ethnic makeup of MPs' constituencies. This effect stands irrespective of constituency electoral competitiveness, suggesting MPs aim to represent their constituents even when the electoral incentives are weak. This is particularly significant because it suggests that under SMP electoral systems, geographic concentration, while beneficial for descriptive representation, should not be assumed to have a positive effect on substantive representation. Instead, the concentration of ethnic minorities into a small number of constituencies limits both their electoral weight and their visibility to a broader number of MPs. Combined with the effect of relative patterns of deprivation and the presence of ethnic minorities in competitive constituencies, geography can be seen as a key mediator of ethnic minority representation under the UK's SMP electoral system.

R Packages

- bayestestR (Makowski, Ben-Shachar, and Lüdecke 2019)
- caret (Kuhn 2022)
- DescTools (Andri et mult. al. 2021)
- creditmodel (Fan 2022)
- glmnet (J. Friedman, Hastie, and Tibshirani 2010)
- jsonlite (Ooms 2014)
- lubridate (Grolemund and Wickham 2011)
- Matrix (Bates and Maechler 2021)
- mnis (Odell 2021)
- pano (Hanretty 2021)
- readxl (Wickham and Bryan 2019)
- rstan ("RStan: The R Interface to Stan" 2022)
- rstanarm (Goodrich et al. 2022)
- scales (Wickham and Seidel 2020)
- shinystan (Gabry and Veen 2022)
- stargazer (Hlavac 2022)
- stringr (Wickham 2019)
- tidyverse (Wickham et al. 2019)
- tm (Feinerer, Hornik, and Meyer 2008)
- xml2 (Wickham, Hester, and Ooms 2021)

Replication Materials

- GitHub Repository: github.com/owenwntr

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