
Multi-Party contests in the UK's FPTP system:

By James Prentice

The result of our research demonstrates the following:

1. There are six distinct constituency types shaping political competition in England at a constituency level. These are Metropolitan hubs, Diverse metro centres, Affluent urban hubs, Sparse market towns, Old seasonal retreats and Rooted left-behind communities.
2. Subtle but important demographic differences between constituency types are shaping where parties will target and compete for voters.
3. Labour and the Conservatives are being restricted in the number of constituency types they can win by challenger parties on their flanks.
4. Reform is competitive across the largest number of constituency types (four of 6).
5. The Greens and Lib-Dems have become competitive in England's FPTP system through targeting niche areas and voter groups.
6. Labour and the Greens will contest Metropolitan hubs and Diverse Metro centers for younger renters who supported remain. Labour will battle Reform in Diverse Metro centers where the liberal vote splits sufficiently enough for Reform to win.

7. The Conservatives will mostly be contesting Reform for older Leave voters in Old seasonal retreats and Sparse Market towns.
8. The Lib-Dems will target higher income, university educated voters in Affluent Urban hubs whilst also seeking to secure older lower-income voters in Old seasonal retreats and Sparse Market towns.
9. Most of the five main parties are targeting broader coalitions across multiple constituency types. This is limiting the number of seats parties can secure, increasing the chances of a hung parliament and coalition governments.

Introduction

The purpose of this paper is to outline how parties will seek to compete against multiple opponents within the UK's FPTP electoral system.

The UK is one of the few countries in the world that still uses the FPTP majoritarian voting system. The UK has been able to retain this system largely because the public has historically opposed coalitions and has been unwilling to support challenger parties. However, recent polling demonstrates that five parties are now competitive within England. With nationalist parties performing well in Wales and Scotland, and Northern Ireland not adopting the politics of the other UK nations, the whole of British politics now faces multi-party politics.

Usually, when democracies transition to multi-party contests, they adopt a voting system that either reflects how people vote proportionally or expresses a more sophisticated view of voters' preferences. However, after the lost AV referendum in 2012, electoral reform has not featured heavily in British politics. Further, the UK currently has no plans to change from FPTP. This creates a rather unusual scenario where a democracy has developed multiple

competitive parties that are all trying to secure the highest number of votes within relatively small constituencies.

This has been most evident in by-elections and local elections, where more candidates are winning contests with relatively low shares of the vote. Indeed, candidates winning with less than 30% have become increasingly more common. In some of these cases, a candidate wins because of a considerable split vote on the other side of the political divide. This has become increasingly problematic due to the British electorate engaging in bloc voting, where voters are choosing within a left-liberal (Labour-Liberal-Green) and a right-authoritarian (Conservative and Reform) bloc. This means that if one party can secure a fair amount of support within one bloc and the other bloc splits among two or more parties, the party with the smallest split vote wins. This creates a sense of winning by luck rather than consent, with some even describing it as electoral chaos.

In other countries that use FPTP with multiple competitive parties, such as India, electoral chaos is avoided through arranging electoral pacts. This is where similar parties agree what seats they will contest to try and squeeze out the opponents they most disagree with. Yet, the UK displays no signs of organising electoral pacts or coalitions.

In the next general election, this presents the possibility of parties winning seats with relatively small shares of the vote by concentrating their support within specific constituencies. Therefore, as the proportion of votes obtained may increasingly bear no relation to the number of representatives gained, parties will have to calculate where they can win. This will present parties with challenges on where to best place resources. This confusion may give the impression of electoral chaos for political analysts, yet there will be logical patterns in how parties will compete for seats in the next general election.

This paper outlines this logic and argues parties will compete within this series of multi-party contests by targeting specific constituency types. It argues that 6 constituency types enable the five competitive parties in England to win parliamentary representation. Therefore, smaller parties historically undermined by FPTP can now use this system to win representation and deny the two main parties complete control over government. Consequently, this has the potential to translate the multi-party nature of political support in Britain into the House of Commons. If successful in doing so, this will increase these parties' influence over government. This will make coalitions increasingly more likely and create incentives to renew talks on electoral reform in future parliamentary cycles.

Methodology

This report uses the results from the 2024 general election, available on the House of Commons Library website. This dataset lists the results of each constituency in the UK. It then combines this dataset with demographic data to provide variation in the dataset that will allow for the identification of distinct constituency types. This ONS data includes the age and education profiles of all the UK constituencies. It also contains the ethnic and religious composition of all localities. Further, it attaches the housing tenure profiles for all constituencies. This records the proportion of households that rent or own their property. It also includes the economic profiles of the constituencies. This comprises the workforce, social class and income breakdown for each area. This also includes the proportion of households experiencing multiple deprivation and the proportion of the workforce that is unemployed. The dataset also merges Hanretty's constituency estimates of the Leave and Remain vote share, enabling it to take into account the Brexit divide that heavily shaped British politics in the late 2010s.

Due to the added complexity of nationalist parties, and some demographic data being unavailable in Scotland, Wales, and Northern Ireland,

constituencies in these nations are filtered out. Additionally, with the Speaker only contesting the seat of Chorley, this seat is also eliminated from the analysis. This means that only English constituencies, bar the Speaker seat of Chorley, can be deployed for the clustering analysis, leaving 542 observations.

To identify the six different constituency types, this study uses unsupervised machine learning techniques. Firstly, it identifies the optimal number of different types of constituencies using a within-sum-of-squares analysis. This analysis finds the optimal number of clusters, which for this study was six; see Appendix A.

Secondly, it performs a K-means analysis, instructing the algorithm to find six clusters within the dataset. To increase the explanatory value of the analysis, variables that were highly correlated were eliminated.

The six groups produced by this analysis create centres that indicate how each numeric variable in the dataset shapes each cluster. The numeric variables in the dataset are standardised so that the impact of each variable is comparable. This analysis also indicates the impact size of each variable, allowing the study to identify what attributes most impact each cluster. From this, distinct constituency types emerge, with each constituency being allocated a unique constituency type. Descriptions of these constituencies are based on the most impactful variables. The variable containing the category each constituency falls into is then added to the original dataset.

This allows the report to identify which demographic factors are influencing where parties will most likely target their resources. Scatter diagrams are used to illustrate how subtle demographic differences form different types of constituencies. These contrasts will outline the different electoral coalitions different parties will be able to target.

Finally, the dataset is then merged with estimates of the party's current vote share within each constituency. These estimates are taken from supervised machine learning techniques (MRP) which use aggregated polling data to

estimate each party's vote share. These vote shares are downloaded from the website *PollCheck*. This allows the study to demonstrate how the parties are performing in each different constituency type, thus outlining where they are most likely to compete in the next general election. It also allows the report to highlight where their natural electoral coalitions currently exist. Box plots are used to illustrate how party support varies over the different constituency types.

From this analysis, it becomes clearer where and why parties will likely target, bringing greater clarity to how parties will compete in future general election multi-party contests.

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The six different constituency types

Before outlining in which constituency types the parties will compete, the paper describes each constituency type.

1. Metropolitan hubs



Metropolitan hubs are highly educated, densely populated areas. There is a strong university presence, with a large student population. They tend to be located in the major cities of England and are the country's economic hubs, which means they experience very low levels of economic inactivity compared to the rest of England. They form the country's service knowledge-based economy and are core contributors

to the country's economic growth and government finances. These economic centers were born out of economic modernisation, such as the growth of industry and technology. These constituencies strongly supported remaining in the EU and would likely vote heavily to rejoin it.

The population is, on average, younger and renting is more common due to very high house prices. Whilst wages are higher than the national average, higher housing costs can increase the cost of living. This can create strong levels of multiple deprivation and such challenges can bring higher levels of unemployment. They are highly ethnically diverse and have a strong minority religion presence, such as a notable Muslim population. The prevalence of individuals having no religion is mixed.

Examples of these constituencies include: Brighton Pavilion, Bristol Central, Cambridge, Hackney South, Islington North, Manchester Central, Oxford East, Putney, Tooting, Tottenham and Walthamstow.

2. Diverse Metro Centres.



Diverse metro centres are highly densely populated and have a much larger than average ethnic minority (BAME) community. They also have much higher than average minority faith communities, such as containing a larger than average Muslim population. They tend to be younger and contain higher than average student populations, with more people educated to a university level.

In some cases, they have a strong university presence that forms a notable part of their economy. Despite having these traits, they were not strong Remain supporters. Indeed, there is a mix of areas that slightly supported Remain and Leave.

Wages and house prices are much lower than the national average. This is partly because these areas, whilst urban, are not the economic centres of England. In part, they reflect de-industrialised urban areas that have adapted to the new knowledge-based economy. Partly because of this, they have slightly higher than average levels of economic inactivity, unemployment and multiple deprivation. Despite having lower than average house prices, there are greater than average levels of renting and outright property ownership is below the national average. This again reflects the challenges low-incomes bring to these localities. Therefore, economic challenges and greater diversity shape these areas.

Examples of these continuities include: Barnsley South, Bradford East, Burnley, Derby South, Gorton and Denton, Hyndburn, Leeds East, Oldham, Preston, Rochdale, Slough and Wolverhampton North.

3. Affluent Urban Hubs



These areas strongly supported Remaining in the EU. They have slightly higher than average levels of ethnic diversity, and there is a greater spread between those who have no religion and identify as Christian than in other economic centres. There are also smaller minority populations, such as a smaller-than-average Muslim community.

These places form part of England's economic centres, with them being major connection points to the country's central economic hubs. They are often the historic economic hubs of England, some gaining city status through historical importance, such as possessing a cathedral or being an administrative capital of a county. Consequently, economic flows have often been attracted to and benefited these areas. Consequently, they have low rates of economic inactivity, weak unemployment, higher-than-average wages and houses tend to be more expensive than the English average. Limited deprivation exists within these centres, with outright ownership being slightly greater than average and rental options being more restricted.

Despite being economic centres, these areas are mixed in population density, with some being not densely populated at all. This is partly because central areas for the church, such as places where cathedrals have been built, are

often surrounded by countryside. They also tend to be more age-split, meaning they contain a combination of young and older groupings that broadly reflects the national average. Yet, it should be noted that they have high student populations and are educated to a university level considerably more than the average constituency.

Examples of these constituencies include: Bath, Canterbury, Chichester, Exeter, Guildford, Milton Keynes, Orpington, Sheffield Hallam, St Albans, Sutton, Wimbledon, Windsor, Yeovil and York Central.

4. Sparse Market Towns



These constituencies comprise market towns that are usually connected to rural communities, meaning they are not densely populated. They tend to have populations that are slightly older than average, reflect average education levels and contain small student populations. There is limited ethnic diversity and a weak presence of minority religious groups. There is still a larger-than-average presence

of people identifying as Christian.

These constituencies tend to be less overtly political. They were the most split on the Brexit referendum; some narrowly voted to Remain, and others narrowly voted to Leave.

They tend to have larger than average levels of outright home ownership, and few rent their accommodation. Wages and house prices tend to reflect the national average. As these places tend to be better connected to economic

hubs, there are lower levels of unemployment, economic activity and deprivation. Therefore, these constituencies often reflect the average sentiment across England.

Examples of these constituencies include: Basildon, Brentwood, Chelmsford, Dartford, Epping Forest, Farnham, Hexham, Horsham, Newark, Reigate, Salisbury, Sevenoaks, Tatton, Tunbridge Wells, Witney, Outer York.

5. Old seasonal retreats



These seats comprise areas of England that are often either retirement destinations or rely on a seasonal economy, such as agriculture or tourism. They are shaped by the transient flow of people, and their economies are partly shaped around these temporary demands. Population density is very low, and these small towns within these constituencies are often poorly connected to

economic hubs. This has resulted in lower-than-average wages and higher levels of economic inactivity. However, due to their more remote nature, property prices tend to be lower. This helps attract those moving away from cities due to the cost of living or affordable retirement. Retirees are also attracted by the general appeal of living in a seaside or village atmosphere. This also contributes to greater economic inactivity. The disposable income from this flow of people helps reduce overall deprivation and unemployment levels. However, pockets of strong deprivation do exist.

Due to attracting those seeking to retire or move away from urban areas, outright property ownership is high and rental options are poor. From these trends, these areas tend to have more elderly populations, much more so than the English average. They also tend to attract older people who are not that ethnically diverse and are more likely to have kept a Christian faith or identity. They also tend to have fewer younger residents and very low student populations. These trends also shape the politics of these constituencies, with them possessing a stronger-than-average Leave vote in 2016.

Examples of these constituencies include: Bexhill and Battle, Clacton, Dover and Deal, Eastbourne, Great Yarmouth, Hastings & Rye, Herne Bay, Lewes, North Cornwall, Scarborough and Whitby, South Shropshire, Suffolk Coastal, Torbay, West Dorset and Worthing West.

6. Rooted Left-behind communities



These areas have strongly shaped British politics over the last decade. They are not densely populated and often are shaped by a sense of local identity and community. With many people choosing to set down long-term roots and younger people moving away for education and economic opportunities, these places have fewer younger people and tend to have slightly older-than-average populations. They also have a low

student population, likely as students go elsewhere to study and then settle down to access opportunities.

They strongly voted to leave the EU and would likely vote to stay out. They are not that diverse and have a low presence of minority religions. They also still have a slightly higher-than-average Christian population.

They are often not well connected to economic hubs, and, as a result, have low wages and very low house prices compared to the rest of England. They have been more exposed to the post-industrial decline of Britain due to these areas being expanded during times of industry. However, these post-industrial hubs have changed their economies and have lower-than-average unemployment and are not the economically disadvantaged places they are sometimes labelled. This decline has been avoided by greater levels of self-employment, which has helped to grow the private sector. Because of this, they have mixed levels of economic inactivity and deprivation, meaning they reflect the average in this regard. With house prices historically very low, they have roughly average levels of ownership, but with wages also being low, they also have mixed levels of renting. Therefore, in terms of living accommodation, these seats reflect the national average.

Examples of these constituencies include: Amber Valley, Blyth, Bolsover, Broxbourne, Bury, Corby, Darlington, Gosport, Hartlepool, Hull, Mansfield, Lincoln, Poole, Redcar, Runcorn, Sittingbourne and Sheppy, South Derbyshire, Stoke on Trent, Wakefield, Weston-super-Mare and Wigan.

Where will parties compete and for which voters?

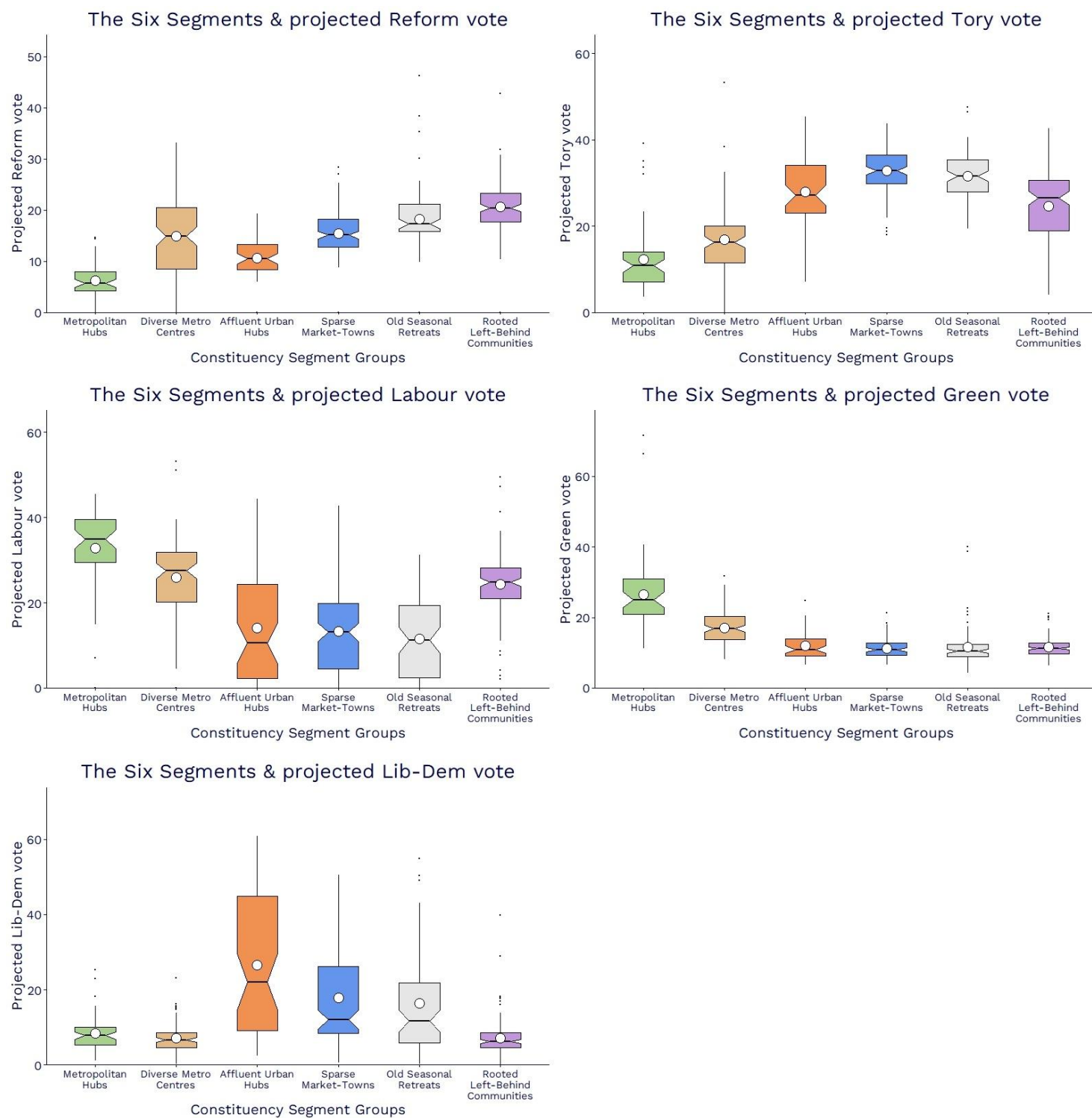


Figure 1: The six segments and the projected vote share of the 5 main English Parties. Source: PollCheck data. It shows how well the parties perform within all constituency types.

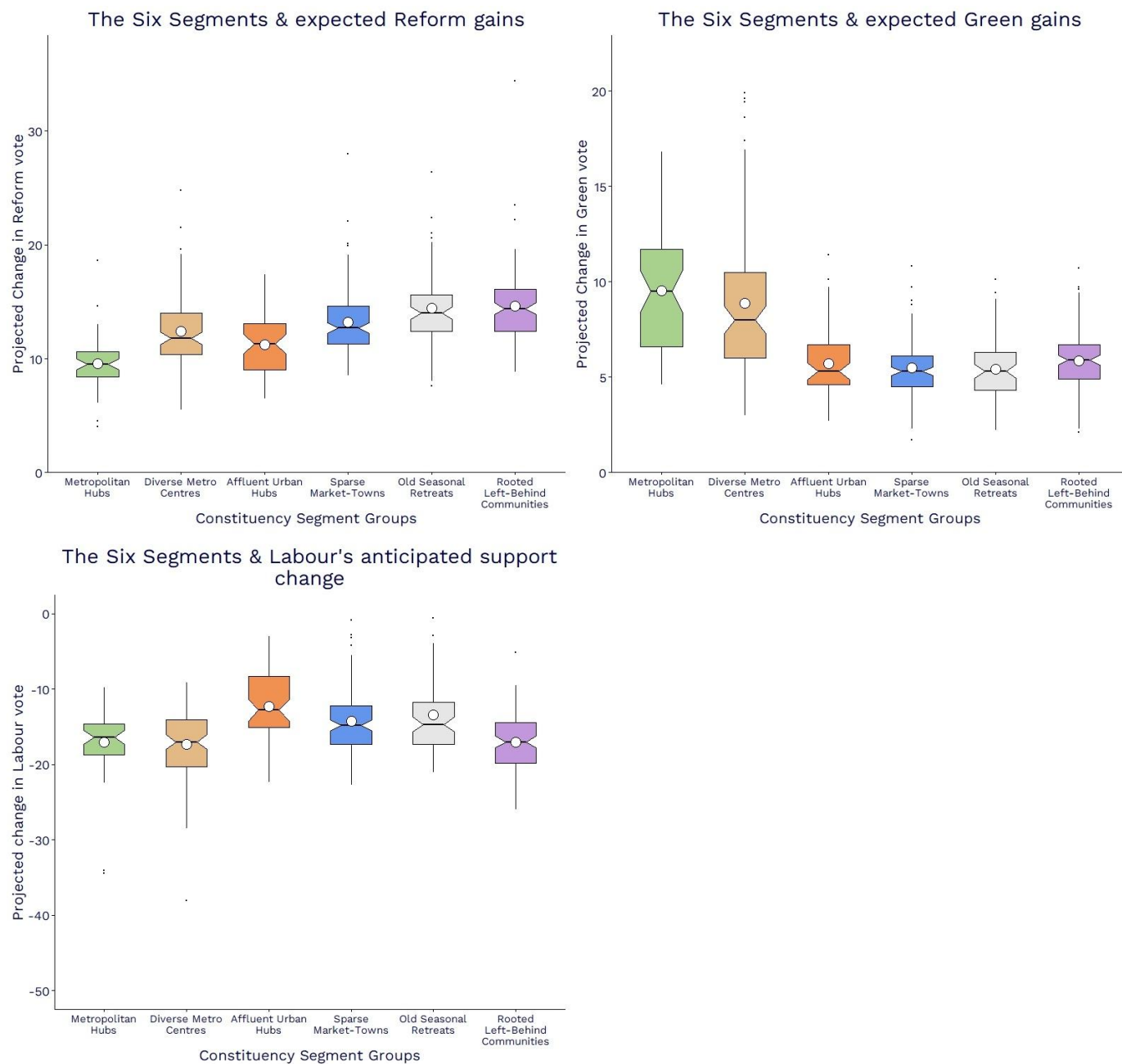


Figure 2: Projected change in the parties' vote share by the six segments. Source: PollCheck & constituency results data.

Reform:

Reform is the most electorally competitive party, partly because it can compete in four of the six identified constituency types, see Figure 1. This means they can compete across more areas than any other party. Reform is most competitive in Rooted left-behind communities. The spread of projected results for Reform in these constituencies is narrow, indicating it will be able to strongly challenge in most of the 129 seats. Within these constituencies, Reform is projected to gain 104 seats. 94 of these potential gains are currently held by Labour, the other 10 by the Conservatives. Further, Figure 2 shows that Labour's anticipated vote share losses tend to be greater than any of the six other segments. Notably, the Tories' decline in support is also higher in these areas. In contrast, Reform's average gains are amongst the highest within the six different constituency types. Therefore, it is likely that Reform will target Labour in these 104 constituencies (and the Tories in the other 10) in the next general election.

Old seasonal retreats offer the next largest set of gains, with 61% of these seats currently projected to be Reform gains. This would provide Reform with another 46 seats. Therefore, Reform will likely target this type of constituency in the next general election. 21 of these constituencies would be taken from Labour, but 24 would be gained from the Conservatives. Again, Figure 1 shows that Reform's gains are, on average, larger in the constituency types they will most target. Therefore, this concentration in their vote share gains allows Reform to secure a large number of seats amongst specific constituency types. Consequently, Reform could successfully break through the two-party system that has historically stopped challenger parties by targeting these types of constituencies.

Sparse market towns also offer Reform promising gains, with 45% of all these seats currently being projected to swing to Reform. This would give Reform an additional 56 seats. 36 of these constituencies would be gained from the

Tories and 20 from Labour. This again illustrates how Reform will more often be fighting the Conservatives in specific constituency types, whereas Labour will be the main opponent in other areas.

The final group of constituencies that offer gains for Reform are perhaps the most interesting. Reform is currently projected to gain 43% of Diverse metro Centres, 43 seats. All of these seats would be gained from Labour. Figure 1 highlights how Reform's share of the vote is distributed unevenly in these types of constituencies, meaning Reform will likely only target a section of these seats, producing limited gains. These will be the areas that disproportionately supported Leaving the EU. Further, the seats Reform is projected to win are, on average, secured with a lower share of the vote than in other constituency types. Figure 2 shows this is partly because Labour's vote decreases and the Greens' vote share increases more than the national average. This means that Reform can gain these seats with a relatively low share of the vote due to the left vote splitting. Therefore, these seats could be a battleground between Labour and the Greens, with Reform being able to target these seats if the Left vote continues to split.

Reform is currently projected to gain no Metropolitan hub seats and only three Affluent urban hub constituencies. Figure 1 shows that their projected vote share within these two constituency types is much lower than the other four. Further, Figure 2 outlines how Reform's anticipated vote share gains are, on average, lower than the other four constituency types. Therefore, it is unlikely Reform will target many of these seats in the next general election. It also shows how even the party with the highest vote share is struggling to compete in all constituency types. This highlights the growing possibility of no party being able to secure a majority, making minority governments and coalitions more likely.

Which voters will Reform target:

There are key themes that link the voters in the constituency types Reform will likely target. Their key voters will have overwhelmingly supported the UK's decision to leave the EU and would likely vote to stay out. Within these constituencies, Reform will likely target the areas that most heavily voted to leave. Reform will primarily target White British voters in traditional communities. These people disproportionately identify as Christian and have average levels of people stating they have no religion. They will be a limited target of ethnic minority voters within most of these areas. This means that Reform will be targeting more traditional voters who will likely have culturally conservative views. However, they may be required to target some of these voters within Diverse metro centres, which have greater numbers of ethnic minority voters who identify as Muslim. Whilst some of these voters may have culturally and socially conservative views, Reform may be required to moderate its position to not repel voters who may be repulsed by hostile language towards ethnic minorities and immigrants.

These areas are also consistent in having a small number of students and often lack a strong university presence. They also tend to have a smaller than average proportion of their population being educated to a university degree level. Individuals who have not accessed a university-level education are more likely to hold culturally conservative views on immigration. This again means that Reform will most often be targeting these types of voters in these core areas.

Another commonality amongst likely Reform voter targets is low income. The constituencies they will target are disproportionately lower-income, meaning they will likely have to target these voters to win key areas. Yet, whilst on lower-than-average incomes, they will also need to target those who own their home outright. This is because their core areas have either average or higher-than-average levels of home ownership. As house prices in these areas

tend to be lower, they will likely be targeting poorer homeowners who will be greatly affected by cost-of-living pressures. With energy prices predicted to rise this winter due to Middle East conflicts, it is likely Reform will be targeting these households that will increasingly feel poorer.

In these areas, unemployment and economic inactivity are low, indicating that they will also be targeting lower-income individuals who are in work. Levels of self-employment are also consistently higher, indicating they will be targeting lower-income individuals working in the private sector. Therefore, Reform will likely be targeting voters who will be growing concerned over rising costs for businesses, squeezes in wages, increases in tax and the general state of the economy. This will mean that Reform may need a broader economic narrative that can address cost-of-living concerns to gain enough support to win this range of constituencies.

Whilst consistent themes exist, Reform will be required to target different types of voters in varying constituency types. Figure 3 shows that whilst Reform target areas do share a strong Leave preference, they vary in terms of the proportion of elderly people living in the area. Whilst Old seasonal retreats contain larger-than-average elderly populations, it is more mixed in Rooted left-behind communities and Sparse market towns and is much lower in Diverse metro centres. This means that Reform will be required to target a range of age groups across different constituency types. Consequently, only addressing the needs of older voters may not be enough for Reform to secure the support it needs to win the next general election.

They may also be required to target voters that have experienced varying levels of affluence and deprivation. Whilst Sparse market-town constituencies tend to be more affluent, areas categorised as Diverse metro centres tend to have much higher levels of multiple deprivation. Also, Rooted left-behind communities have more mixed levels of deprivation. This means that these voters may have a broader view on the economy, with some likely having

left-wing positions on redistribution. Therefore, Reform may need to moderate its right-wing position on the economy to not repulse key voters in these areas.

Due to the large spread of constituencies Reform will be competitive in, they will be fighting for these core voters with Labour in some areas and the Conservatives in others. Reform will predominantly compete against Labour in metro Urban hubs and Rooted left-behind communities. However, it will vary much more in sparse market-towns and Old seasonal retreats, where they will likely compete for these core voters between the Tories and Labour. As they are less competitive in Affluent urban hubs and Metropolitan hubs, there will be limited competition for these voters against the Greens and Lib-Dems.

The Six Segments: Older people & Their Brexit Support

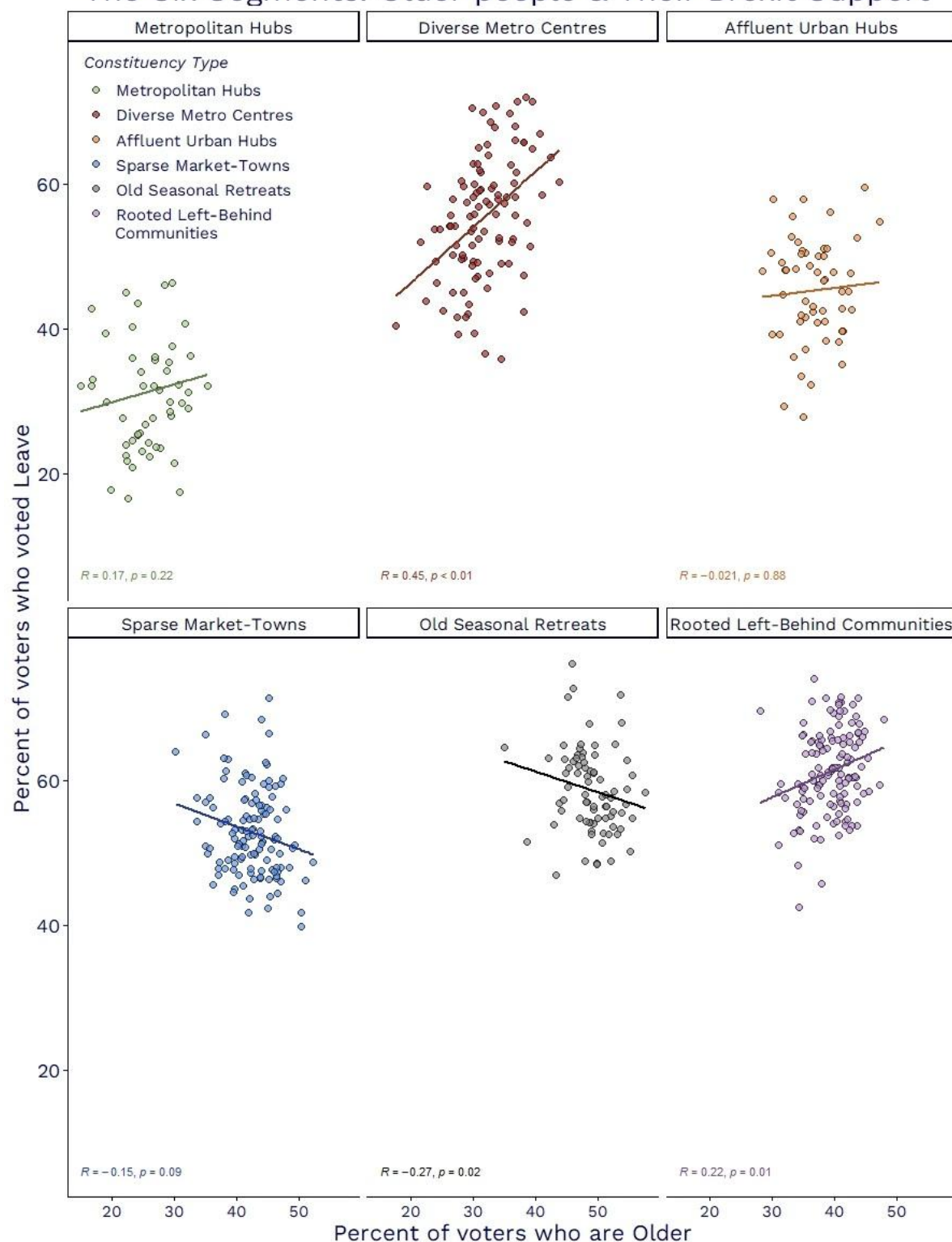


Figure 3. Scatter plots showing how much a constituency voted to leave & how elderly their population is by each constituency type. Source: General election result data & ONS data.

Green:

The Greens are not as competitive as Reform across a broad range of constituency types. However, in our FPTP system, they have the potential to gain seats within two of the constituency types. Figure one shows that the Greens are projected to perform most strongly in Metropolitan hubs and Diverse metro centres. Figure two also highlights how the Greens have disproportionately increased their vote share within these two constituency types. In our FPTP system, this will be important as concentrated support enables small parties to secure MPs within specific areas. 11 of the 12 projected Green gains are controlled by Labour, with one Independent who gained their seat from Labour being the exception. Therefore, the Greens will most likely target these types of constituencies. Figure 1 also shows how Labour's vote share is still relatively strong in these types of constituencies, meaning these constituencies will likely be shaped by Labour-Green battles.

Figures 1 and 2 also show that the Green Party's total vote share and gains in the share of the vote are too low for them to be able to win seats in four of the six constituency types. Their vote share is particularly low in Rooted left-behind communities and Old seasonal retreats. Sparse market towns and Affluent urban hubs also offer little prospect for the Greens. This is confirmed by polling projecting the Greens will win no seats within these four constituency types. Therefore, as the Greens' recent polling increase is not concentrated in many areas of the country, they are unlikely to target any of these seats.

Which voters will the Greens target:

Due to the Greens performing significantly better in two of the six constituency types, they have a niche group of voters they can target. These voters share several common features and are distinctive from voters in other constituency types. Figure 4 shows that these individuals tend to live in

dense urban areas that have higher levels of renting. These voters also tend to be renters, and outright property ownership is weak. Economically, these voters are more exposed to unemployment and live in households experiencing multiple deprivation. These voters have had greater exposure to a university-level education and live in areas with a large student population. They also have younger-than-average populations and possess greater ethnic and religious diversity. These voters overwhelmingly voted to Remain. All these traits indicate they will target a large group of left-wing, culturally liberal voters. These voters tend to favour greater government intervention and have more strongly liberal stances on issues like immigration. They tend to favour greater diversity and are more internationalist in their outlook. Therefore, the Greens may seek to target these electors by having a strong pro-EU message and taking clear stances on international causes like Gaza, immigration and refugees. Due to these voters' likely left-wing position on the economy, they may also promote a greater government intervention approach, such as favouring greater redistribution. To appeal to younger voters and students, they may also focus on policies around university education, like the growing cost of tuition fees and cost of living pressures on students.

Whilst there are several commonalities amongst the voters the Greens will target, there are some notable differences. The voters the Greens will target in metropolitan hubs tend to have much higher wages than the rest of the country, and house prices tend to be much greater than in Diverse metro centres. Therefore, the Greens will need to bridge gaps that may exist between low and high-income voters within these seats to win adequate parliamentary representation. In the Gorton and Denton by-election, they showed that they could do this by focusing on cost-of-living and foreign policy issues voters in these areas cared about.

As the Greens are mainly competitive in Metropolitan hubs and Diverse metro centres and are competing amongst specific groupings, they most likely will compete against Labour for their target voters.

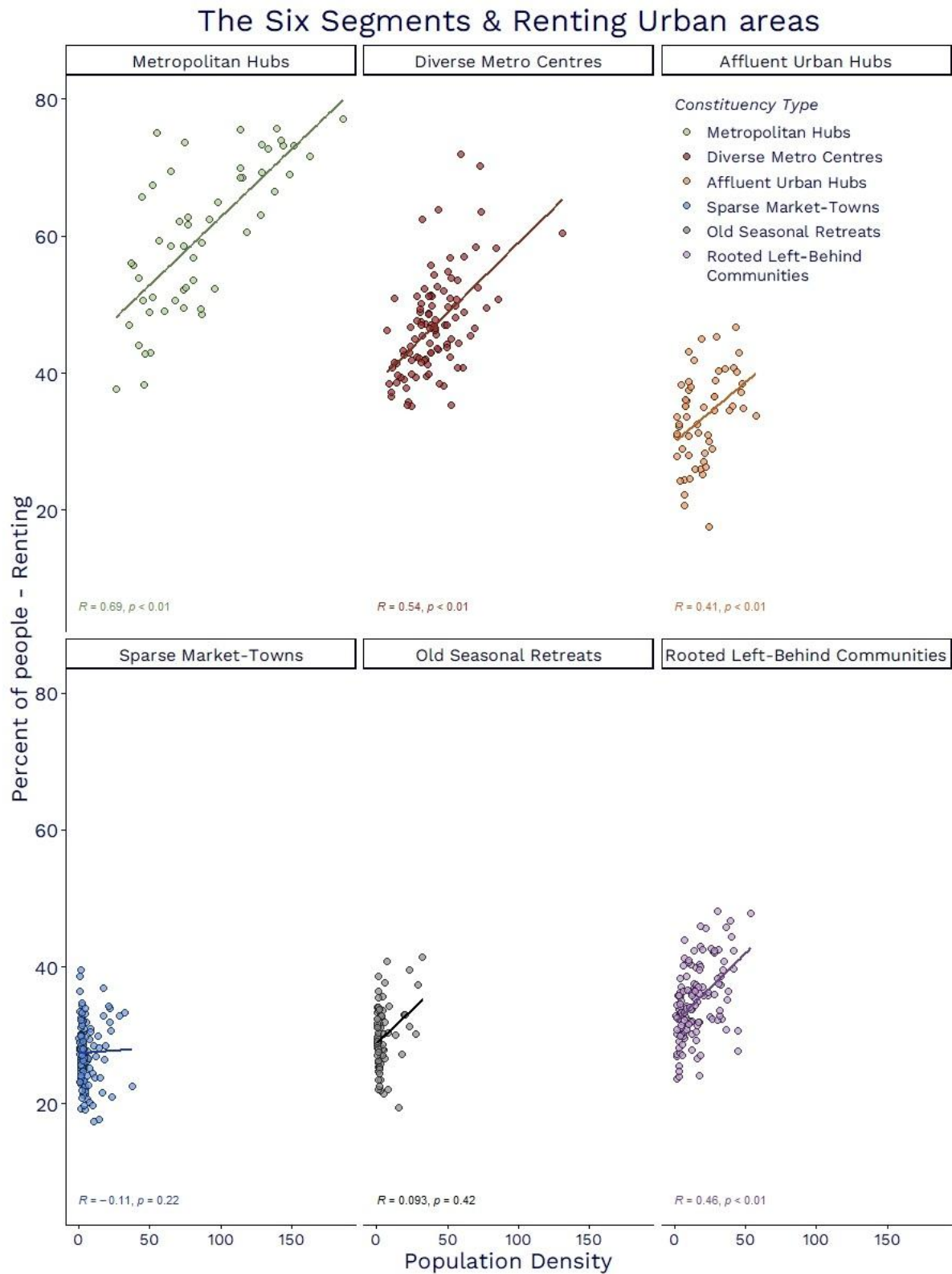


Figure 4. Scatter plots showing how much a constituency's population density & the proportion of people renting by each constituency type. Source: General election result data & ONS data.

Lib-Dem:

Similar to the Greens, the Lib-Dems have become electorally competitive by concentrating their support within specific constituency types. The Lib-Dems have targeted three types of constituencies: Affluent urban hubs, Sparse market-towns and Old seasonal retreats. The Lib-Dems are projected to retain the seats they currently hold in England and gain 9 seats, all within these three constituency types. The Lib-Dems are projected to secure 28 of the 56 Affluent urban seats available, making the Lib-Dems the most competitive party within this constituency type. Figure 1 also shows that the Lib-Dems secure their highest vote shares within these areas. It also shows that Labour and the Conservative Party receive higher-than-average support in a good proportion of these constituencies. This highlights how the Lib-Dems will mostly fight Labour and the Conservatives in these constituency types.

The Lib-Dems are also projected to secure 27 of the 124 Sparse market town constituencies and 15 of the 79 old seasonal retreat constituencies. The Lib-Dems have partially been able to secure strong results within these localities through building local bases of support. Therefore, whilst they are only competitive in a small proportion of these constituencies, they are projected to have enough support to secure 42 seats within these types of constituencies. Therefore, the Lib-Dems' ability to concentrate their support base within specific areas allows them to effectively target enough seats to secure strong parliamentary representation. In a hung parliament, this would allow them to be a notable force within a coalition government.

Which voters will the Lib-Dems target:

The Lib-Dems can be competitive in a FPTP system by, like the Greens, targeting a specific niche group of voters. The voters the Lib-Dems will be targeting in their core areas share some similar traits. Figure 5 demonstrates

that the Lib-Dems will be mostly focusing their efforts on voters who live in areas with limited deprivation and own their property outright. These voters will experience limited unemployment, and live in houses valued at average or well above average prices. They will also be targeting voters with higher than average education levels who more often identify as Christian or as having no religion. In most areas, these individuals will identify as White British, but in Affluent urban hubs the ethnicity of the individuals they will target will be more mixed.

Whilst shared traits exist, there are notable differences within different constituency types in which the Lib-Dems will be competitive. Some of the voters they are targeting live in more urban areas while others reside in smaller, less densely populated market town localities. There is also a spread of age groups, with Old seasonal retreats requiring them to target older voters with small student populations, whilst Affluent urban hubs incentivising them to focus on younger student populations. Also, wages of targeted individuals will be mixed. Within Affluent urban hubs, the Lib-Dems will be targeting voters on higher incomes. Yet, in Sparse market towns wages will reflect the national average and in seasonal retreats they will be targeting voters on lower incomes.

Due to the Lib-Dems being projected to retain most of their constituencies, they will be fighting to retain these target voters. They will mostly be battling with the Conservatives in the constituencies they can win. However, individuals within these constituencies may flip between Labour and Lib-Dem, meaning they will also be battling Labour over key target voters.

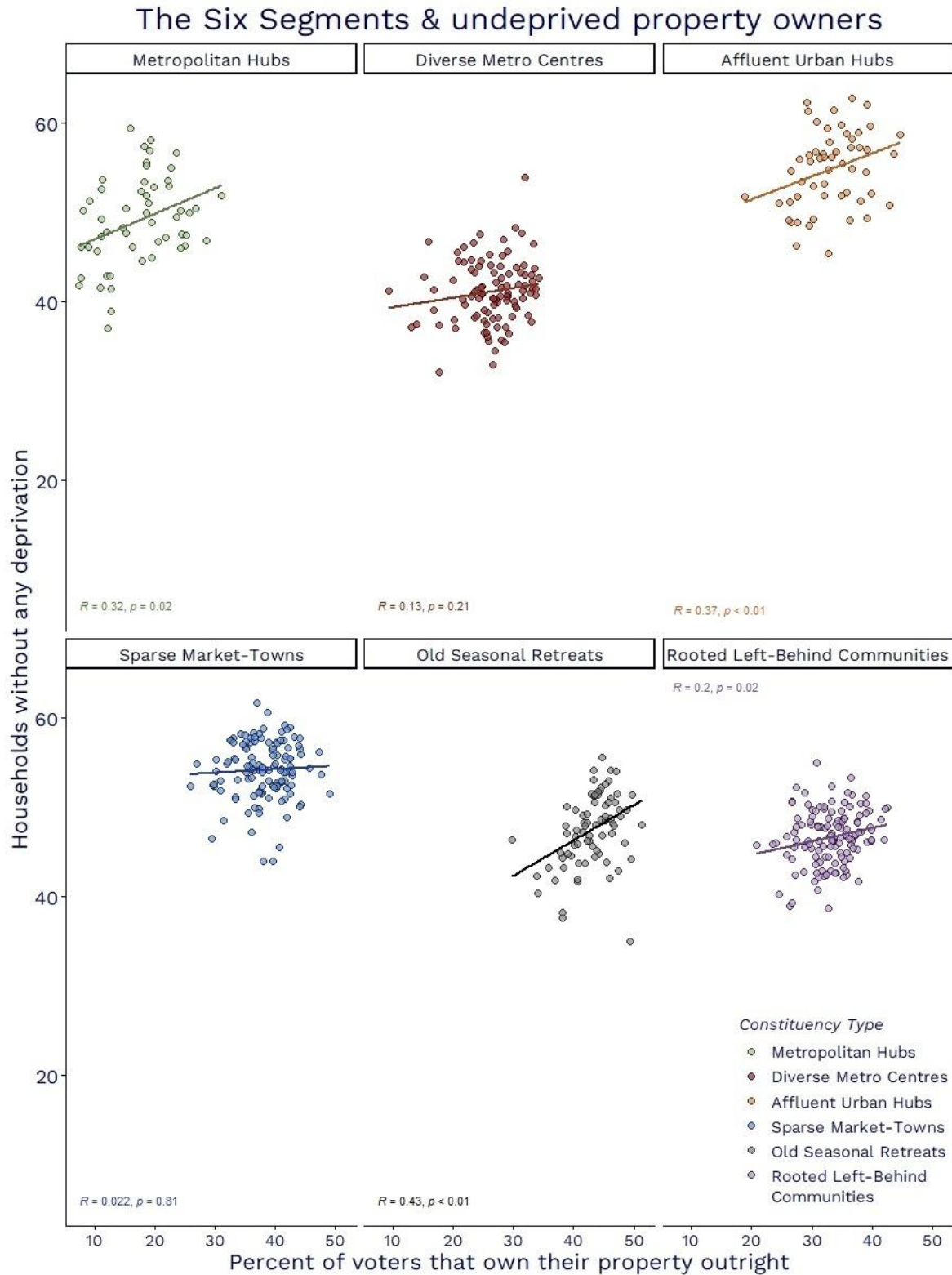


Figure 5. Scatter plots showing the proportion of households that are owned outright and not in any deprivation by each constituency type. Source: General election result data & ONS data.

Labour and Conservative:

Between the two of them, the governing parties have historically dominated all of the six constituency types. This is because these broad catch-all parties have relied on large voter coalitions to enter government or become the main opposition party. Yet, Figure 1 shows that these parties are not securing enough support in two or three of the six constituency types. The pattern for Labour and Conservative does sit in contrast, but both are struggling to secure enough support across the country. Indeed, it could be argued that Reform are competitive in more constituency types, making them more of a national party than the historic two main parties.

Labour is more competitive in Metropolitan hubs, Diverse metro centres and Rooted left-behind communities. Out of the 123 seats Labour is currently projected to retain, 98 fit into these two types of constituencies. This makes it likely Labour will defend these types of seats in the general election. Figure 1 highlights how Labour will not face challenges from the same party within these constituencies. Labour will face Green battles in Metropolitan hubs, whilst it will face contests with Reform in Rooted left-behind communities. In Diverse metro centres, due to the Labour and Green Party vote heavily splitting and Reform performing well, they will face challenges from both Reform and the Greens. Indeed, Reform may win such seats if the left-liberal vote splits sufficiently enough and Reform maintains its support.

It is currently projected to be less competitive in Affluent urban hubs and Old seasonal retreats. Therefore, Labour will be less likely to target these constituency types in the next general election.

In contrast, the Conservatives are projected to perform more strongly in Sparse market towns, Affluent urban hubs and Old seasonal retreats. Out of the 39 seats the Tories can likely defend, nearly all reside within these three types of constituencies. The Tories are currently projected to be less

competitive in Diverse metro centres and Metropolitan hubs. This shows how Labour and the Tories will likely target very different constituencies, and there will be few Labour-Tory contests. This marks a change in electoral competition in Britain, historically dominated by Labour-Tory battles. Instead, they will be mostly battling with Reform. 70 of the 116 seats the Tories will be defending at the next election will most likely be gained by Reform. Further, all of them reside within these three constituency types. Only 7 of their 77 projected losses will mainly target seats within these three constituency types that Reform will be seeking to take from them.

Both Labour and the Conservatives face these new types of electoral challenges because their share of the vote has decreased in all these constituency types. Figure 2 highlights Labour's decline, but this has also occurred with the Conservatives in the previous parliamentary cycle. These parties now mainly contest different seats as challenger parties have emerged, reducing the number of centre-left and centre-right contests. Instead, Labour face challenges from the Greens in specific areas and Reform in other localities. In contrast, the Conservatives' much-reduced vote share has mainly left them battling Reform. Consequently, the next general election will be shaped by multiple battles across different types of constituencies. This competition is what shapes Britain's multi-party politics.

Which voters will Labour and the Tories target:

Both the main parties will be seeking to either rebuild or maintain their broad coalitions of support. Labour will be fighting both the Greens and Reform in contrasting areas due to being squeezed from both sides. The main reason for this is that the constituencies they will be targeting voters in, whilst having some comparability, do possess important differences. Figure 6 shows that although Labour will be targeting many seats within Metropolitan hubs and Diverse metro centres, the voters they are targeting differ. An example of this can be found within voter ethnic diversity and Brexit support. Specifically,

whilst areas within Metropolitan hubs are ethnically diverse and rejected Brexit, other ethnically diverse areas in Diverse metro centres embraced it. This is also the case for voters in Rooted left-behind communities, where Labour will mainly be fighting Reform. This means that while Labour will be battling for these voters with the Greens in Remain-leaning areas, they will also be fighting Reform for similar voters in Leave-leaning areas. Therefore, whilst Labour will battle the Greens in Metropolitan hubs, they will fight both the Greens and Reform in Diverse metro centres. This presents difficulties in electoral strategy for Labour as it will mean targeting both culturally liberal and authoritarian voters. Therefore, Labour may target their broad coalition of voters through focusing on uniting narratives, such as cost-of-living and economic issues.

Whilst differences present problems, other demographic factors unite voters Labour will likely target. These are primarily economic, where the voters Labour target will be more often exposed to unemployment, lower wages, greater levels of economic inactivity and multiple deprivation. These voters also more often rent and tend to be younger than the voters other parties will target. Again, this indicates that Labour will seek to target their broad coalition by focusing on the economic problems that affect these broad groups of people. Specifically, cost-of-living challenges around squeezed wages and increased housing costs could feature in Labour's next general election campaign.

The Conservative Party faces a different challenge in targeting voters. In the previous parliament, 2019-2024, the Tories were squeezed from both sides and were more restricted in the seats they could target. This squeeze has continued further in the current parliament, with the growth of Reform, further reducing the number of seats the party can expect to be competitive in. Currently, the Conservatives will be challenging in a smaller number of seats than they have historically been used to. The voters within these niche

area groupings tend to have voted to Leave the EU, be mostly white British, more often identify as Christian and be older. These voters more often own their own property and the value of their home tends to be lower than average. These voters tend not to live in households that are deprived and are less likely to experience unemployment. These voters reflect a less broad voter coalition than the one the Tories have been historically used to targeting.

This is partly because from 2010-2024, the Lib-Dems, Greens and Labour have captured the younger, urban liberal part of their historic support base. Consequently, this has left the Tories reliant on older voters who tend to have more culturally authoritarian and traditional views. This would include more conservative views on immigration and the EU. As Reform are predominantly targeting these voters in the constituency types the Tories will be most competitive in, the Conservatives will mainly be fighting these voters with Reform. This will likely mean they will seek to convince voters they can be trusted on these issues more than Reform in the next election. As their coalition base tends to be economically more secure, such as more often owning their home outright, their general election efforts will likely focus less heavily on economic issues.

The exception to this might be cost-of-living issues around housing costs, such as energy. The overall performance of the economy may be used in areas where self-employment tends to be higher. Due to the lack of incentive for them to heavily focus on economic fairness, it is likely they will mostly battle Reform over voters who care more about immigration. Therefore, Labour-Conservative battles over economic competence, whilst still existing, will be less prominent and will occur in fewer constituencies than historically has been the case. This will mark a notable change in electoral competition, as British politics has been dominated by such debates that have been fought between Conservative and Labour.

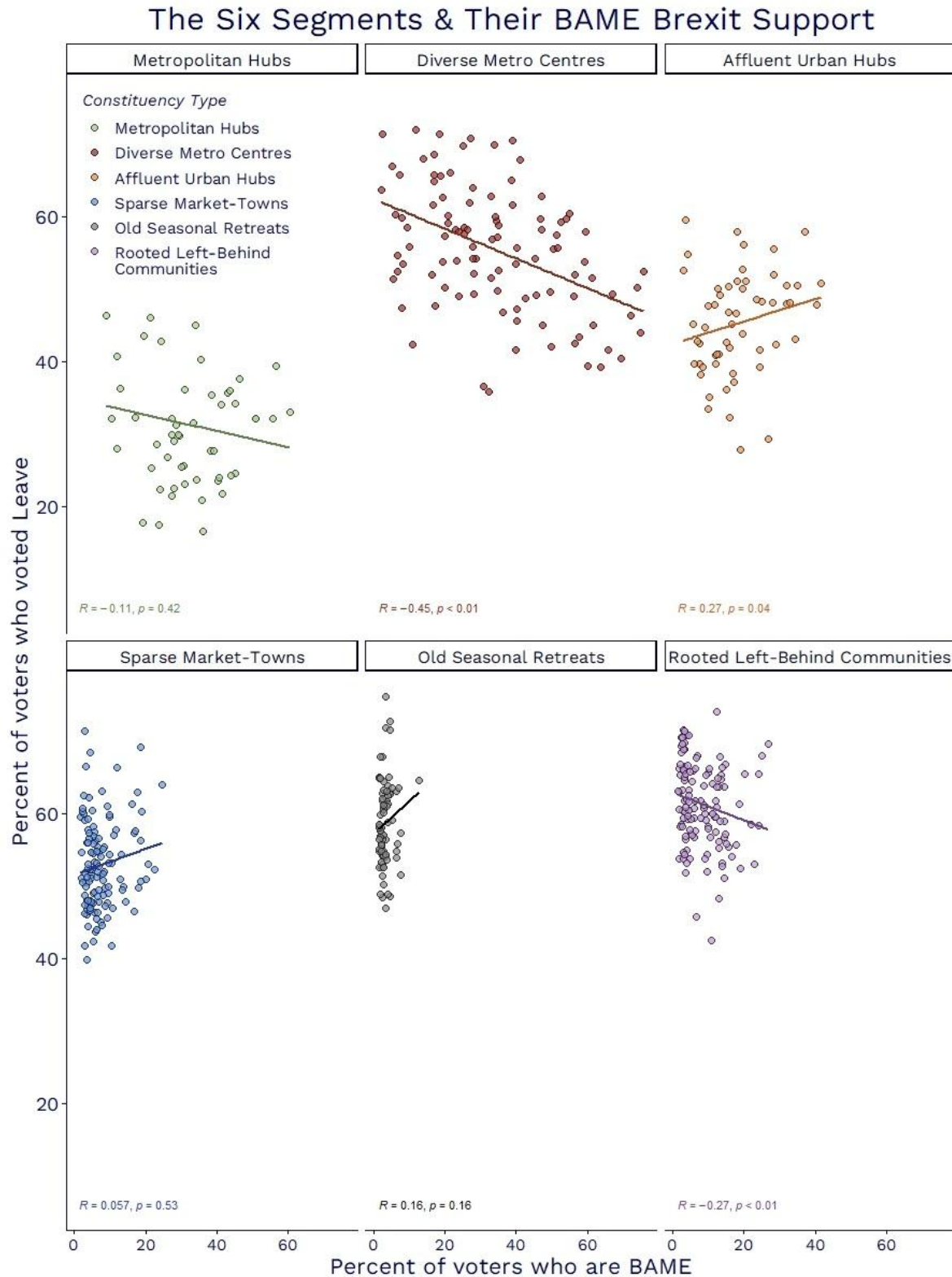


Figure 6. Scatter plots showing the proportion of the population who are BAME and vote to Leave the EU by constituency type. Source: General election result data & ONS data.

Conclusions

Whilst the current UK electoral landscape can appear chaotic, the paper has shown that England's multi-party competition is logical and will be driven by locality types. Six types of constituencies are now producing significant variation to provide the five main parties with enough potential parliamentary representation to end the dominance of the old two-party system. This is not only ending Labour and the Conservative Party's electoral dominance, but is also increasing the chances of a hung parliament and coalition governments.

These constituency types found in the K-means analysis were Metropolitan hubs, Diverse metro centres, Affluent urban hubs, Sparse market towns, Old seasonal retreats and Rooted left-behind communities. The table below summarises how competitive each party is within these different areas. Importantly, this research paper has found that none of the parties is greatly competitive across the six different constituency types, meaning parties will be more selective about where they target.

Both the Lib-Dems and the Greens will seek to secure stronger parliamentary representation through targeting a niche set of constituencies. The Greens will likely target Metropolitan hubs and Diverse metro centers. This is due to these areas' high concentration of younger, diverse, renting student populations on low incomes looking for better economic outcomes and more liberal approaches on issues like immigration. Alternatively, the Lib-Dems will target more affluent, educated older homeowners who are more cautious of economic change and are apolitical on many issues. Instead, they are seeking better economic outcomes through improved management of cost-of-living issues using a more centre-ground approach.

Reform has extended beyond their typical target areas and is now challenging both Labour and Conservative across four different constituency types. This step to becoming a national party has reduced the number of seats the two

main parties can expect to win. Further, whilst this produces gains for Reform, it also presents them new challenges. This is because it has broadened the coalition of voters they are seeking to target. Reform will still be targeting their core historic vote, which tends to be older pro-Brexit individuals who own their home outright in Old seasonal retreats and Rooted left-behind communities. However, if they are to win the next general election, they will also need to target voters in areas with more diverse younger, educated populations who will more likely be renters and have mixed attitudes towards Brexit. Consequently, when Reform tries to win the next general election, they will be seeking to maintain this broader coalition base across these four constituency types. This may require difficulty in balancing their members' desires for big change whilst trying to moderate its message to maintain this coalition of voters.

Both the historic main parties of English politics are struggling to be competitive across all of the constituency types. The broad bases that they could once rely upon to dominate House of Commons representation have vanished. Consequently, both Labour and the Conservatives are restricted in where they can win and will likely be targeting fewer seats at the next election in fewer constituency types. Labour and the Conservatives differ in where they can target and will have limited competition in terms of competing for the same constituencies.

Labour will face challenges in two main directions. They will face a new and strong challenge in Diverse metro centres and Metropolitan hubs from the Greens amongst younger, more diverse pro-EU students renting their accommodation. Yet, they will also face a challenge from Reform in Rooted left-behind communities amongst their traditional working-class base who are on lower incomes and voted to leave the EU. The Conservatives, having already been squeezed out of their younger, more liberal bases in the 2010s, now face another challenge on their right-flank from Reform. These voters are

mostly older, white homeowners who supported Brexit and will live in Sparse market towns and Old seasonal retreats. The capacity for both parties to defend their flanks will shape their parliamentary strength, rather than battles directly between Labour and Conservative.

Overall, whilst the electoral dynamics confronting British political contests seem chaotic and confusing, this paper has shown a clear logic providing the demographics of an area are well known. It is these subtle demographics that are driving electoral outcomes within the UK's multi-party system, which, once understood, creates a clear picture of how the parties will target constituencies and voters. In short, the Lib-Dems and Greens are niche parties seeking to win a small number of seats by focusing on a small group of areas with very precise disproportionate demographics. Reform has its own niche appeal but is seeking to expand into four different area types to break the old party system. Labour and the Conservatives will likely be competing in fewer areas than historically has been the case and will be defending their flanks rather than fighting each other.

Seat type	Competitive	Middle	Uncompetitive
Metropolitan Hubs	Labour, Green	Lib-Dems	Reform, Tories
Voters targeted: Students, University Educated, Renters, Ethnically Diverse, Religious minorities, Remainers.			
Diverse metro Centres	Labour, Green, Reform		Tory, Lib-Dem
Voters Targeted: Students, Ethnically Diverse, religious minorities, renters, lower-income, A mix of Remainers and Leavers			
Affluent Urban Hubs	Lib-Dems, Tory	Labour	Reform
Voters Targeted: Affluent, homeowners, educated, younger populations, Remainers			
Sparse Market Towns	Tory, Lib-Dems	Labour	Green
Voters Targeted: Older, homeowners, politically neutral, mixed-incomes, lower house prices.			
Old Seasonal Retreats	Tory, Reform	Lib-Dem, Labour	Green
Voters targeted: Leavers, lower-income, homeowners, Older, White British, economically inactive, more economically deprived.			
Rooted Left-Behind Communities	Reform, Labour	Conservative	Green, Lib-Dem
Voters targeted: Leavers, lower-income, A mix of renters and owners, older, White British, traditionalist, self-employed.			

Table 1: How competitive each party is in each constituency type. Source: Projected constituency results from PollCheck & Constituency ONS data.

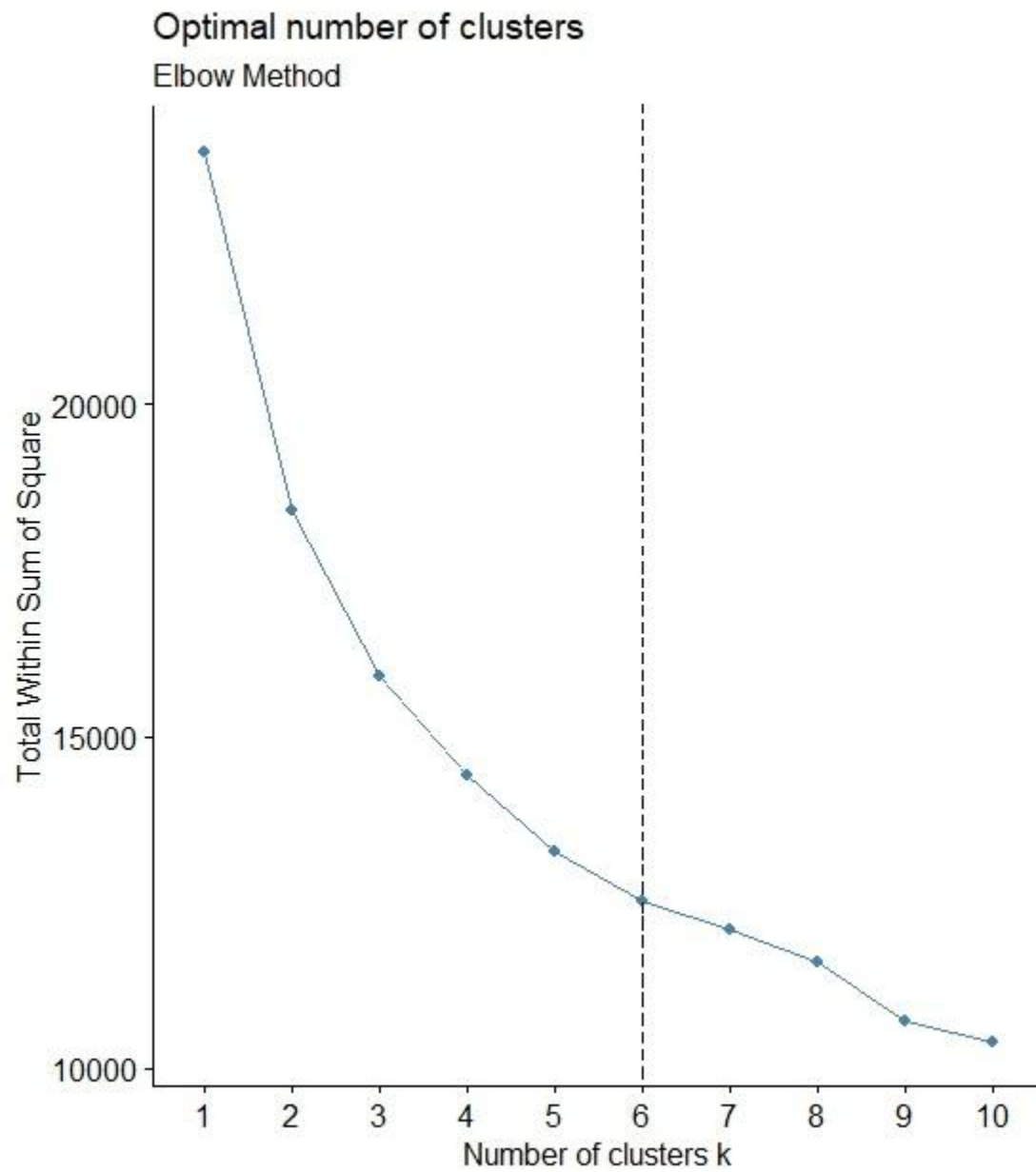
Appendix A: Determining the number of clusters.

Figure 7. An elbow plot showing the optimal number of clusters for the K-means analysis.

Appendix B: Constituency types.

Table 2: Constituency Types - Number of each type:

Constituency type	Number
Metropolitan Hubs	53
Diverse Metro Centres	101
Affluent Urban Hubs	56
Sparse Market Towns	124
Old Seasonal Retreats	79
Rooted Left-Behind Communities	129

N=542.

Metropolitan Hubs (Constituency examples).

Battersea	Clapham and Brixton Hill	Islington South and Finsbury	Peckham
Bermondsey and Old Southwark	Ealing Central and Acton	Leeds Central and Headingley	Poplar and Limehouse
Bethnal Green and Stepney	Finchley and Golders Green	Lewisham East	Portsmouth South
Brighton Pavilion	Greenwich and Woolwich	Lewisham North	Putney
Bristol Central	Hackney South and Shoreditch	Leyton and Wanstead	Queen's Park and Maida Vale
Bristol East	Hammersmith and Chiswick	Liverpool Riverside	Reading Central
Bristol North West	Hampstead and Highgate	Manchester Central	Sheffield Central
Bristol South	Holborn and St Pancras	Manchester Rusholme	Stratford and Bow
Cambridge	Hornsey and Friern Barnet	Norwich South	Tooting
Chelsea and Fulham	Hove and Portslade	Nottingham East	Tottenham
Cities of London and Westminster	Islington North	Oxford East	Vauxhall and Camberwell Green
			Walthamstow

Diverse Metro Centres (Constituency examples).

Barking	Croydon West	Leeds East	Rochdale
Barnsley South	Derby South	Leeds South	Rotherham
Bedford	Dewsbury and Batley	Leicester West	Salford
Birmingham Edgbaston	Dudley	Liverpool Walton	Sheffield and Hillsborough
Birmingham Ladywood	Ealing North	Luton North	Slough
Blackburn	Ealing Southall	Middlesbrough and Thornaby East	Smethwick
Blackley and Middleton South	East Ham	Mitcham and Morden	South Shields
Blackpool South	Enfield North	Newcastle upon Tyne East and Wallsend	Stockton North
Bolton North East	Gorton and Denton	Northampton North	Stoke-on-Trent Central
Bradford East	Heywood and Middleton North	Nottingham South	Sunderland Central
Brent East	Huddersfield	Oldham East and Saddleworth	Walsall and Bloxwich
Brent West	Hyndburn	Peterborough	West Bromwich
Burnley	Ilford South	Plymouth Sutton and Devonport	West Ham and Beckton
Coventry East	Kingston upon Hull North and Cottingham	Preston	Wolverhampton North East

Affluent Urban hubs (Constituency examples).

Aldershot	Eltham and Chislehurst	Maidenhead	Sutton and Cheam
Altrincham and Sale West	Epsom and Ewell	Milton Keynes Central	Twickenham
Bath	Exeter	Orpington	Uxbridge and South Ruislip
Beckenham and Penge	Filton and Bradley Stoke	Oxford West and Abingdon	Warwick and Leamington
Bromley and Biggin Hill	Frome and East Somerset	Richmond Park	Wimbledon
Canterbury	Guildford	Ruislip & Northwood	Winchester
Cheltenham	Harpenden and Berkhamsted	Runnymede and Weybridge	Windsor
Chester North and Neston	Hertsmere	Sheffield Hallam	Wokingham
Chichester	Kingston and Surbiton	South Cambridgeshire	Wycombe
Chingford and Woodford Green	Leeds North West	South West Hertfordshire	Yeovil
Chipping Barnet	Loughborough	St Albans	York Central

Sparse Market-Towns (Constituency examples).

Arundel and South Downs	Exmouth and Exeter East	Lichfield	Shrewsbury
Basildon and Billericay	Farnham and Bordon	Macclesfield	Stratford-on-Avon
Bracknell	Faversham and Mid Kent	Maidstone and Malling	Stroud
Brentwood and Ongar	Grantham and Bourne	Milton Keynes North	Surrey Heath
Bury St Edmunds and Stowmarket	Harrogate and Knaresborough	Newark	Sutton Coldfield
Central Devon	Hazel Grove	Newbury	Tatton
Chelmsford	Henley and Thame	Old Bexley and Sidcup	Tewkesbury
Chippenham	Hertford and Stortford	Reading West	Tonbridge
Colne Valley	Hexham	Reigate	Tunbridge Wells
Congleton	High Peak	Ribble Valley	Warrington South
Dartford	Hitchin	Rushcliffe	Wirral West
Eastleigh	Hornchurch and Upminster	Rutland and Stamford	Witham
Ely and East Cambridgeshire	Horsham	Salisbury	Witney
Epping Forest	Huntingdon	Sevenoaks	York Outer

Old Seasonal Retreats (Constituency examples).

Beverley and Holderness	Forest of Dean	Morecambe and Lunesdale	South Suffolk
Bexhill and Battle	Gainsborough	New Forest East	Southport
Blackpool North and Fleetwood	Great Yarmouth	North Cornwall	St Ives
Bognor Regis and Littlehampton	Harwich and North Essex	North Devon	Staffordshire Moorlands
Boston and Skegness	Hastings and Rye	North Dorset	Suffolk Coastal
Castle Point	Havant	North East Derbyshire	Tiverton and Minehead
Chatham and Aylesford	Hereford and South Herefordshire	North Herefordshire	Torbay
Clacton	Herne Bay and Sandwich	North Norfolk	Torridge and Tavistock
Derbyshire Dales	Isle of Wight West	North West Norfolk	Truro and Falmouth
Dover and Deal	Lancaster and Wyre	Scarborough and Whitby	West Dorset
East Thanet	Lewes	South Devon	West Worcestershire
East Worthing and Shoreham	Maldon	South Dorset	Westmorland and Lonsdale
Eastbourne	Mid Dorset and North Poole	South East Cornwall	Worthing West
Folkestone and Hythe	Mid Norfolk	South Shropshire	Wyre Forest

Rooted Left-Behind Communities (Constituency examples).

Amber Valley	Crawley	Makerfield	Sittingbourne and Sheppey
Ashfield	Crewe and Nantwich	Mansfield	South Basildon & East Thurrock
Ashford	Darlington	Middlesbrough & East Cleveland	South Derbyshire
Barnsley North	Derby North	Newcastle upon Tyne North	Southend West and Leigh
Basingstoke	Doncaster Central	Newcastle-under-Lyme	Spen Valley
Bassetlaw	Doncaster North	Normanton and Hemsworth	St Helens North
Blyth and Ashington	Easington	Norwich North	Stevenage
Bolsover	Gillingham and Rainham	Nuneaton	Stockport
Bolton West	Gloucester	Pendle and Clitheroe	Stoke-on-Trent South
Bootle	Gosport	Penistone and Stocksbridge	Swindon South
Bournemouth East	Gravesham	Plymouth Moor View	Tamworth
Braintree	Great Grimsby and Cleethorpes	Pontefract & Castleford	Telford
Broxbourne	Harlow	Poole	Thurrock
Broxtowe	Hartlepool	Redcar	Wakefield and Rothwell

Bury North	Hemel Hempstead	Redditch	Wallasey
Cannock Chase	Ipswich	Rochester and Strood	Weston-super-Mare
Carlisle	Jarrow and Gateshead East	Romford	Whitehaven and Workington
Chesterfield	Kettering	Rother Valley	Widnes and Halewood
City of Durham	Kingston upon Hull East	Rugby	Wigan
Colchester	Knowsley	Runcorn and Helsby	
Corby	Leeds West and Pudsey	Scunthorpe	
Coventry North West	Lincoln	Sherwood Forest	

Tables 3 - Examples of constituencies for each constituency type.

Appendix C: Constituency types - detailed descriptions.

Category	Leave	Remain
Metropolitan Hubs	Very Weak	Very Strong
Diverse Metro Centres	Moderately Strong	Moderately Strong
Affluent Urban Hubs	Weak	Strong
Sparse Market-Towns	Split	Split
Old Seasonal Retreats	Very Strong	Very Weak
Rooted Left-Behind Communities	Very Strong	Very Weak

These tables describe each constituency type in detail. These descriptions determine the names and identity of each constituency types. These descriptions are generated from the K-means Cluster values, see the Appendix D.

Category	BAME	White British	No Religion	Christian	Muslim
Metropolitan Hubs	Very Strong	Very Weak	Mixed	Very Weak	Strong
Diverse Metro Centres	Very Strong	Very Weak	Weak	Very Weak	Very Strong
Affluent Urban Hubs	Moderately Strong	Moderately Weak	Mixed	Split	Moderately Weak
Sparse Market-Towns	Weak	Strong	Mixed	Strong	Very Weak
Old Seasonal Retreats	Very Weak	Very Strong	Mixed	Strong	Very Weak
Rooted Left-Behind Communities	Weak	Strong	Mixed	Moderately Strong	Very Weak

Category	Population Density	Younger	Older	Student Population
Metropolitan Hubs	Very High	Very Strong	Very Weak	Very Strong
Diverse Metro Centres	High	Moderately Strong	Very Weak	Strong
Affluent Urban Hubs	Mixed	Split	Weak	Strong
Sparse Market-Towns	Very Low	Weak	Moderately Strong	Very Weak
Old Seasonal Retreats	Very Low	Weak	Very Strong	Very Weak
Rooted Left-Behind Communities	Moderately Low	Moderately Weak	Split	Weak

Category	Renters	Ownership
Metropolitan Hubs	Very Strong	Very Weak
Diverse Metro Centres	Strong	Very Weak
Affluent Urban Hubs	Weak	Split
Sparse Market-Towns	Very Weak	Strong
Old Seasonal Retreats	Weak	Very Strong
Rooted Left-Behind Communities	Split	Split

Category	Unemployment	EconInactive	Wages	House Prices
Metropolitan Hubs	Strong	Very Low	Very High	High
Diverse Metro Centres	Strong	Slightly High	Very low	Very low
Affluent Urban Hubs	Weak	Slightly Low	High	High
Sparse Market-Towns	Very Weak	Slightly Low	Mixed	Mixed
Old Seasonal Retreats	Very Weak	High	Low	Low
Rooted Left-Behind Communities	Weak	Mixed	Low	Very Low

Category	Multiple Deprivation	No Deprivation
Metropolitan Hubs	Strong	Weak
Diverse Metro Centres	Very Strong	Very Weak
Affluent Urban Hubs	Very Weak	Very Strong
Sparse Market-Towns	Very Weak	Very Strong
Old Seasonal Retreats	Moderately Weak	Moderately Strong
Rooted Left-Behind Communities	Mixed	Mixed

Category	Reform Vote	Reformcng	Con Vote
Metropolitan Hubs	Very Low	Very Low	Very Low
Diverse Metro Centres	Mixed	Mixed	Low
Affluent Urban Hubs	Low	Low	Mixed
Sparse Market-Towns	Moderately high	Mixed	Very High
Old Seasonal Retreats	Very High	Moderately high	Very High
Rooted Left-Behind Communities	Very High	Moderately high	Moderately low

Category	Green Vote	Greencng	Lab Vote	Labcng	Lib-Dem
Metropolitan Hubs	Very High	Large Increase	Very High	Large Decrease	Very Low
Diverse Metro Centres	Moderately High	Large Increase	Moderately High	Large Decrease	Very Low
Affluent Urban Hubs	Low	Minor Increase	Mixed	Moderate Decrease	Very High
Sparse Market-Towns	Low	Minor Increase	Mixed	Moderate Decrease	Slightly High
Old Seasonal Retreats	Low	Minor Increase	Mixed	Moderate Decrease	Mixed
Rooted Left-Behind Communities	Low	Minor Increase	Moderately High	Large Decrease	Very Low

Figures 8: Demographic summaries for each constituency type. These descriptions include the most important variables shaping the six distinct constituency types.

Appendix D: Centre cluster values for the K-Means analysis on the constituency dataset.

The dataset extracts the numeric variables listed in the tables below and then runs a K-means analysis. As outlined in the methodology, the K-means is instructed to form 6 groups. The clustering analysis produces a centre for each variable for the six constituency types. These centres indicate how the variable shapes the constituency. The greater the positive or negative value, the greater the impact. Variables and centres with low impacts aren't included in the results. For example, a minus figure for population density reflects a rural area and a positive figure an urban locality. From these values, the characteristics of each constituency type can be understood in detail. This is how the more detailed descriptions in the tables above were created.

Segment	Population Density	Leave Vote	Remain Vote	Younger	Older	Student Population	White British	BAME
Sparse Market Towns	-0.59			-0.59	0.46	-0.47	0.51	-0.48
Old Seasonal Retreats	-0.66	0.40	-0.40	-0.82	1.32	-0.52	0.81	-0.78
Affluent Urban Hubs		-0.83	0.83		-0.35	0.40	-0.33	
Metropolitan Hubs	2.24	-2.05	2.05	2.16	-1.69	1.48	-1.50	1.14
Diverse Metro Centres		0.62	-0.62	0.33	-0.45	0.32		
Rooted Left-Behind Communities		0.71	-0.71				0.44	-0.43

Segment	No_religion	Christian	Buddhist	Hindu	Muslim	Jewish
Sparse Market Towns		0.44			-0.49	
Old Seasonal Retreats	0.42	0.57	-0.30	-0.44	-0.60	
Affluent Urban Hubs			0.76	0.51		0.50
Metropolitan Hubs		-1.21	1.42		0.79	0.71
Diverse Metro Centres			-0.50		0.51	
Rooted Left-Behind Communities	0.35	0.32	-0.39		-0.36	

Segment	Owned outright	Owned mortgage	Rented	Other tenure	Wages	House Price	Inactive
Sparse Market Towns	0.59	0.89	-0.85	0.40	-0.35		0.72
Old Seasonal Retreats	1.17	-0.46	-0.62	-0.32	-0.33		0.77
Affluent Urban Hubs		0.66			0.89	0.66	-0.67
Metropolitan Hubs	-1.91	-1.71	2.12	0.82	-0.79	-0.45	0.48
Diverse Metro Centres	-0.52	-0.52	0.64	-0.50	-0.63	-0.79	
Rooted Left-Behind Communities		0.45		-0.32	0.45	0.56	

Segment	Deprived None	Deprived 3 or more	Proffess- ional	Interm- ediate	Lower Manager	Routine	Jobless	Self Employed
Sparse Market-Towns	1.05	-1.02	0.70	1.07		-0.59	-0.80	0.35
Old Seasonal Retreats		-0.46			0.47		-0.75	
Affluent Urban Hubs	1.06	-0.73	1.20	0.57	-1.10	-1.16		0.51
Metropolitan Hubs		0.66	1.13	-0.72	-1.57	-1.25	1.26	
Diverse Metro Centres	-1.25	1.38	-1.11	-1.12	0.44	1.08	0.84	-1.11
Rooted Left-Behind Communities			-0.51		0.84	0.74		-0.59

Tables 4: The Cluster centre values for the most significant variables used in the K-means analysis. These cluster values determine the descriptions and names of the six identified constituency types.