The Effects of Local Campaigning in Great Britain

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Abstract

Political parties devote many resources to local campaigning to contact voters directly. But parties do not choose to contact voters at random; they contact those voters they believe more likely to be swayed. This strategic behavior introduces an empirical challenge: separating the effect of contact itself from the selection effect – the fact that contacted voters may be more likely to be swayed in the first place. I rely on the panel structure of the British Election Study separate the effect of contact itself from the selection effect for the 2015, 2017, and 2019 General Elections. My findings show that parties are successful in increasing their support through local campaigning by a combination of conversion and mobilization. The effectiveness of local campaigning remains mostly unchanged throughout the three elections, despite the very different electoral environments.

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1 Introduction

Parties devote part of their efforts to mobilizing voters to turn out to vote and support their party during electoral campaigns. Local campaigning is composed of practices designed to reach particular voters directly, from traditional in-person canvassing, to telephone calls, mail, and even targeted online approaches. A substantial literature is devoted to the study of campaigns and their effects on voter behavior. While the existence and widespread use of mass communication (from TV to the internet) could have made local campaigning irrelevant in a context of increasingly nationalized campaigns, previous research has found that parties still benefit electorally from organized and intense campaigning at the local level.

Identifying the effect of parties' local campaign efforts on vote choices and correctly estimating their sizes is mired with empirical challenges in observational studies.[1] The most important challenge is identifying the effect of local campaigning efforts separate from the strategic behavior of parties: parties will – or at least will try to – contact voters that they believe are more likely to respond to the parties' message or appeals, what I call the selection effect. The difficulty in dealing with the selection effect is that researchers do not observe how parties decide which voters to contact. Ignoring or not appropriately accounting for this selection effect will likely lead to overestimation of the effectiveness of local campaign efforts: parties may not be convincing or mobilizing voters but just reaching out already likely supporters.

To address this identification challenge, I rely on the panel structure of the data from the British Election Study Online Panel, collected for the 2015, 2017, and 2019 UK General Elections, using three waves for each election.[2] To disentangle the selection effect from the effect of party contacts on voter behavior, I first use two pre-election waves to estimate the probability

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[1]Experimental approaches to the study of local campaigning, like get out the vote experiments (e.g., Gerber et al., 2008), overcome many of the challenges of identification and estimation. However, it is often the case that researchers are interested in particular elections and/or specific campaigns, and the design and implementation of experiments to measure effects in each is simply not feasible in most cases. Moreover, field experiments present an ethical dilemma as they potentially alter the outcome of the election, particularly when moving beyond non-partisan GOTV messages. Researchers have sometimes embedded experimental designs within existing campaigns, which reduces these concerns (e.g., Townsley, 2018)

[2]One wave corresponds to the post-election wave, and the other two are the two most recent pre-election waves.

that a voter is contacted by a party based on a series of political variables and demographic characteristics. I then use this estimated model to obtain the predicted probability of contact for the third, post-election, wave. This predicted probability thus captures the selection effect, the strategic decision by parties to contact some voters but not others. Importantly, these predicted probabilities do not use information, and are separate from, actual contacts made during the third survey wave. I then use this predicted probability together with contact indicators in the final wave for each election to estimate the effect of party contacts, controlling for the selection effect as captured by the predicted probabilities.

For this estimation strategy to be valid, it is necessary that parties do not change their contact strategies between the different survey waves in a given election, as otherwise the predicted probabilities from the early waves would not correctly capture the selection effect for the final wave in each election. While parties certainly ramp-up their local campaigning efforts towards the end of the campaign, the evidence strongly suggests that this is mainly a matter of scale and not of substance: more voters are contacted, but the types of voters contacted in the different waves within an election are essentially the same. Thus, this evidence fully justifies the use of the predicted probabilities from early waves to capture the selection effect in the final one.

My results for England show that party contacts result in both conversion of supporters of other parties as well as mobilization of otherwise abstainers. In particular, both major parties, Labour and the Conservatives, increase their support by both reducing that of third parties and by encouraging mobilization. However, there is no evidence that the major parties convert supporters from each other. Third parties, on the other hand, show little effect on mobilization (with the exception of 2019), but instead increase their support by drawing from the two major parties in similar proportions. The results for Scotland and Wales, analyzed separately because of their somewhat different party systems, are broadly consistent with those for England, although there are fewer statistically significant findings.

While the outcomes 2015, 2017, and 2019 General Elections were quite different, the results presented here show that the effectiveness of local campaigning on vote choice was strikingly

similar across the three elections analyzed. Additionally, other than for third parties, there is no evidence that parties' intensity of local campaigning being capable of explaining the swings in overall election outcomes. This suggests that local campaigns are not the driving force in generating the different outcomes from the 2015, 2017, and 2019 elections. This is not to say they do not matter. On the contrary, the evidence shows that if a party were not to engage in local campaigning, it would in fact be disadvantaged on election day. As it happens, they all do, and thus mostly neutralize each other's efforts.

The remainder of the paper is organized as follows. In Section 2 I present a brief discussion of the literature on local campaigning in the United Kingdom; in Section 3 I describe the data and method used to account for the selection effect; in Section 4 I present the results; and Section 5 concludes.

2   Literature Review

Experimental evidence from the United States shows that citizens are responsive to efforts aimed at getting them out to vote (see, for example, Gerber et al., 2008; Arceneaux and Nickerson, 2009). Similar evidence has been produced in experimental studies in other countries, including the United Kingdom (e.g., John and Brannan, 2008; Fieldhouse et al., 2013; Townsley, 2018). Studies based on observational data have also found this positive effect (see, for example, Geys, 2006; Karp et al., 2008). There is a substantial literature on British elections that studies the effects of local campaigning that generally finds that that parties benefit electorally from more organized and intense local campaigning, both in terms of mobilization and in terms of their vote share (Fisher et al., 2011, 2016; Pattie and Johnston, 2003; Johnston et al., 2013; Clarke et al., 2004, 2009; Cutts, 2014; Fisher et al., 2011; Whiteley and Seyd, 1994; Fisher et al., 2019; Fieldhouse et al., 2020a, and references therein).

A significant portion of the literature on campaign effectiveness in the United Kingdom focuses on aggregate data at the constituency level, e.g., the effect of constituency campaign

spending (or other measures of campaign intensity) on turnout and parties' vote shares. A smaller portion of the literature focuses on analyses at the individual voter level, and is closer to the study in this paper.

The literature that uses aggregate data generally finds evidence consistent with both conversion and mobilization of voters, and the effects found are sometimes are considerable. It is difficult to conduct direct comparisons of the effects found in the different articles as they use different measures of local campaigning and methods. Nonetheless, it is possible to make a broad comparison of these effects. For example, Denver et al. (2004) study the effect of campaign effort measured with an index constructed from constituency level campaign activity using principal components. They find that a strong local campaign, relative to an average local campaign gains parties about 5% higher vote share. Fisher et al. (2011) use a similar measure and find effects on the order of 30% when campaign intensity goes from the intensity of a non-target seat to the intensity of a target seat (an increase of about 50% in their measure of intensity). Johnston et al. (2013) focus instead on spending as a percentage of the spending limit finding that, for Labour, increasing spending to the limit would result in a 6% higher vote share for the party. Fisher et al. (2014) use a campaign spending index as well and find effects ranging from -0.1% to 5.1% when increasing said index by 1 unit. These effects are substantial when considering that the index in a target constituency is about 120 whereas in a non-target constituency is about 85. Cutts (2014) find effects in the order of 1 to 1.5% using a similar index (very different specification, however). Fisher et al. (2016) also uses a similar index of campaign intensity at the constituency level, finding effects in the order of 1 to 2%. These effects are also substantial since the campaign intensity indices typically averages 100 with wide variation; therefore, within the normal range of variation of the campaign intensity indices, the regression coefficients typically imply large returns to local campaigns.

Another portion of the literature relies on analyses at the individual level. Pattie and Johnston (2003) use data from the 1997 British Election Study (BES) and find that doorstep canvassing has an impact on respondents' vote choices, but that telephone contacts do not. The

effects, reported in odds ratios, go from 0 to 1.7 greater odds due to contacts by the parties. Denver et al. (2004) also include individual level results. Their coefficient estimates from a logit model are somewhat large, but probabilities and partial effects are not reported in the original paper. Cutts et al. (2017) focus on the United Kingdom Independence Party during the 2015 election. They find that UKIP contact increases UKIP support in the order of 12%, whereas contacts by the other parties reduce UKIP support between 3 and 8%, depending on the party. Their model uses a multilevel logit model designed to account for many individual level-covariates as well as constituency characteristics.

All the articles discussed so far control for a multiplicity of factors, from demographics and individual-level political variables, to constituency characteristics and information on seat-targeting by parties. These variables together can indirectly capture a significant proportion of the selection effect: the fact that parties choose to contact some voters but not others. However, it is possible that they do not control for the entirety of this selection effect; after all, parties tend to exploit more on the ground information that may not be completely captured by control variables. In fact, this is a difficult problem to address, since it is hard to pin down the decision process that prompts parties to contact one voter over another.

Fisher et al. (2011) tackle this issue more directly using data from the 2010 BES. They use the pre-election wave to identify those respondents who initially declared themselves to be un-decided. With this subsample, they study whether voters contacted by the different campaigns were more or less likely to support the Conservatives, Labour, or the Liberal Democrats. They find strong campaign contact effects in all cases, between 17 and 34% marginal effects. These strong results should be interpreted with caution, however, as undecided voters are probably more likely to be swayed by parties' appeals, leading to high estimates by focusing only on this section of the electorate.

Whiteley and Seyd (2003) also deal with the problem of parties selecting which voters to contact directly. They study respondents' intention to turn out to vote and vote choice. Importantly, they are able to control for respondents' self-reported willingness to turn out and

vote derived from an earlier panel wave. This way, their estimates of party campaign efforts are teased out from parties' mobilization efforts. Their findings show smaller effects than those found in the rest of the literature. In particular, they find partial effects of canvassing face to face for the Labour party increased the probability of voting for Labour by 6%, whereas canvassing by phone increased it by 5%.

3 Data & Methods

3.1 Data

To study the effect of party contacts on the probability of casting a vote for each of the parties or abstaining, I use data from nine waves of the British Election Study (BES) Online Panel (Fieldhouse et al., 2020b). The first three waves correspond to the 2015 General Election, the next three to the 2017 General Election, while the final three correspond to the 2019 General Election. I study each election as separate panels. Each panel includes two pre-election waves and the post-election wave.[3] I restrict each sample to respondents who reported vote intention in at least two of the three waves for each election. Due to the presence of the Scottish National Party (SNP) in Scotland and Plaid Cymru (PC) in Wales, I analyze England, Scotland, and Wales separately, as their party systems are somewhat different. While the BES includes many more survey waves in its data, it is not advisable to use more survey waves prior to each election. The method used for identifying the effect of party contacts separately from the selection effect requires that the parties' local contact strategies remain relatively constant within the period under study. Extending the time frame of study beyond a couple of months prior to the election severely undermines this. Moreover, assessments of behavior too far removed from election day may not elicit meaningful or accurate information.

The outcome of interest is a categorical variable that indicates whether the individual respondents voted Conservative, Labour, some other party, or abstained from voting. For Scotland,

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[3]The study covers England, Scotland, and Wales, but excludes Northern Ireland.

the outcome also includes voting for the SNP; for Wales, voting for PC is included with third parties.

The main independent variables are contact indicators by each party in the four weeks prior to each survey wave. The modes of contact considered are telephone, mail (letter or leaflet), home visits, meeting in the street, email, SMS, and social media.[4] Thus, for England, the main independent variables consist of contact indicators for each one of the Conservative Party, the Labour Party, and other parties grouped together. For Scotland it also includes the Scottish National Party, whereas for Wales it Plaid Cymru in included with third parties.

Contacts are not the only possible measure of local campaign efforts, but it is the best one available for individual-level analyses. A potential concern with voter self-reported contacts is that voters may not accurately remember contacts. While it is not possible to determine the accuracy of voters' recall, in Appendix G, I provide evidence that contact recall correlates closely with campaign spending at the constituency level. This suggests that voters' recall of contacts is consistent with parties' spending decisions.

As control variables, I include the feeling thermometer scores for the parties, whether the respondent believes each party is the best party to tackle their most important issue, party identification, left-right ideology, as well as a series of voter demographics characteristics like gender, age, having a university degree, being white British, personal income, and home ownership status (renting, mortgage, or owning outright).

3.2 Methods

As mentioned in the introduction, the empirical challenge in estimating the effect of party contacts on the probability of casting a vote for the different parties is that parties are likely strategic in their local campaign efforts: they will tend to contact those voters they think will be more likely to be swayed in the desired direction. This implies that models that do not account

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[4] Due to a technical error the party contact questions were not asked of those respondents who took the survey during the first week of the 2015 campaign in wave 5. It was asked of respondents who took the survey on and after April 24th, 2015. Therefore, data for these respondents for this wave is not included, reducing the number of observations available for estimation of local campaign effects in 2015.

for this behavior, which I call the selection effect, will produce upwardly biased estimates of the effect of party contacts on voters' choice: parties do not contact voters at random, but are instead more likely to contact shoe for which their efforts will be more rewarded. Control variables typically included in models of voter behavior can account for this selection effect partially. Parties, however, likely use information not readily available to researchers or use it in a way that researchers cannot fully determine, which creates the potential for biased estimates.

Without precise knowledge and measurement of how parties choose which voters to contact, it is not possible to explicitly control for this selection effect directly. The panel structure of the BES data, however, allows me to estimate parties' contact behavior from the early waves in each election and generate predicted contact probabilities for the last wave. The inclusion of these predicted probabilities in the vote choice model allows me to control for this selection effect. Importantly, these predicted probabilities do not use actual contact information from the third way, thus providing a measure of the selection effect that is separate from actual contacts conducted during the final wave for each election.

To implement this strategy, I first estimate how the parties' contact decisions are influenced by a series of individual level characteristics, including feeling thermometers, party identification, and a variety of demographics. Importantly, this estimation only relies on the first two waves for each election:

$$P(Contact_{it}^p = 1) = \Lambda(\alpha^p + \beta^p x_{it} + \delta_{i[c]}^p), \ \ t \in \{1, 2\}, \ \ p = Con, \ Lab, \ Oth, \qquad (1)$$

where $Contact_{it}^p$ indicates whether party p contacted voter i in the four weeks prior to wave t; x_{it} is a series of political and demographic variables; α^p and β^p are parameters for each equation; $\delta_{i[c]}^p$ is a random intercept for each constituency, c; and $\Lambda(\cdot)$ is the cumulative logistic distribution function. The random intercepts by constituency are designed to capture parties' decision to conduct more or less intense campaigns in certain constituencies but not others,

beyond what individual voter characteristics predict.[5]

Once the parameters from the model in equation 1 are estimated, $\widehat{\alpha}_p$ $\widehat{\beta}_p$, and $\widehat{\delta}^p_{i[c]}$, they are used to calculate predicted probabilities of contact by each party using the individual level information for the third and final wave in each panel. That is:

$$PrContact^p_{i3} = \Lambda(\widehat{\alpha}^p + \widehat{\beta}^p x_{i3} + \widehat{\delta}^p_{i[c]}), \ \ p = Con, \ Lab, \ Oth, \tag{2}$$

where $PrContact^p_{i3}$ is the predicted probability that individual i is contacted by party p in wave $t = 3$, based on the model estimated using waves $t = 1, 2$ as described in equation 1. This predicted probability thus measures the selection effect for the different parties, in so far as the parties' contact strategies remain stable across the three waves for each election. In Appendix E, I show that parties' contact strategies remain stable for each election in terms of the types of voters contacted, thus justifying the use of this approach.

Finally, to estimate the effect of party contacts disentangling it from the selection effect introduced by the strategic behavior of the parties, I estimate the following multinomial logit model:

$$P(y_{i3} = j) = \Lambda\left(\gamma_j + \sum_p \eta_{jp} Contact^p_{i3} + \sum_p \pi_{jp} PrContact^p_{i3} + \kappa_j Controls_{i3} + \phi_{jc}\right) \tag{3}$$

where y_{i3} indicates which party j respondent i reported voted for (or abstained) in wave 3; $Contact^p_{i3}$ indicates whether i was contacted by party p in the four weeks prior to wave 3; $PrContact^p_{i3}$ contains the predicted probability that voter i would be contacted by party p in wave 3, according to the estimation in equations 1 and 2; $Controls_{i3}$ includes a number of control variables (see Section 3.1); η_{jp} is the effect of being contacted by party p on the probability of voting for party j; π_{jp} measures the selection effect of party p on the probability of voting for party j; κ_j is a vector that captures the effect of the control variables on the

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[5]Alternative specifications that use fixed effects by constituency rather than random effects produce almost indistinguishable predicted probabilities. Therefore, random effects are preferred as they do not discard constituencies in which a party conducted no contacts in the period under study.

probability of voting for party j; ϕ_{jc} is a random effect by constituency-party designed to capture constituency-specific behavior; and $\Lambda(\cdot)$ is the cumulative logistic distribution function. Finally,

The inclusion of the predicted contact probabilities derived from equation 1 controls for the selection effect: the fact that parties are more likely to contact some voters instead of others. This allows for the estimate of η_{jp} to measure to effect of contact by party p on voting from party j free from this effect.

4 Results

4.1 Party Strategies in each Election

Before discussing the effects of party contacts on the probabilities of voting one way or another, it is useful to study which voters parties tend to contact. To do this, I estimate separate logistic models where the outcome is being contacted by the Conservative Party, the Labour Party, or other parties. Each model uses all three waves for each election (the two pre-election waves, plus the post-election wave). The models also include random effects by constituency.[6]

In terms of demographics characteristics, all parties were more likely to contact voters with university degrees, this being the strongest demographic predictor of party contacts in all three elections. Parties were also more likely to contact older voters (except third parties in 2019), voters who are male, and those who identify as being white British. In terms of income levels, both the Conservatives and third parties tended to target voters with higher incomes, whereas the Labour party did not; moreover, it tended to contact lower income voters in 2019. Both the Conservatives and third parties tended to target home owners (both outright owners and those with mortgages); whereas the Labour party was equally likely to contact them compared

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[6]Using fixed-effects by constituency instead of random effects produces very similar results. Random effects are thus preferred because they produce estimates with slightly smaller uncertainty and they do not remove observations from constituencies in which one of the parties did not contact any respondent.

Figure 1: Party Contact Strategies in Each Election
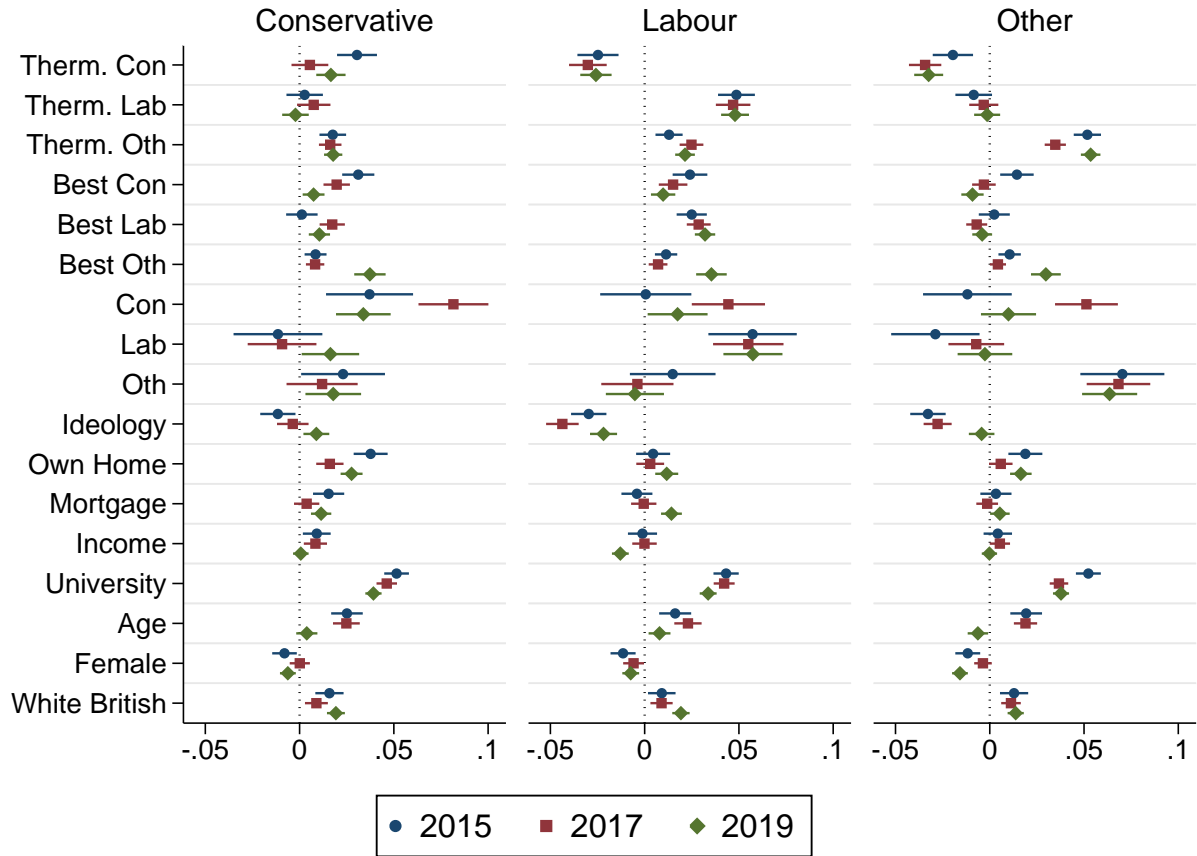
Non-binary variables are standardized; coefficients represent change in probability of contact from a one standard deviation increase in the corresponding variable. All models include random effects by constituency. All point estimates are average marginal effects with 95% confidence intervals derived from the model in equation 3.

to renters, with the exception of 2019 during which the Labour party behaved similarly to its contenders.

All parties were more likely to contact voters who identify with the party. This is the variable with the strongest effect on the probability of party contact. It strongly signals that parties seem to focus their efforts on mobilization to a large extent. When looking at cross-party appeals, some interesting figures arise. While in 2015 the Labour party did not target voters who identify as Conservative, they did do so in 2017 and to a lesser extent in 2019. It is likely that this change in the strategy of the party devised with the Brexit decision in mind. The same is evident in the contacting efforts of third parties during the 2017 election. Finally, while the Conservative party showed a slight tendency to target voters who identify with third parties (except in 2017), there is no evidence of the Labour party systematically targeting those who identify with third parties.

Voters' assessments of the parties, controlling for partisan identification, present a different picture. The Conservative party was more likely to contact voters who felt warmer towards it, while Labour and third parties tended to contact voters who felt colder towards the Conservatives. Warmer feelings towards the Labour party led to a higher likelihood of being contacted by Labour, but no effect for the Conservatives and third parties. Warmer feelings towards third parties led to a higher likelihood of contact from all parties, evidence that third parties tried to retain their potential supporters while Labour and the Conservatives tried to stave off potential defectors.

There certainly are some minor differences in the effects of the different variables on party contacts between the three elections, but the overall picture is one of striking similarity in the types of voters that were targeted by each party across the three elections. This is somewhat unexpected given the very different nature of the three elections under consideration, which saw the fortunes of the Labour party in England to improve significantly between 2015 and 2017 (accompanied by a notable decrease in third party voting), only to diminish in 2019 (accompanied by a renewed increase in third party voting).

4.2 Effectiveness of Party Contacts

Despite the rather similar strategies in terms of voter targeting in the three elections, discussed in Section 4.1, it is possible that the impact of local campaigning efforts could have been quite different. After all, the election results were quite different between the two elections. However, this is not what the evidence shows. On the contrary, the effectiveness of party contacts in the 2015, 2017, and 2019 elections bear a surprising similarity to each other.

Figure 2 shows how contact by the parties changes the probability of voting Conservative, Labour, Other party, or not voting for each election. All figures correspond to average marginal effects with 95% confidence intervals, estimated following the method described in Section 3.2.

Local campaigning efforts by each of the parties increases the probability that the voters targeted would vote for that party. Conservative contacts increase the probability of voting for the Conservative party by between 4.4% and 5.7%; those by Labour increase the probability of voting for Labour by between 5.3% and 6.0%; while those by other parties increases the probability of voting for them by between 7.8% and 9.2%, depending on the election.

The increase in Conservative support from Conservative contacts comes predominantly from a reduction in the probability of voting for third parties by between 2.2% and 3.3%, depending on the election. Some additional support for the Conservative party comes from a reduction in the level of abstention, of between 3.0% and 1.1%. There is no evidence at standard statistical significance levels that Conservative party contacts reduce support for the Labour party.

The increase in Labour support from Labour contacts also comes predominantly from a reduction in the probability of voting for third parties. This reduction is somewhat larger than that induced by Conservative contacts, reaching levels of between 2.7% and 4.3%, depending on the election. Labour also increases its support by reducing the level of abstentions, by between 0.6% and 1.9%, although this mobilization effect is not statistically significant for the 2015 General Election.

The increase in third party vote derived from third party contacts is predominantly derived from a reduction in the support for the two main parties, more strongly from Labour. Third

Figure 2: Effects of Party Contacts in England
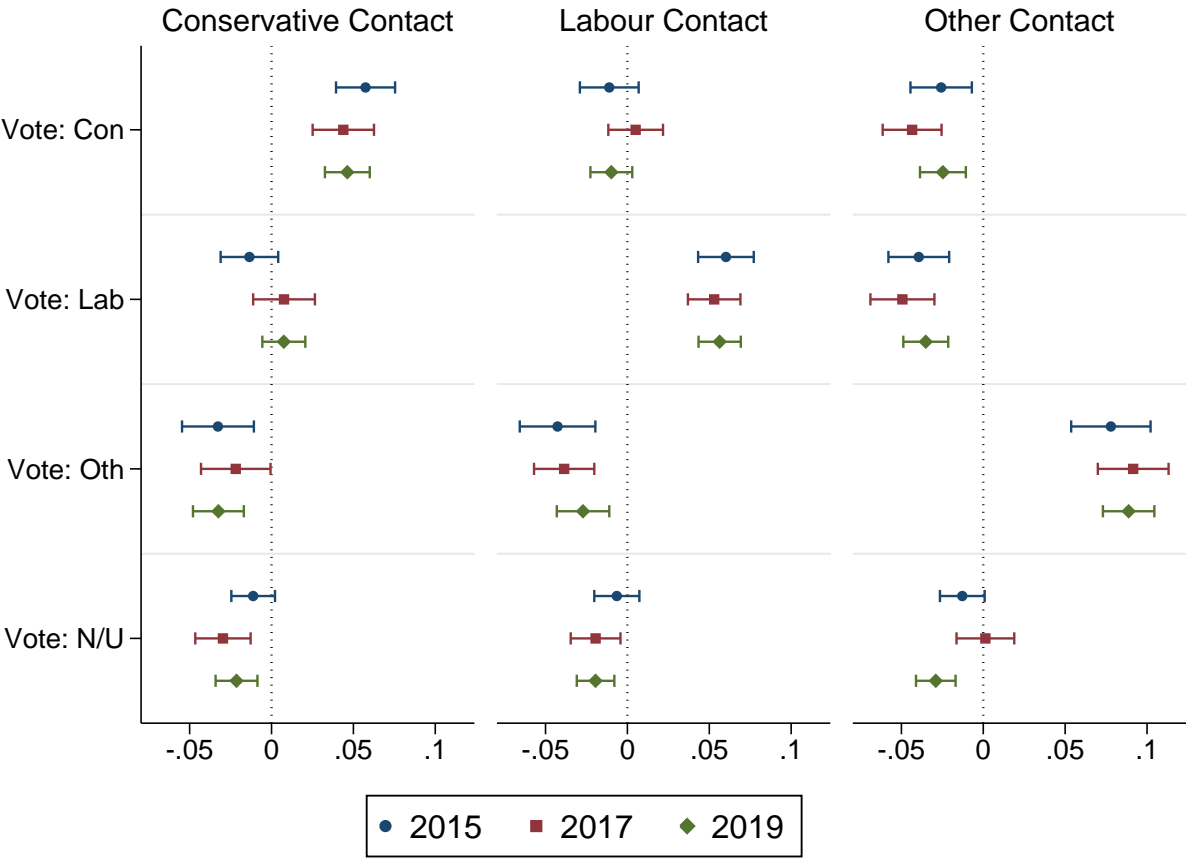
All point estimates are average marginal effects with 95% confidence intervals derived from the model in equation 3. Con stands for the Conservative party, Lab for the Labour party, Oth for all other parties, and N/U stands for non-voters. All effects are marginal effects.

party contacts reduced Conservative support by between 2.5% and 4.3%; while they reduced Labour support by between 3.5% and 4.9%. The strongest effects occur both in the 2017 General Election, likely as consequence of UKIP's and the Liberal Democrats' stances on Brexit providing the opportunity for very focused issue voting on one of the most high-salience issue during this election. In terms of reductions in abstentions, third parties do not seem to achieve the same levels of success as the main parties, only achieving a statistically significant reduction in abstention of 2.9% in 2019, and a marginally statistically significant reduction of 1.3% in 2015.

The evidence presented here shows that all parties benefit from directly appealing to voters in the form of party contacts. Both main parties (Conservatives and Labour) achieve similar results, while third parties tend to derive larger benefits. There is little evidence of the main parties picking off voters from each other, only from third parties. Third parties, on the other hand, manage to increase their support by reducing voting for the two main parties. In terms of mobilization, or reduction in abstentions, both main parties achieve some success, although mobilization gains are lower than the conversion gains from third parties. Third parties do not seem to generate the same level of mobilization gains from party contacts as the major parties, except for the 2019 General Election. The relatively smaller effects on mobilization should be interpreted with some care, however. There is evidence that BES tends to over-sample voters and respondents tend to over-report turnout (Mellon and Prosser, 2017). As such, the mobilization effects may be somewhat understated.

Most notable about these results is the degree of similarity in the effectiveness of party contacts across the three elections. This similarity stands in contrast to overall election results in England, which saw Conservative support increase from 40.9% in 2015 to 47.0% in 2019; Labour's vote share to increase significantly from 31.6% in 2015 to 41.9% in 2017, only to decrease noticeably again to 34.0% in 2019; and third party support to decrease from 27.5% in 2015 to 12.7% in 2017 only to increase again to 19.0% in 2019.

The fact that these large swings in the overall vote share of the parties is accompanied by

a relative stability in the effect of party contacts on vote choice suggests that party contacts play only a marginal role in the overall outcomes of elections. In fact, Figure 3 shows contact efforts by the Conservative party declined throughout the three elections, while its vote share increased. Labour contact efforts also declined while the party's vote share experienced increases and reductions. The case of third parties is different: the overall vote share of third parties follows a similar pattern to that of their contact efforts.

Figure 3: Intensity of Contact by Election & Party
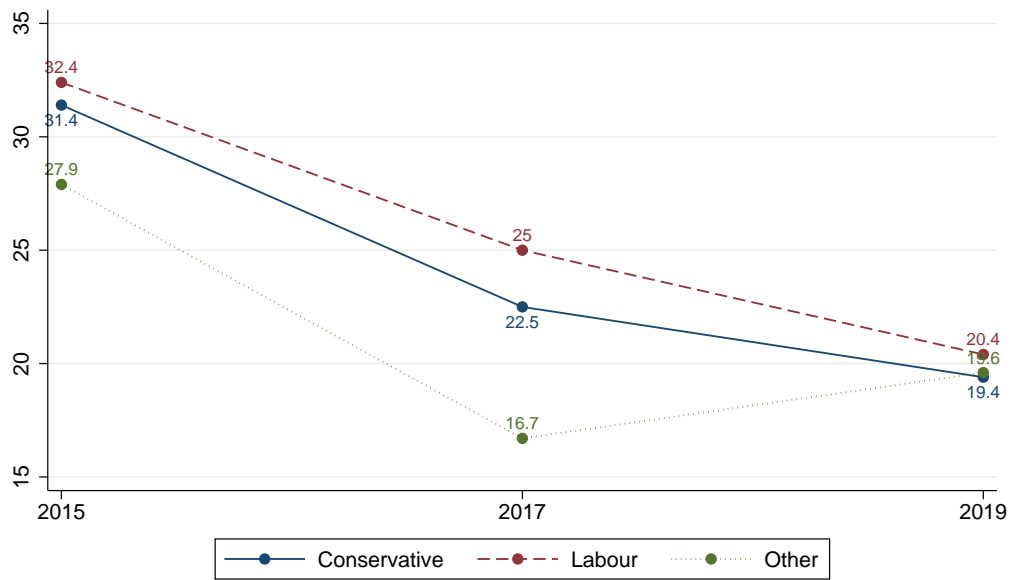
Values represent the average contact probabilities throughout the three waves corresponding to each election by each of the parties (all third parties grouped together), derived from BES self-reported contacts.

This is not to say that local campaigns do not matter. In fact, the evidence presented here suggests that they do: parties do manage to produce some degree of conversion and mobilization. However, the local campaigning efforts of the two main parties, Conservatives and Labour, seem to compensate each other and, to some extent, that of third parties. This leads to neither of them seemingly gaining the upper hand by direct appeals to voters. Overall, while local campaigns matter, and not conducting them would put a party at a disadvantage. Ultimate success, however, seems to lie in the parties' national campaigns and the national electoral environment.

The analyses for Scotland and Wales are presented in Appendices B and C. The findings are largely consistent with those for England, although fewer effects are statistically significant at standard significance levels. In the case of Wales this seems to be largely due to smaller sample sizes and consequently larger standard errors, but not in Scotland.

An important difference for Scotland is the presence and strength of the SNP in these three elections. The results for Scotland, presented in Figure B1 show that SNP contacts' increased support for the SNP is both 2017 and 2019. In both of these elections, a significant part of this additional support came from mobilization of abstainers. Additionally, for 2017 and somewhat for 2019, additional SNP support came at the expense of the Labour party.

5   Conclusion

The goal of a party's local campaign efforts are to drive support towards the party or to diminish the support of parties. To that end, parties will tend to put their efforts in contacting the voters they deem likely to be swayed in the desired way, if only to make efficient use of limited resources, both time and money. Parties' strategic decision to contact some voters (or types of voters) but not others implies that any analysis of local campaign effectiveness that does not account for this strategic decision may produce upward biased estimates: local campaigns will seem more effective than they really are, simply because parties are approaching the right type(s) of voters. Parties' contact strategies are not directly observed and measured by researchers, thus posing a methodological challenge in the estimation of campaign effectiveness.

To address this issue, I rely on panel data structure of the British Election Study. I argue that, at least during the time frame of the campaigns for the 2015, 2017, and 2019 UK General Elections, parties' contact strategies remained stable over time within each election, making panel data an appropriate method to tackle this challenge. To address the selection effect, I use information from the first two waves of each election to estimate a contact probability for each voter, which captures the desire of the parties' to contact them – the selection effect. Then, I use

these predicted probabilities and voting choices in the third and last wave for each election to estimate the effect of contact on the probability of voting for each of the parties and abstaining, controlling for the selection effect.

The results show that despite the very different electoral environments in the three elections considered here, the effectiveness of party contacts is largely the same across them. There is evidence of both conversion of certain voters as well as evidence of mobilization. The two major parties, the Conservatives and Labour, increase their support by contacting voters through a reduction in abstentions (mobilization) and the conversion of some third party supporters, especially in the case of Labour. There is no evidence that contact by the major parties converts supporters of the other major party. Contact by third parties shows little impact on mobilization (except for 2019); instead, third parties' contact efforts increase their support by reducing the probability that a voter will support one of the two main parties, with the sizes of these effects comparable between Labour and the Conservatives.

The similarity of the results across the three elections suggest that changes in the overall election results, and these elections are showed quite different outcomes, cannot be ascribed to the effect of local campaigns. In fact, the effectiveness of local campaigns remains largely constant over the three elections, and the intensity of these local campaigns is not sufficient to explain the overall election outcomes. The only exception is the intensity of local campaigning efforts by third parties, which seems to track their vote share slightly.

These results, however, do not imply that local campaigns do not matter. On the contrary, had a party refrained from engaging in this form of campaigning, the evidence presented here shows that their contenders would have gained an advantage in the election. As it stands, all parties engage in local campaigning, thus neutralizing the efforts of the other parties. The overall variation in vote share across elections are thus better explained by the overall changes in national campaigns and election environment than by the intensity and effectiveness of local campaigns.

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Appendix A   Results Tables

The following tables correspond to the estimates presented in Figure 2. All models include the control variables described in Section 3.1 as well as the predicted contact probabilities form earlier waves to control for the selection effect.

Table A1: Main Estimates 2015: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.057***	-0.013	-0.033**	-0.011
	(6.24)	(-1.51)	(-2.92)	(-1.65)
Labour Contact	-0.011	0.060***	-0.043***	-0.006
	(-1.21)	(6.94)	(-3.62)	(-0.92)
Other Contact	-0.026**	-0.039***	0.078***	-0.013
	(-2.69)	(-4.16)	(6.30)	(-1.84)
Observations	15355	15355	15355	15355

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A2: Main Estimates 2017: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.044***	0.008	-0.022*	-0.030***
	(4.59)	(0.79)	(-2.02)	(-3.44)
Labour Contact	0.005	0.053***	-0.039***	-0.019*
	(0.59)	(6.48)	(-4.12)	(-2.51)
Other Contact	-0.043***	-0.049***	0.092***	0.001
	(-4.74)	(-4.95)	(8.30)	(0.14)
Observations	9367	9367	9367	9367

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A3: Main Estimates 2019: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.046***	0.008	-0.032***	-0.021**
	(6.63)	(1.12)	(-4.10)	(-3.28)
Labour Contact	-0.010	0.056***	-0.027***	-0.019***
	(-1.50)	(8.56)	(-3.31)	(-3.33)
Other Contact	-0.025***	-0.035***	0.089***	-0.029***
	(-3.45)	(-5.02)	(11.07)	(-4.70)
Observations	16459	16459	16459	16459

t statistics in parentheses

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

Appendix B   Results for Scotland

The following figure and tables present the estimates from the model in equation 3 for Scotland. The model specification is identical to that from England, except for the inclusion of the SNP among the parties.

Table B1: Main Estimates 2015, Scotland: Average Marginal Effects

	Con	Lab	SNP	Oth	N/U
Conservative Contact	0.030	-0.029	0.009	-0.003	-0.006
	(1.72)	(-1.47)	(0.48)	(-0.18)	(-0.54)
Labour Contact	0.004	0.045*	0.006	-0.036	-0.019
	(0.23)	(2.45)	(0.37)	(-1.87)	(-1.67)
SNP Contact	-0.008	0.007	0.020	-0.025	0.006
	(-0.51)	(0.36)	(1.26)	(-1.27)	(0.45)
Other Contact	-0.012	-0.027	-0.024	0.078***	-0.015
	(-1.01)	(-1.45)	(-1.36)	(4.07)	(-1.22)
Observations	3406	3406	3406	3406	3406

t statistics in parentheses

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

Table B2: Main Estimates 2017, Scotland: Average Marginal Effects

	Con	Lab	SNP	Oth	N/U
Conservative Contact	0.016	-0.035	0.026	-0.011	0.004
	(0.92)	(-1.62)	(1.49)	(-0.65)	(0.22)
Labour Contact	-0.000	0.100***	-0.015	-0.070***	-0.015
	(-0.00)	(5.20)	(-0.87)	(-3.90)	(-0.98)
SNP Contact	0.030	-0.064**	0.067***	0.013	-0.047**
	(1.76)	(-2.82)	(3.95)	(0.75)	(-2.83)
Other Contact	-0.048*	-0.010	-0.045**	0.082***	0.021
	(-2.51)	(-0.51)	(-2.59)	(4.27)	(1.08)
Observations	1738	1738	1738	1738	1738

t statistics in parentheses

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

Table B3: Main Estimates 2019, Scotland: Average Marginal Effects

	Con	Lab	SNP	Oth	N/U
Conservative Contact	0.027	0.002	-0.027	-0.022	0.020
	(1.74)	(0.08)	(-1.40)	(-1.48)	(1.63)
Labour Contact	-0.041**	0.058**	-0.045*	0.042	-0.014
	(-2.62)	(3.25)	(-2.13)	(1.86)	(-0.86)
SNP Contact	-0.001	-0.039	0.093***	-0.014	-0.038*
	(-0.04)	(-1.89)	(4.86)	(-0.83)	(-2.35)
Other Contact	-0.003	-0.028	0.010	0.018	0.002
	(-0.14)	(-1.49)	(0.42)	(0.78)	(0.10)
Observations	2048	2048	2048	2048	2048

t statistics in parentheses

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

Figure B1: Effects of Party Contacts in Scotland
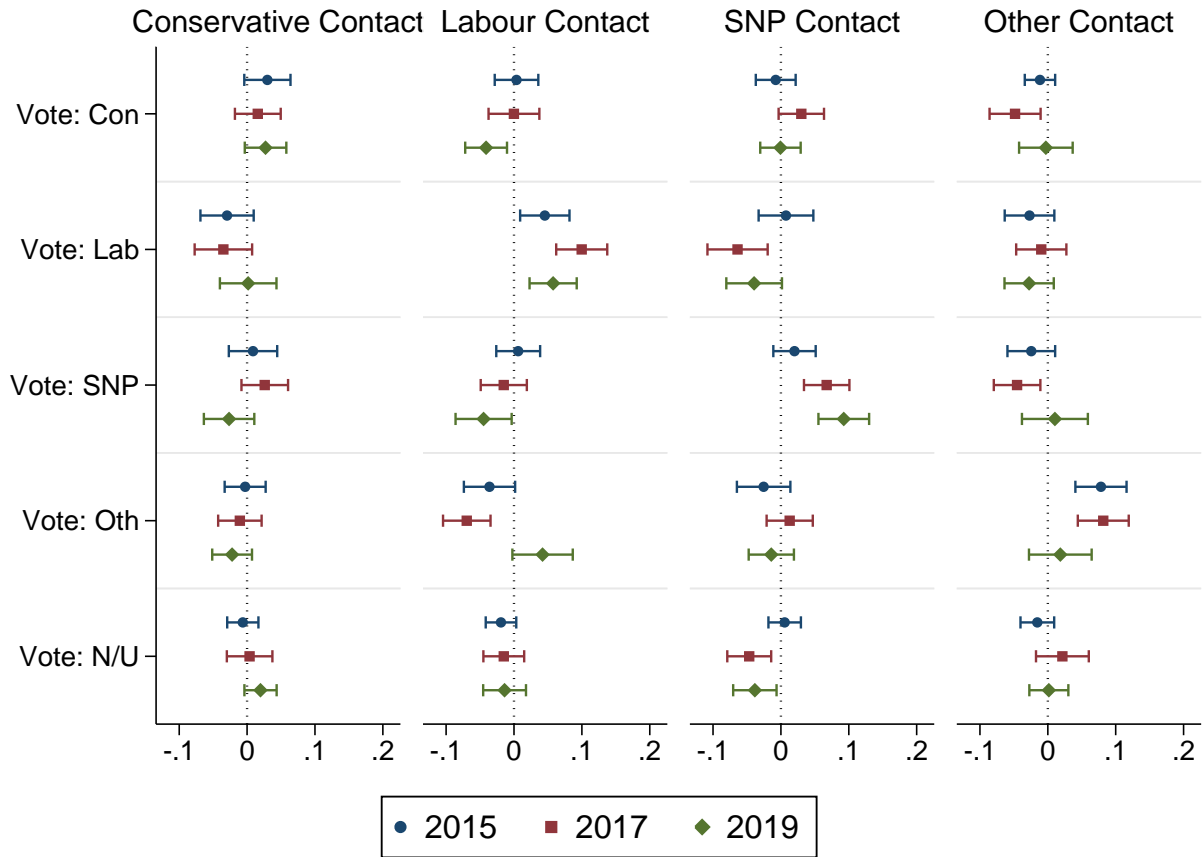
All point estimates are average marginal effects with 95% confidence intervals derived from the model in equation 3. Con stands for the Conservative party, Lab for the Labour party, Oth for all other parties, and N/U stands for non-voters. All effects are marginal effects.

Appendix C   Results for Wales

The following figure and tables present the estimates from the model in equation 3 for Wales. The model specification is identical to that from England, except for the inclusion of the PC among other parties.

Figure C1: Effects of Party Contacts in Wales
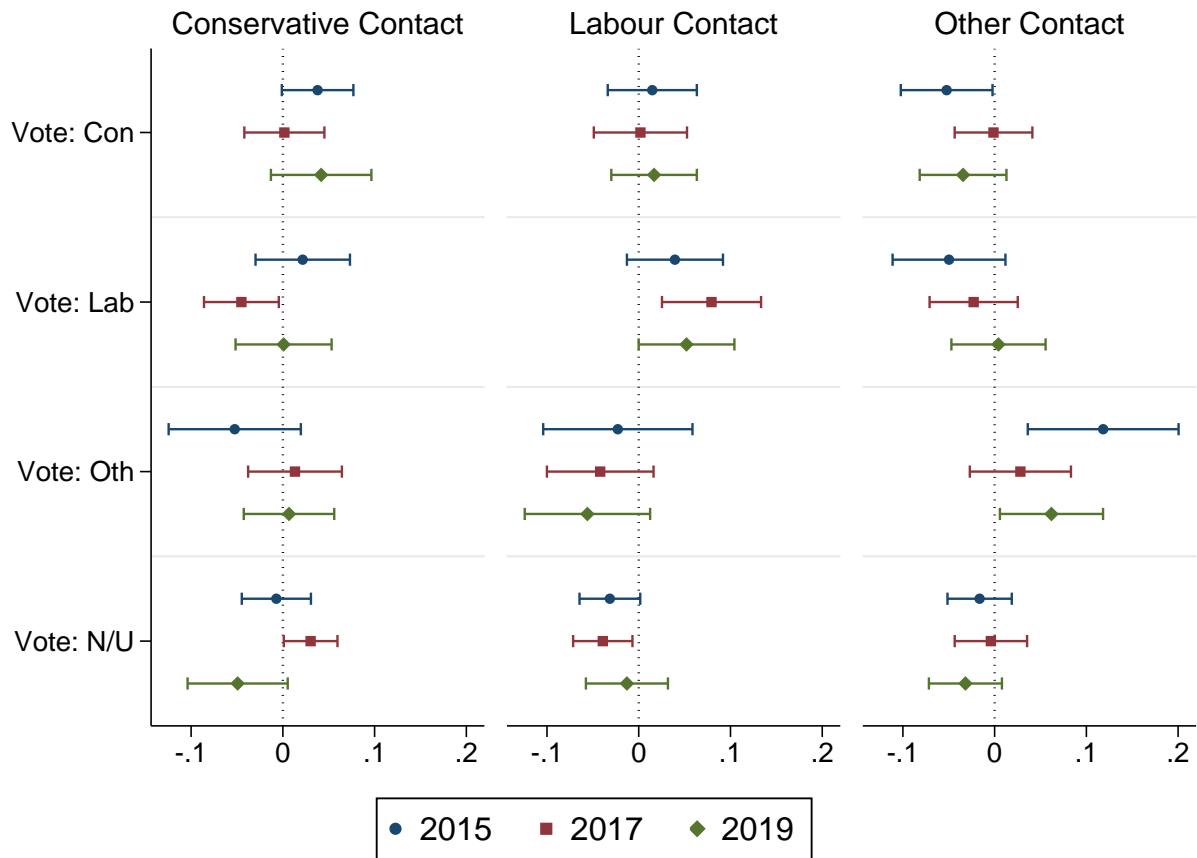
All point estimates are average marginal effects with 95% confidence intervals derived from the model in equation 3. Con stands for the Conservative party, Lab for the Labour party, Oth for all other parties, and N/U stands for non-voters. All effects are marginal effects.

Table C1: Main Estimates 2015, Wales: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.038	0.022	-0.052	-0.007
	(1.90)	(0.82)	(-1.43)	(-0.37)
Labour Contact	0.015	0.039	-0.023	-0.031
	(0.60)	(1.48)	(-0.55)	(-1.86)
Other Contact	-0.052*	-0.050	0.118**	-0.016
	(-2.05)	(-1.58)	(2.82)	(-0.91)
Observations	1948	1948	1948	1948

t statistics in parentheses

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

Table C2: Main Estimates 2017, Wales: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.002	-0.045*	0.013	0.030*
	(0.07)	(-2.17)	(0.51)	(2.03)
Labour Contact	0.002	0.079**	-0.042	-0.039*
	(0.07)	(2.88)	(-1.42)	(-2.38)
Other Contact	-0.001	-0.023	0.028	-0.004
	(-0.06)	(-0.93)	(1.00)	(-0.20)
Observations	959	959	959	959

t statistics in parentheses

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

Table C3: Main Estimates 2019, Wales: Average Marginal Effects

	Con	Lab	Oth	N/U
Conservative Contact	0.042	0.001	0.007	-0.049
	(1.49)	(0.03)	(0.27)	(-1.77)
Labour Contact	0.017	0.052	-0.056	-0.013
	(0.70)	(1.96)	(-1.60)	(-0.57)
Other Contact	-0.034	0.004	0.062*	-0.032
	(-1.43)	(0.16)	(2.16)	(-1.57)
Observations	1238	1238	1238	1238

t statistics in parentheses

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

Appendix D   Party Contact Strategies Marginal Effects

The following tables show the average marginal effects from the models described in equation
1 and presented in Figure 1. All models include random effects by constituency.

Table D1: Conservative Contact Predictors: Marginal Effects

	2015	2017	2018
Therm. Con	0.030***	0.005	0.017***
	(5.64)	(1.10)	(4.20)
Therm. Lab	0.003	0.008	-0.002
	(0.55)	(1.67)	(-0.60)
Therm. Oth	0.018***	0.016***	0.018***
	(4.88)	(5.33)	(7.21)
Best Con	0.031***	0.020***	0.007*
	(7.15)	(5.51)	(2.51)
Best Lab	0.001	0.017***	0.011***
	(0.29)	(5.08)	(3.66)
Best Oth	0.008**	0.008***	0.037***
	(2.86)	(3.32)	(8.79)
0b.PID	0.000	0.000	0.000
	(.)	(.)	(.)
1.PID	0.037**	0.082***	0.034***
	(3.15)	(8.63)	(4.57)
2.PID	-0.011	-0.009	0.016*
	(-0.95)	(-1.00)	(2.10)
3.PID	0.023*	0.012	0.018*
	(2.03)	(1.24)	(2.37)
Ideology	-0.012*	-0.004	0.009*
	(-2.42)	(-0.85)	(2.55)
Own Home	0.038***	0.016***	0.028***
	(8.20)	(4.35)	(9.30)
Mortgage	0.015***	0.004	0.011***
	(3.65)	(1.10)	(4.17)
Income	0.009*	0.008**	0.001
	(2.42)	(2.68)	(0.31)
University	0.051***	0.046***	0.039***
	(15.39)	(16.67)	(17.82)
Age	0.025***	0.025***	0.004
	(5.88)	(6.85)	(1.34)
Female	-0.008*	0.000	-0.006**
	(-2.40)	(0.04)	(-2.90)
White British	0.016***	0.009**	0.019***
	(4.15)	(2.89)	(7.96)
Observations	36355	46774	77925

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table D2: Labour Contact Predictors: Marginal Effects

	2015	2017	2018
Therm. Con	-0.025***	-0.030***	-0.026***
	(-4.45)	(-5.92)	(-6.11)
Therm. Lab	0.049***	0.047***	0.048***
	(9.77)	(10.04)	(12.71)
Therm. Oth	0.013***	0.025***	0.021***
	(3.52)	(7.73)	(8.05)
Best Con	0.024***	0.015***	0.010**
	(5.12)	(3.90)	(2.97)
Best Lab	0.025***	0.029***	0.032***
	(6.11)	(8.87)	(11.63)
Best Oth	0.011***	0.007**	0.035***
	(3.76)	(2.81)	(8.57)
0b.PID	0.000	0.000	0.000
	(.)	(.)	(.)
1.PID	0.001	0.044***	0.017*
	(0.05)	(4.48)	(2.15)
2.PID	0.057***	0.055***	0.057***
	(4.79)	(5.77)	(7.19)
3.PID	0.015	-0.004	-0.005
	(1.28)	(-0.39)	(-0.66)
Ideology	-0.030***	-0.044***	-0.022***
	(-6.20)	(-9.91)	(-5.96)
Own Home	0.004	0.003	0.012***
	(0.98)	(0.78)	(3.77)
Mortgage	-0.004	-0.000	0.014***
	(-0.98)	(-0.14)	(5.05)
Income	-0.001	-0.000	-0.013***
	(-0.29)	(-0.03)	(-5.67)
University	0.043***	0.042***	0.034***
	(12.66)	(14.85)	(14.69)
Age	0.016***	0.023***	0.008**
	(3.74)	(6.21)	(2.66)
Female	-0.011***	-0.006*	-0.007**
	(-3.37)	(-2.08)	(-3.25)
White British	0.009*	0.009**	0.019***
	(2.44)	(2.98)	(8.21)
Observations	36355	46774	77925

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table D3: Other Contact Predictors: Marginal Effects

	2015	2017	2018
Therm. Con	-0.020***	-0.034***	-0.032***
	(-3.58)	(-7.83)	(-8.26)
Therm. Lab	-0.009	-0.003	-0.001
	(-1.72)	(-0.81)	(-0.39)
Therm. Oth	0.052***	0.035***	0.054***
	(14.03)	(12.11)	(20.25)
Best Con	0.014**	-0.003	-0.009**
	(3.18)	(-0.97)	(-3.04)
Best Lab	0.002	-0.007*	-0.004
	(0.57)	(-2.44)	(-1.50)
Best Oth	0.011***	0.004*	0.030***
	(3.49)	(1.99)	(7.39)
0b.PID	0.000	0.000	0.000
	(.)	(.)	(.)
1.PID	-0.012	0.051***	0.010
	(-0.99)	(6.03)	(1.33)
2.PID	-0.029*	-0.007	-0.003
	(-2.41)	(-0.95)	(-0.35)
3.PID	0.070***	0.068***	0.064***
	(6.19)	(7.94)	(8.53)
Ideology	-0.033***	-0.028***	-0.004
	(-6.84)	(-7.30)	(-1.25)
Own Home	0.019***	0.006	0.016***
	(4.11)	(1.84)	(5.65)
Mortgage	0.003	-0.001	0.005*
	(0.78)	(-0.46)	(2.02)
Income	0.004	0.005	-0.000
	(1.11)	(1.96)	(-0.08)
University	0.052***	0.037***	0.038***
	(15.52)	(14.62)	(17.34)
Age	0.019***	0.019***	-0.006*
	(4.50)	(6.03)	(-2.27)
Female	-0.012***	-0.004	-0.016***
	(-3.47)	(-1.51)	(-7.41)
White British	0.013***	0.011***	0.014***
	(3.38)	(4.26)	(6.29)
Observations	36355	46774	77925

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix E   Parties' Contact Strategies

For the method utilized in this paper to be a valid approach to control for the selection effect, it is necessary for parties' contact strategies to remain constant throughout each campaign. That is, it requires that the individuals that parties decide to contact across the different survey waves have similar characteristics. Notice that variation in the intensity of the campaign as election day approaches does not violate this, as long as the types of individuals campaigns contact are similar across the survey waves. While it is not possible to test whether individuals contacted by the parties across the different survey waves have the same unobserved characteristics, it is possible to analyze whether their observed characteristics are the same (or similar).

To determine whether parties target the *same kinds* of voters across survey waves, I first compare the average characteristics of voters contacted by each party in each of the waves, using a t-test for the comparison of means. As an alternative method, I estimate the contact strategy of each party in each wave, and compare its predicting power for different waves. In both cases, I find that the types of voters contacted by the parties is essentially the same throughout the survey waves covered in the study, for all three elections. Finding no differences in observable characteristics does not prove that there are no differences in unobserved characteristics. However, it is unlikely that voters contacted in different waves will differ substantially, or at all, in their unobserved characteristics when they are extremely similar in terms of their observed ones.

E.1   Comparison of Means

For each wave, I calculate the average characteristics of voters contacted by a given party: μ_1, μ_2, and μ_3. Then, I produce t-test for the difference in means between different survey waves corresponding to the same election for each variable. Thus, $t_{1,2}$ is the t-test for a comparison of means between wave 1 and wave 2; $t_{1,3}$ is the t-test for a comparison of means between wave 1 and wave 3; $t_{2,3}$ is the t-test for a comparison of means between wave 2 and wave 3.

As can be seen from Tables E1 through E15, the t-tests reject any difference in means across contacted voters in each wave for all parties and both General Elections. In fact, the highest t-test is 0.42, well below standard critical values for statistical significance. This is even the case with the Feeling Thermometers towards the different parties, which are the variables most likely to reflect any change in the parties' contact strategies. Given the overwhelming evidence of no-difference in observed characteristics of voters contacted in the different survey waves, the assumption that the parties' contact strategies remain relatively constant throughout the time-frame of each election is very reasonable.

Table E1: Comparison of Means, Conservative Contact, 2015

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	53.09	52.14	53.34	0.06	-0.02	-0.08
Agreeableness	6.09	6.08	6.07	0.00	0.01	0.00
Conscientiousness	6.89	6.87	6.84	0.01	0.03	0.02
Extrovert	4.28	4.22	4.19	0.02	0.04	0.01
Neuroticism	3.55	3.57	3.58	-0.01	-0.02	-0.00
Openness	5.62	5.61	5.62	0.01	0.00	-0.01
White British	0.93	0.93	0.92	0.01	0.02	0.01
Female	0.47	0.48	0.49	-0.02	-0.03	-0.01
Own Home Outright	0.48	0.46	0.45	0.06	0.06	0.00
Home Mortgage	0.32	0.33	0.32	-0.03	-0.00	0.03
Renter	0.17	0.19	0.20	-0.04	-0.08	-0.03
Household Income	7.21	7.22	7.24	-0.00	-0.01	-0.01
Personal Income	5.27	5.17	5.20	0.03	0.02	-0.01
University Degree	0.53	0.54	0.55	-0.02	-0.03	-0.01
Con Thermometer	4.70	4.49	4.45	0.06	0.07	0.01
Lab Thermometer	3.79	4.03	4.08	-0.08	-0.09	-0.02
LD Thermometer	3.30	3.97	3.89	-0.26	-0.22	0.03
UKIP Thermometer	3.06	3.15	2.99	-0.03	0.02	0.05
Green Thermometer	3.82	4.05	4.26	-0.08	-0.15	-0.07

Table E2: Comparison of Means, Labour Contact, 2015

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	49.66	49.82	52.01	-0.01	-0.15	-0.14
Agreeableness	6.10	6.13	6.09	-0.01	0.01	0.02
Conscientiousness	6.69	6.75	6.74	-0.03	-0.02	0.01
Extrovert	4.25	4.19	4.18	0.03	0.03	0.00
Neuroticism	3.67	3.63	3.66	0.02	0.01	-0.01
Openness	5.74	5.70	5.67	0.02	0.04	0.02
White British	0.91	0.92	0.91	-0.03	-0.01	0.01
Female	0.49	0.49	0.49	-0.01	-0.00	0.01
Own Home Outright	0.39	0.40	0.40	-0.02	-0.04	-0.01
Home Mortgage	0.33	0.34	0.33	-0.02	0.00	0.02
Renter	0.25	0.23	0.24	0.04	0.03	-0.01
Household Income	6.82	6.97	6.98	-0.04	-0.04	-0.00
Personal Income	4.92	4.91	4.97	0.00	-0.02	-0.02
University Degree	0.55	0.55	0.55	0.01	0.02	0.01
Con Thermometer	2.94	3.26	3.38	-0.10	-0.13	-0.03
Lab Thermometer	5.27	5.02	4.89	0.08	0.12	0.04
LD Thermometer	3.20	3.80	3.77	-0.23	-0.22	0.01
UKIP Thermometer	2.18	2.40	2.52	-0.07	-0.11	-0.04
Green Thermometer	4.70	4.69	4.70	0.00	-0.00	-0.00

Table E3: Comparison of Means, Lib-Dem Contact, 2015

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	51.97	51.54	52.87	0.03	-0.06	-0.08
Agreeableness	6.07	6.08	6.07	-0.00	-0.00	0.00
Conscientiousness	6.80	6.84	6.81	-0.02	-0.01	0.02
Extrovert	4.24	4.25	4.16	-0.00	0.03	0.04
Neuroticism	3.56	3.54	3.59	0.01	-0.01	-0.02
Openness	5.79	5.73	5.70	0.04	0.05	0.02
White British	0.91	0.92	0.92	-0.03	-0.02	0.01
Female	0.47	0.48	0.49	-0.01	-0.02	-0.01
Own Home Outright	0.47	0.45	0.44	0.04	0.04	0.01
Home Mortgage	0.31	0.32	0.32	-0.03	-0.02	0.01
Renter	0.20	0.21	0.21	-0.03	-0.03	-0.00
Household Income	7.17	7.07	7.18	0.03	-0.01	-0.03
Personal Income	5.16	5.05	5.14	0.04	0.01	-0.03
University Degree	0.60	0.57	0.58	0.05	0.04	-0.01
Con Thermometer	3.54	3.81	3.87	-0.08	-0.10	-0.02
Lab Thermometer	4.28	4.42	4.40	-0.05	-0.04	0.01
LD Thermometer	4.06	4.38	4.19	-0.11	-0.05	0.07
UKIP Thermometer	2.31	2.58	2.63	-0.09	-0.10	-0.02
Green Thermometer	4.47	4.55	4.64	-0.03	-0.06	-0.03

Table E4: Comparison of Means, UKIP Contact, 2015

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	53.14	51.42	53.02	0.11	0.01	-0.10
Agreeableness	6.04	6.04	6.06	0.00	-0.01	-0.01
Conscientiousness	6.83	6.86	6.79	-0.01	0.02	0.04
Extrovert	4.32	4.19	4.13	0.06	0.09	0.03
Neuroticism	3.57	3.57	3.60	-0.00	-0.01	-0.01
Openness	5.61	5.66	5.64	-0.03	-0.02	0.01
White British	0.94	0.93	0.93	0.02	0.05	0.03
Female	0.44	0.47	0.47	-0.05	-0.06	-0.00
Own Home Outright	0.46	0.44	0.44	0.04	0.04	0.01
Home Mortgage	0.31	0.34	0.33	-0.06	-0.04	0.02
Renter	0.21	0.20	0.22	0.02	-0.02	-0.04
Household Income	6.70	7.03	7.07	-0.09	-0.10	-0.01
Personal Income	4.79	4.96	5.02	-0.06	-0.07	-0.02
University Degree	0.47	0.54	0.54	-0.13	-0.14	-0.01
Con Thermometer	4.14	3.95	4.05	0.06	0.03	-0.03
Lab Thermometer	3.76	4.22	4.28	-0.15	-0.16	-0.02
LD Thermometer	2.91	3.60	3.75	-0.26	-0.32	-0.06
UKIP Thermometer	4.35	3.65	3.41	0.18	0.26	0.07
Green Thermometer	3.58	4.03	4.31	-0.15	-0.25	-0.10

Table E5: Comparison of Means, Green Contact, 2015

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	46.97	49.53	52.03	-0.14	-0.30	-0.15
Agreeableness	6.06	6.10	6.07	-0.02	-0.01	0.02
Conscientiousness	6.51	6.70	6.67	-0.10	-0.08	0.02
Extrovert	4.26	4.29	4.21	-0.01	0.02	0.03
Neuroticism	3.65	3.70	3.65	-0.02	0.00	0.02
Openness	6.15	5.92	5.89	0.13	0.15	0.02
White British	0.88	0.92	0.90	-0.14	-0.07	0.06
Female	0.46	0.48	0.48	-0.04	-0.03	0.01
Own Home Outright	0.36	0.44	0.42	-0.16	-0.12	0.04
Home Mortgage	0.25	0.28	0.30	-0.08	-0.11	-0.03
Renter	0.36	0.26	0.26	0.22	0.22	-0.01
Household Income	6.48	7.04	6.97	-0.15	-0.14	0.02
Personal Income	4.47	4.92	4.94	-0.15	-0.15	-0.01
University Degree	0.59	0.60	0.60	-0.02	-0.03	-0.01
Con Thermometer	2.40	3.07	3.09	-0.21	-0.21	-0.01
Lab Thermometer	4.63	4.70	4.71	-0.02	-0.03	-0.00
LD Thermometer	3.14	3.84	3.88	-0.26	-0.27	-0.01
UKIP Thermometer	1.64	2.20	2.14	-0.19	-0.17	0.02
Green Thermometer	6.14	5.43	5.47	0.23	0.22	-0.01

Table E6: Comparison of Means, Conservative Contact, 2017

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	56.05	55.33	54.00	0.04	0.13	0.08
Agreeableness	6.11	6.13	6.11	-0.01	-0.00	0.01
Conscientiousness	6.97	6.93	6.85	0.02	0.07	0.05
Extrovert	4.13	4.11	4.06	0.01	0.03	0.02
Neuroticism	3.51	3.54	3.66	-0.01	-0.07	-0.05
Openness	5.56	5.56	5.59	-0.00	-0.02	-0.02
Female	0.48	0.48	0.51	-0.01	-0.07	-0.06
Own Home Outright	0.52	0.51	0.47	0.02	0.10	0.08
Home Mortgage	0.31	0.30	0.31	0.02	-0.01	-0.03
Renter	0.15	0.17	0.19	-0.05	-0.11	-0.06
Personal Income	5.27	5.21	5.01	0.02	0.08	0.06
University Degree	0.58	0.55	0.56	0.05	0.03	-0.01
Con Thermometer	5.20	4.90	4.19	0.09	0.29	0.20
Lab Thermometer	3.74	4.26	4.78	-0.16	-0.32	-0.16
LD Thermometer	3.84	3.86	3.95	-0.01	-0.04	-0.03
UKIP Thermometer	2.63	2.32	2.14	0.10	0.16	0.06
Green Thermometer	4.06	4.26	4.59	-0.07	-0.17	-0.11

Table E7: Comparison of Means, Labour Contact, 2017

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	52.43	52.62	52.67	-0.01	-0.01	-0.00
Agreeableness	6.16	6.15	6.13	0.01	0.02	0.01
Conscientiousness	6.69	6.73	6.74	-0.02	-0.03	-0.01
Extrovert	4.13	4.12	4.08	0.00	0.02	0.01
Neuroticism	3.71	3.69	3.72	0.01	-0.00	-0.01
Openness	5.77	5.67	5.67	0.06	0.06	0.00
Female	0.49	0.51	0.52	-0.03	-0.05	-0.02
Own Home Outright	0.44	0.45	0.43	-0.02	0.01	0.02
Home Mortgage	0.31	0.31	0.31	0.00	0.01	0.01
Renter	0.22	0.22	0.23	0.01	-0.03	-0.04
Personal Income	4.75	4.86	4.79	-0.04	-0.01	0.02
University Degree	0.56	0.55	0.55	0.02	0.02	-0.00
Con Thermometer	3.10	3.37	3.26	-0.08	-0.05	0.03
Lab Thermometer	5.77	5.81	5.76	-0.01	0.00	0.02
LD Thermometer	4.16	4.16	4.11	0.00	0.02	0.02
UKIP Thermometer	1.75	1.78	1.81	-0.01	-0.02	-0.01
Green Thermometer	5.23	5.11	5.05	0.04	0.06	0.02

Table E8: Comparison of Means, Lib-Dem Contact, 2017

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	53.94	53.91	53.45	0.00	0.03	0.03
Agreeableness	6.08	6.07	6.10	0.00	-0.01	-0.01
Conscientiousness	6.82	6.86	6.79	-0.02	0.02	0.04
Extrovert	4.16	4.14	4.07	0.01	0.04	0.03
Neuroticism	3.67	3.62	3.65	0.02	0.01	-0.01
Openness	5.78	5.69	5.72	0.05	0.03	-0.02
Female	0.49	0.49	0.50	-0.01	-0.02	-0.01
Own Home Outright	0.48	0.49	0.47	-0.02	0.03	0.04
Home Mortgage	0.31	0.29	0.30	0.04	0.02	-0.03
Renter	0.19	0.20	0.21	-0.04	-0.07	-0.03
Personal Income	5.11	5.20	5.07	-0.03	0.01	0.04
University Degree	0.60	0.61	0.60	-0.01	0.01	0.01
Con Thermometer	3.91	3.89	3.54	0.01	0.11	0.11
Lab Thermometer	4.56	4.86	5.22	-0.10	-0.21	-0.11
LD Thermometer	5.04	4.74	4.59	0.10	0.16	0.05
UKIP Thermometer	1.84	1.73	1.68	0.04	0.06	0.02
Green Thermometer	4.99	4.95	5.08	0.01	-0.03	-0.04

Table E9: Comparison of Means, UKIP Contact, 2017

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	56.21	56.16	54.23	0.00	0.13	0.12
Agreeableness	6.28	6.19	6.17	0.05	0.06	0.01
Conscientiousness	7.04	7.03	6.82	0.01	0.12	0.11
Extrovert	4.17	4.09	4.14	0.03	0.01	-0.02
Neuroticism	3.43	3.43	3.69	0.00	-0.12	-0.12
Openness	5.72	5.66	5.71	0.04	0.01	-0.03
Female	0.43	0.47	0.47	-0.07	-0.07	-0.00
Own Home Outright	0.52	0.54	0.44	-0.05	0.17	0.22
Home Mortgage	0.26	0.25	0.34	0.01	-0.17	-0.18
Renter	0.20	0.18	0.21	0.04	-0.02	-0.05
Personal Income	4.90	4.86	4.79	0.01	0.03	0.02
University Degree	0.50	0.49	0.54	0.02	-0.08	-0.09
Con Thermometer	5.03	4.63	3.65	0.12	0.41	0.29
Lab Thermometer	3.82	4.47	5.05	-0.20	-0.36	-0.17
LD Thermometer	3.34	3.65	3.86	-0.11	-0.18	-0.07
UKIP Thermometer	4.04	3.13	2.56	0.25	0.42	0.17
Green Thermometer	3.93	4.28	4.73	-0.11	-0.25	-0.14

Table E10: Comparison of Means, Conservative Contact, 2017

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	56.62	57.16	56.05	-0.03	0.04	0.07
Female	0.49	0.51	0.51	-0.03	-0.04	-0.01
Own Home Outright	0.51	0.51	0.49	0.01	0.04	0.03
Home Mortgage	0.24	0.25	0.25	-0.02	-0.02	0.01
Renter	0.24	0.24	0.26	0.01	-0.03	-0.04
Personal Income	5.44	5.52	5.36	-0.02	0.02	0.05
University Degree	0.56	0.56	0.58	0.01	-0.04	-0.05
White British	0.93	0.94	0.93	-0.04	-0.02	0.03
Con Thermometer	5.34	4.83	4.49	0.14	0.23	0.09
Lab Thermometer	2.88	3.36	3.52	-0.15	-0.20	-0.05
LD Thermometer	3.28	3.49	3.45	-0.07	-0.06	0.01
UKIP Thermometer	1.91	1.84		0.03		
Green Thermometer	3.94	4.37	4.72	-0.14	-0.26	-0.11
Brexit Thermometer	3.39	3.17	2.65	0.07	0.23	0.16

Table E11: Comparison of Means, Labour Contact, 2019

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	51.54	54.15	54.24	-0.16	-0.17	-0.01
Female	0.50	0.52	0.52	-0.04	-0.04	-0.00
Own Home Outright	0.37	0.42	0.44	-0.12	-0.14	-0.03
Home Mortgage	0.27	0.27	0.26	-0.01	0.01	0.02
Renter	0.36	0.30	0.30	0.13	0.14	0.01
Personal Income	5.08	5.29	5.20	-0.07	-0.04	0.03
University Degree	0.58	0.58	0.59	0.00	-0.00	-0.01
White British	0.88	0.91	0.92	-0.10	-0.13	-0.03
Con Thermometer	2.69	3.28	3.60	-0.18	-0.26	-0.09
Lab Thermometer	5.73	4.94	4.40	0.23	0.39	0.16
LD Thermometer	3.89	3.75	3.60	0.05	0.11	0.06
UKIP Thermometer	1.12	1.37		-0.11		
Green Thermometer	5.62	5.24	5.13	0.13	0.17	0.04
Brexit Thermometer	1.79	2.24	2.18	-0.15	-0.13	0.02

Table E12: Comparison of Means, Lib-Dems Contact, 2019

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	51.48	54.46	54.88	-0.18	-0.21	-0.03
Female	0.51	0.51	0.51	0.00	0.01	0.01
Own Home Outright	0.42	0.45	0.46	-0.08	-0.10	-0.02
Home Mortgage	0.26	0.26	0.25	0.01	0.02	0.01
Renter	0.32	0.29	0.28	0.07	0.08	0.01
Personal Income	5.74	5.76	5.53	-0.01	0.06	0.07
University Degree	0.65	0.63	0.63	0.04	0.06	0.02
White British	0.88	0.91	0.92	-0.09	-0.12	-0.03
Con Thermometer	3.38	3.68	3.83	-0.09	-0.13	-0.04
Lab Thermometer	4.09	4.01	3.89	0.03	0.06	0.04
LD Thermometer	4.90	4.40	3.98	0.17	0.32	0.14
UKIP Thermometer	1.09	1.37		-0.12		
Green Thermometer	5.33	5.14	5.15	0.06	0.06	-0.00
Brexit Thermometer	1.86	2.26	2.15	-0.13	-0.10	0.04

Table E13: Comparison of Means, Green Contact, 2019

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	55.33	54.37	53.71	0.06	0.10	0.04
Female	0.40	0.47	0.46	-0.15	-0.13	0.02
Own Home Outright	0.46	0.43	0.43	0.05	0.05	-0.00
Home Mortgage	0.22	0.26	0.26	-0.09	-0.09	-0.00
Renter	0.33	0.31	0.31	0.03	0.03	0.00
Personal Income	5.19	5.18	5.30	0.00	-0.03	-0.04
University Degree	0.52	0.54	0.61	-0.04	-0.19	-0.15
White British	0.92	0.92	0.90	0.01	0.07	0.06
Con Thermometer	5.44	4.12	3.72	0.38	0.48	0.11
Lab Thermometer	2.28	3.88	4.18	-0.48	-0.57	-0.09
LD Thermometer	2.16	3.14	3.38	-0.34	-0.43	-0.09
UKIP Thermometer	2.72	2.00		0.26		
Green Thermometer	3.13	4.42	4.93	-0.41	-0.58	-0.17
Brexit Thermometer	5.74	3.72	2.71	0.52	0.84	0.28

Table E14: Comparison of Means, Brexit Party Contact, 2019

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	55.33	54.37	53.71	0.06	0.10	0.04
Female	0.40	0.47	0.46	-0.15	-0.13	0.02
Own Home Outright	0.46	0.43	0.43	0.05	0.05	-0.00
Home Mortgage	0.22	0.26	0.26	-0.09	-0.09	-0.00
Renter	0.33	0.31	0.31	0.03	0.03	0.00
Personal Income	5.19	5.18	5.30	0.00	-0.03	-0.04
University Degree	0.52	0.54	0.61	-0.04	-0.19	-0.15
White British	0.92	0.92	0.90	0.01	0.07	0.06
Con Thermometer	5.44	4.12	3.72	0.38	0.48	0.11
Lab Thermometer	2.28	3.88	4.18	-0.48	-0.57	-0.09
LD Thermometer	2.16	3.14	3.38	-0.34	-0.43	-0.09
UKIP Thermometer	2.72	2.00		0.26		
Green Thermometer	3.13	4.42	4.93	-0.41	-0.58	-0.17
Brexit Thermometer	5.74	3.72	2.71	0.52	0.84	0.28

Table E15: Comparison of Means, UKIP Contact, 2019

	μ_1	μ_2	μ_3	$t_{1,2}$	$t_{1,3}$	$t_{2,3}$
Age	55.08	52.86	53.76	0.13	0.08	-0.05
Female	0.39	0.58	0.49	-0.38	-0.19	0.18
Own Home Outright	0.35	0.47	0.41	-0.24	-0.13	0.11
Home Mortgage	0.14	0.26	0.25	-0.30	-0.27	0.02
Renter	0.52	0.27	0.34	0.52	0.38	-0.14
Personal Income	5.27	5.51	5.39	-0.07	-0.04	0.04
University Degree	0.36	0.56	0.56	-0.40	-0.39	0.01
White British	0.84	0.87	0.88	-0.10	-0.14	-0.04
Con Thermometer	4.56	3.66	3.74	0.27	0.23	-0.02
Lab Thermometer	3.07	4.33	3.98	-0.35	-0.26	0.10
LD Thermometer	2.66	3.50	3.44	-0.28	-0.27	0.02
UKIP Thermometer	4.33	2.60		0.51		
Green Thermometer	3.78	4.79	4.99	-0.32	-0.37	-0.06
Brexit Thermometer	5.36	3.46	3.00	0.51	0.64	0.12

E.2   Contact Strategies Test/Predict

While the comparison of means show no significant differences for any party in any of the variables considered, it is possible that there are more complex observable differences that a comparison of means could fail to discover. For this reason, I rely on a test/predict method to measure change in parties' contact strategies – or lack thereof.

For each survey wave I split the sample into a training (E_k, for *estimation*, $k = 1, 2, 3$) and test (T_k, for *test*, k=1,2,3) sets. Then, for each training set, I estimate a random forest where the outcome is being contacted by the party and the input variables are all those in the previous subsection. The use of random forests allows for capturing non-linearities in how the different variables affect party contacts, thus providing a more sophisticated comparison than that obtained from the comparison of means in the previous section. After estimating the random forests for each set, I predict the outcomes for each of the test sets. Finally, for each test set, I compare whether the predicted probabilities of contact using the Index of Agreement (Willmott, 1981).

$$f_k(\cdot) \;=\; RF(E_k), \quad k =, 1, 2, 3 \tag{4}$$

$$p_k^r \;=\; f_k(T_r), \quad k = 1, 2, 3, \quad r = 1, 2, 3 \tag{5}$$

$$a_{k,j}^r \;=\; 1 - \frac{\sum (p_k^r - p_j^r)^2}{\sum (|p_k^r - \overline{p}_j^r| + |p_j^r - \overline{p}_j^r|)^2} \tag{6}$$

Thus $a_{i,j}^r$ the Index of Agreement in prediction for test set r using the random forests that relied on training sets i and j, where $\overline{p}_k^r$ is the average predicted probability in test set r using the random forest estimated with random forest k. The Index of Agreement varies between 0 and 1, with 1 being perfect agreement, and 0 indicating no agreement at all.

Overall, the measures of agreement are quite similar to each other, suggesting that the contact strategies that parties used in the different campaign waves are relatively similar. The only deviation from agreement is that for UKIP in 2017, where agreement is relatively low and

Table E16: Index of Agreement of Contact Strategies

| | | 2015 | | | 2017 | | | 2019 | | |
		T_1	T_2	T_3	T_1	T_2	T_3	T_1	T_2	T_3
	f_1 v. f_2	0.48	0.57	0.60	0.55	0.53	0.61	0.66	0.48	0.53
Conservative	f_1 v. f_3	0.54	0.58	0.61	0.53	0.56	0.58	0.66	0.48	0.53
	f_2 v. f_3	0.56	0.58	0.54	0.62	0.55	0.59	0.73	0.48	0.52
	f_1 v. f_2	0.52	0.56	0.66	0.62	0.59	0.68	0.78	0.47	0.49
Labour	f_1 v. f_3	0.58	0.58	0.66	0.61	0.66	0.62	0.77	0.47	0.49
	f_2 v. f_3	0.60	0.59	0.58	0.78	0.61	0.63	0.79	0.47	0.49
	f_1 v. f_2	0.51	0.57	0.63	0.61	0.60	0.71	0.78	0.56	0.65
Lib-Dem	f_1 v. f_3	0.55	0.57	0.63	0.55	0.65	0.63	0.75	0.55	0.65
	f_2 v. f_3	0.59	0.56	0.53	0.69	0.55	0.61	0.81	0.52	0.62
	f_1 v. f_2	0.45	0.52	0.57	0.37	0.42	0.52	0.58	0.50	0.62
UKIP	f_1 v. f_3	0.47	0.52	0.59	0.31	0.46	0.48	0.55	0.62	0.51
	f_2 v. f_3	0.50	0.51	0.49	0.46	0.34	0.40	0.81	0.40	0.43
	f_1 v. f_2	0.49	0.54	0.67				0.59	0.53	0.65
Green	f_1 v. f_3	0.48	0.54	0.65				0.50	0.53	0.58
	f_2 v. f_3	0.52	0.47	0.52				0.68	0.42	0.51
	f_1 v. f_2							0.57	0.52	0.58
Brexit	f_1 v. f_3							0.51	0.53	0.55
	f_2 v. f_3							0.68	0.42	0.48

also differs somewhat across testing sets. Despite this, the evidence suggests that there are little differences in the contact strategies used by the parties all three General Elections, as captured by the random forests.

Appendix F   Spending & Limits

Candidate spending in the UK is regulated for two separate periods: the short and the long campaign.[7] The short campaign begins on the day after parliament is dissolved or when a candidate is formally adopted (whichever is later) and ends on election day. The long campaign covers a period that usually includes many months before parliament is dissolved, although its length will vary depending on whether parliament runs its full term or not.

For the short campaign in 2015, the spending limit is set at £8,700 in each constituency plus 6p per elector in borough constituencies (typically denser urban areas) or 9p per elector in county constituencies (typically more sparse rural areas). For the long campaign, the limit is set at £30,700 in each constituency, plus 6p per elector in borough constituencies and 9p per elector in county constituencies. Similar limits apply for the 2017 and 2019 elections. The following analysis is limited to the 2015 and 2017 elections, due to data availability constraints.

Figures F1 and F2 present histograms of the spending of each candidate in each constituency as a percentage of the total spending limit. As the histograms show, for 2015 it was uncommon that a candidate of any party would spend anywhere near the limit. This is even the case for the larger parties which are competitive in many constituencies. During the 2017 election it was more common for candidates to reach the spending limits. Nonetheless, there are a significant number of constituencies in which candidates do not reach these limits nor are close to them. This suggests that the constituency spending limits set up by UK regulations are not biting. This, in turn, could be a reflection of candidates not finding constituency campaigning sufficiently worthy, which is consistent with the relatively small effects found in the main results of this paper.

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[7]See, for example, Johnston et al. (2013)

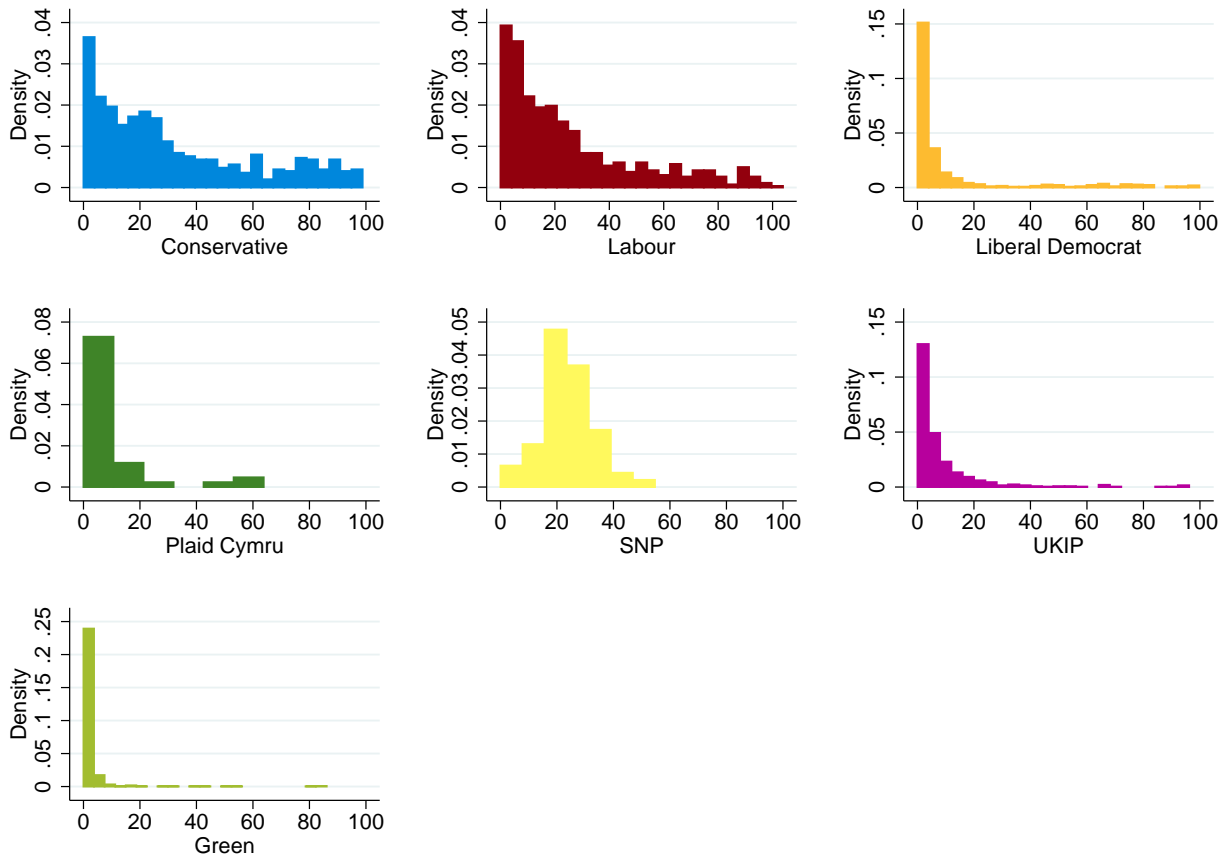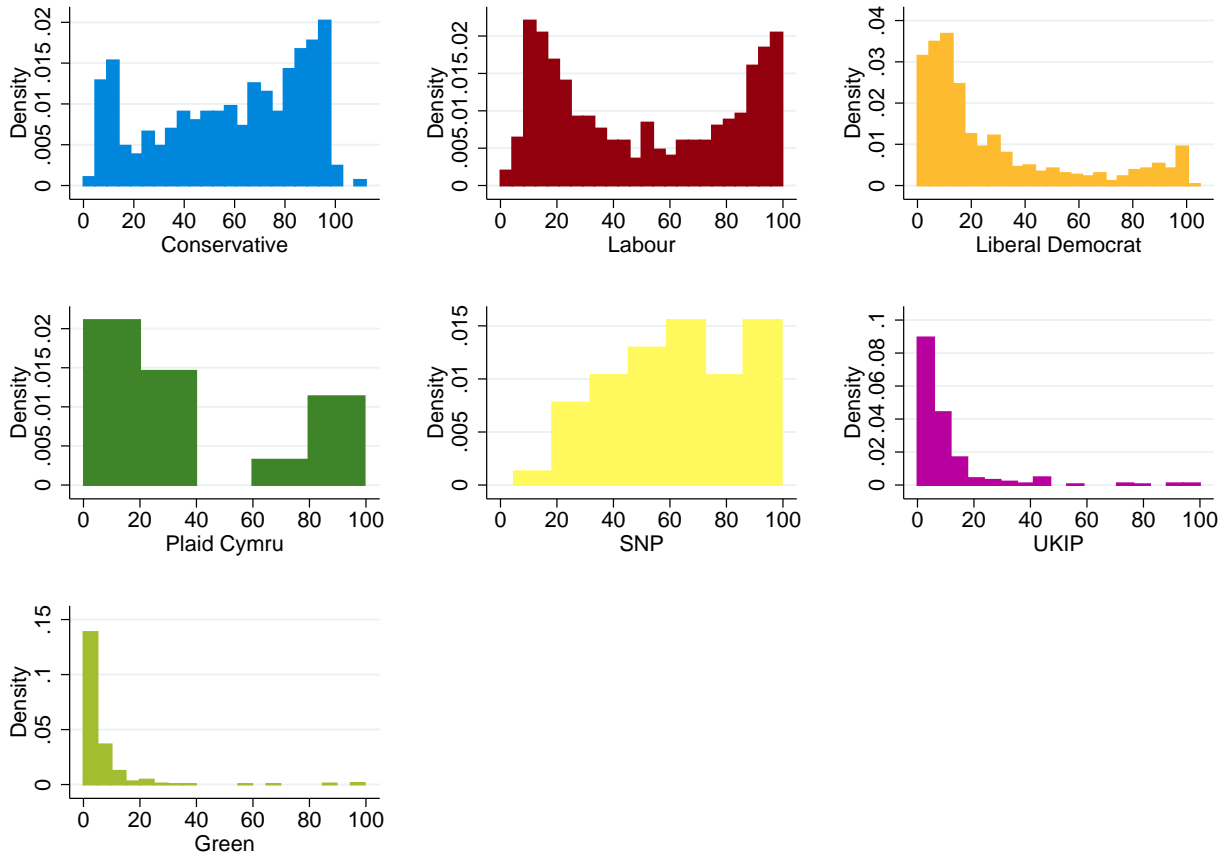Figure F1: Spending as % of Spending Limit, 2015

Figure F2: Spending as % of Spending Limit, 2017

Appendix G   Validation of Contact Data

A concern in utilizing voters self-reports of being contacted by parties is that they may not reflect contacts actually made by parties; voters may incorrectly remember a contact that did not occur, or forget a contact that did (see, for example, Fieldhouse and Cutts, 2009; Mellon and Prosser, 2017). Validating the contacts received by a particular voter is not possible with available data. However, it is possible to validate party contacts in a more aggregate manner by comparing it to campaign spending. That is, local campaigns that spend more money should be the ones that make a larger effort in contacting voters. It should be noted, however, that a campaign's outreach effort does not exclusively depend on campaign spending. A substantial amount of campaigning is often performed on a volunteer basis (see, for example, Denver and Hands, 1997). Moreover, Fisher et al. (2014) show that free campaigning (voluteering, etc) has an independent impact on electoral results. Thus campaign spending cannot fully capture a party's effort. However, it is reasonable to expect that these alternative ways of campaigning that do not rely on funding will be correlated with funding itself.

Thus, it is expected that campaign contacts to be correlated with campaign spending. To validate contact data for each constituency, I calculate the percentage of voters who report having been contacted by each of the parties in each constituency. I then compare the constituency level contact rate (derived from voters' self-reports) with campaign spending at the constituency level. Presumably, if a particular party is contacting more voters, it should be reflected in higher campaign spending. Due to data availability, this analysis is restricted to the 2015 and 2017 General Elections

Figure G1 shows the effect of a one-standard deviation increase in a party's spending on the standardized percentage of voters contacted. For example, for 2015 it shows that a 1 standard deviation increase in Conservative spending is associated with a 0.95 standard deviation increase in the percentage of voters contacted by the Conservative party. The results overall show that there is a positive and significant association between campaign spending and self-reported contact at the constituency level. For the more established national parties (Conservative,

Labour, Liberal Democrats) these standardized associations are close to 1, while for Plaid Cymru they are significantly above 1. For the other parties (SNP, UKIP and Green) they are below 1, but still show a positive and significant association between the two variables. For 2017, the associations are somewhat smaller overall, but still strongly positive and statistically significant.

Figure G1: Relationship between Contacts and Spending for 2015 (upper) and 2017 (lower)
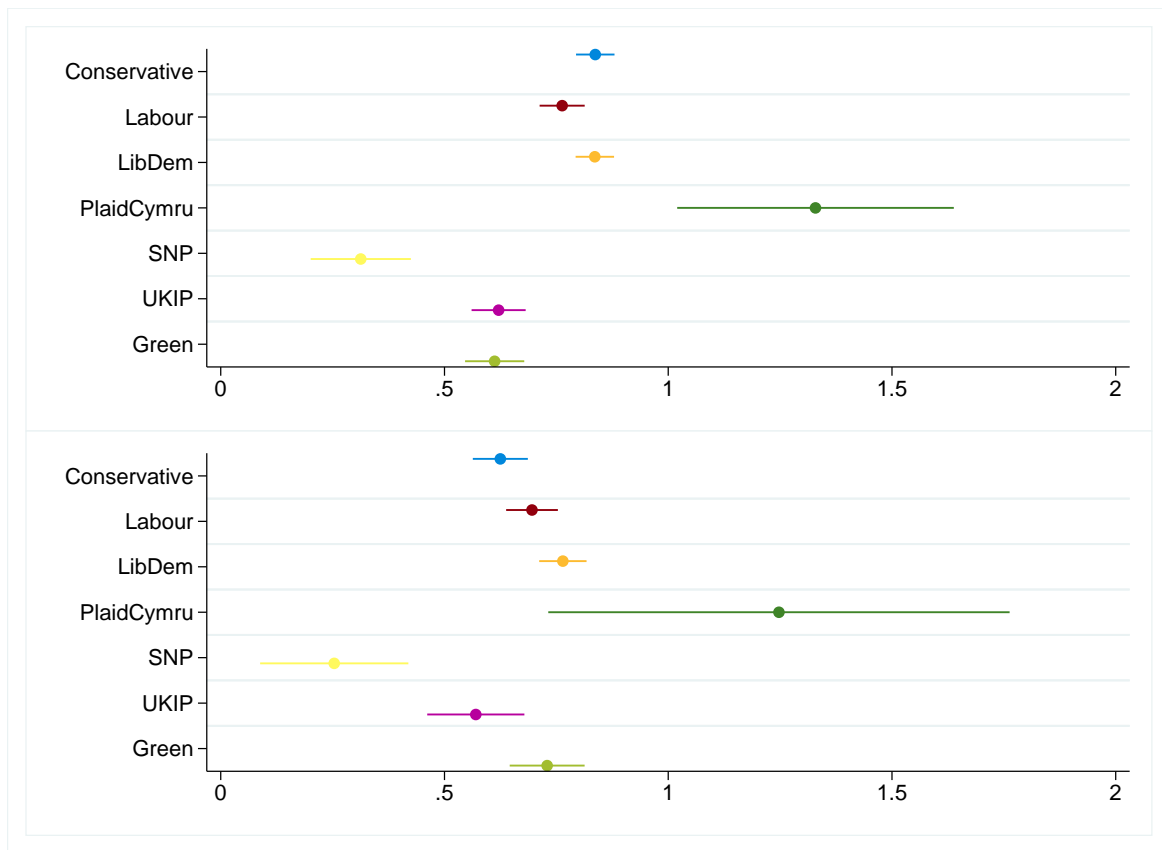
Figures G2 and G3 show the scatter plots of the standardized campaign spending and voter self-reported contact by constituency. Visual inspection of the scatter plots confirm the results previously presented in Figure G1

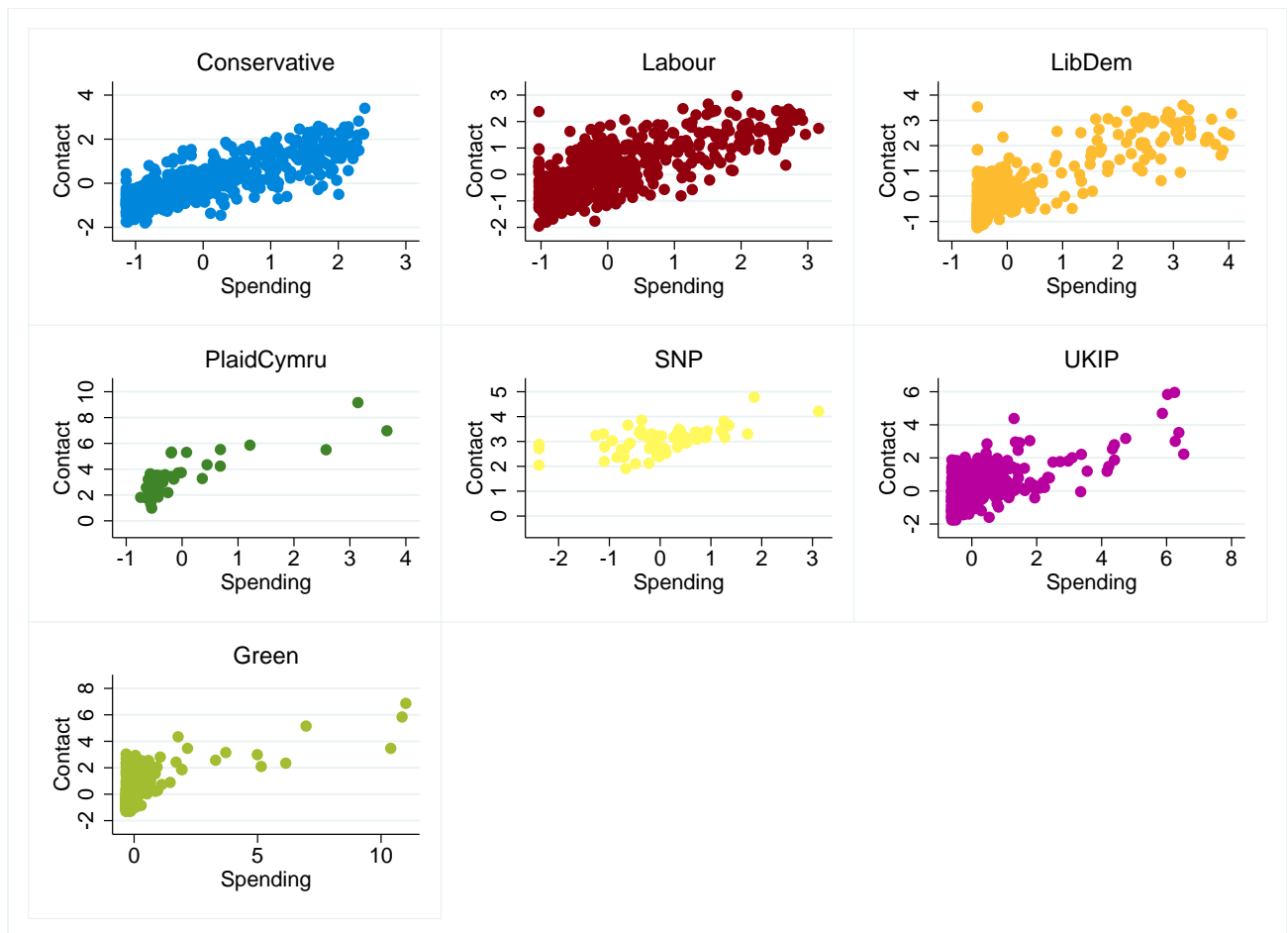Figure G2: Standardized Contact and Spending 2015, Scatterplots by Party

Figure G3: Standardized Contact and Spending 2017, Scatterplots by Party