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The political effects of London's Ultra Low Emission Zone

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Abstract

The unexpected defeat of the Labour Party in a recent by-election has been attributed to the expansion of London's Ultra Low Emission Zone (ULEZ). Employing a difference-in-difference methodology across two phases of ULEZ expansion and examining three sets of elections, we find inconsistent political effects. In all three election scenarios, we observe relatively minor effects for the incumbent Labour Party. Support for both the Green Party and the Conservative Party fluctuated. Complementary individual-level analysis using *UKHLS* data reveals no discernible political party support effects stemming from the ULEZ expansion announcement in 2017 on those with non-compliant cars relative to the rest of the population. Our study suggests caution in generalising the political effects of green policies from mixed evidence in a single case, while contributing to the growing body of research on the complexities of public response to environmentally focused legislation.

Keywords

British politics, green transition, political behaviour, ULEZ

Introduction

The literature on the political effects of environmental policies remains unclear. On the one hand, most 'green' policies' have distributional consequences, with some individuals losing out, possibly blaming the incumbent responsible for economic losses (Stokes, 2016), and potentially turning to radical parties to vent their frustration (Colantone et al., 2024; Otteni and Weisskircher, 2021; Voeten, 2025). On the other hand, a large proportion of individuals support pro-environmental policies (Arıkan and Günay, 2021; Baiardi, 2023) and may reward those responsible, or green parties who support the agenda (Otteni and Weisskircher, 2021). In this article, we test these prevailing theoretical propositions empirically by studying the case of the London Ultra Low Emission Zone (ULEZ) expansion.

ULEZ expansion is a highly salient, and contentious issue in the United Kingdom, particularly London, as highlighted by the 2023 by-election in Uxbridge and South Ruislip. The Conservative Party was expected to lose the seat, but prevailed, with many

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in the media, and the opposition Labour leader, blaming the party's defeat on the forthcoming expansion of ULEZ into the constituency (Ferguson and Thomas, 2023). Potentially buoyed by this political win, the Conservative government would later go on to dilute other 'green transition' policies, including delaying the ban on the sale of new petrol and diesel cars from 2030 to 2035.[1] Some commentators interpreted the Uxbridge and South Ruislip by-election as the event that marked the UK's political retreat from net zero (Ganesh, 2023).

Yet, whether this Conservative victory in Uxbridge and South Ruislip was because of ULEZ is debatable. The Labour candidate, Danny Beales, was not pro ULEZ expansion (despite the Labour Mayor introducing the expansion), arguing during hustings that it was 'not the right time'.[2] Casting further doubt on the 'ULEZ effect', Uxbridge and South Ruislip's MP had been Conservative since 1970, and a year later in the 2024 General Election Labour, albeit with a thin margin, won the seat.[3] Moreover, to what extent Uxbridge and South Ruislip provides an appropriate case study for the effects of ULEZ on London is unclear.

The ULEZ expansion to cover all London Boroughs is the latest policy that requires traffic to pay to access London. We use the natural experiment of two phases of ULEZ expansion to analyse the political implications. In 2017, it was announced that, pending consultation, ULEZ was to be expanded to the North and South Circular roads (covering approximately 4 million Londoners), and in 2022, a policy was put forward to cover all London Boroughs (covering approximately another 5 million people). ULEZ requires all owners of vehicles that do not meet Euro emissions standards, for example, diesel cars need to meet Euro 6 or better, which became mandatory for new cars from September 2015 onwards, to pay £12.50 per day to access the zone.

Our study adds to just one other article on the political effects of car restriction policies, where owners of non-compliant vehicles were shown to be more likely to vote for the populist right (Colantone et al., 2024). Colantone et al.'s work focuses on the losers from 'green' legislation, whereas we investigate the net reaction at an aggregate level as well as any political effect for owners of non-compliant cars. Our contribution is thus to add to this very limited evidence base on the political effects of car restriction policies and a larger but still limited set of work on the political effects of 'green' policies.

Using a difference-in-difference design in three elections (two local elections and one Mayoral election) across two phases of expansion, we find inconsistent political effects at the electoral ward level. In the three elections, there were only minor, and inconsistent, effects for the Labour Party. Similarly, the effect of ULEZ expansion on Green Party support fluctuated across our designs. The Conservatives lost support in the local and Mayoral elections after the first ULEZ expansion, but we find a null effect in the 2022 local elections. Using individual-level data based on the first expansion, we find no significant effect on the change of support for any of the political parties for owners of non-compliant cars relative to the rest of the population.

We expected the effects of ULEZ to be substantial and consistent, given the anecdotal evidence from the Uxbridge and South Ruislip by-election and findings from car restrictions in Italy (Colantone et al., 2024). However, our findings do not build upon this evidence, as the effects observed are inconsistent and relatively minor. This suggests that generalising the overall political impact of the 'green' transition may be challenging, particularly when evidence regarding the political effects of a single policy type in a single city remains mixed.

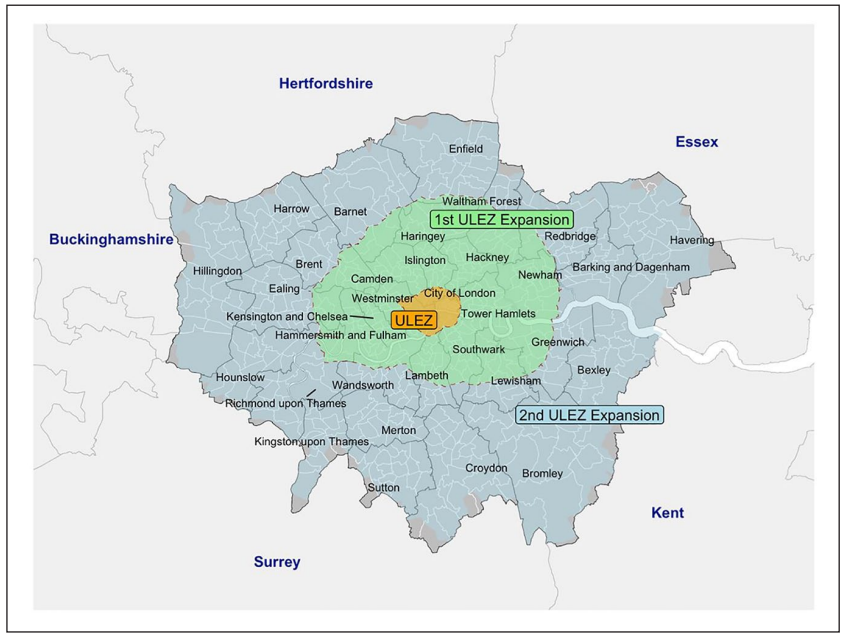

Figure 1. Greater London 2022 electoral wards with original ULEZ (orange), first (green), and second expansion (light-blue).

The case of London's ULEZ

The remit of the London Mayor includes transport policy delivered through Transport for London. London first saw the introduction of a Congestion Charge to reduce traffic in 2003 (the orange area in Figure 1), which covers the same area in Central London as the initial ULEZ, initiated by then Conservative Mayor Boris Johnson in 2013 to reduce pollution. Labour Mayor Sadiq Khan was responsible for subsequent ULEZ expansion policies. The first expansion, the green area in Figure 1, was to the North/South Circular road, and the second expansion was to the remaining London boroughs, the light-blue areas in Figure 1. With this expansion, ULEZ covers almost all of Greater London, with only the dark grey areas in Figure 1 remaining outside the ULEZ boundary. Khan won the London Mayoral election in May 2016 and would be re-elected in May 2021. We summarise the timetable of traffic measures in London in Figure 2. A more detailed account of the developments and actors involved can be found in Appendix A.

To be ULEZ compliant petrol cars must be Euro 4 standard, which has been mandatory for new cars after 2005, and diesel cars must be Euro 6 standard, which came into force for new cars in September 2015. Similar standards apply to motorcycles, light vans, and other vehicles. Anyone driving in ULEZ must pay £12.50 per non-compliant vehicle per day, facing a fine of £180 if not paid. Prior to the announcement of the North/South Circular expansion, 39% of vehicles in the proposed zone were compliant, by October 2021, prior to the launch, 86.9% were compliant, and a year after the expansion 94.4% were compliant (Mayor of London, 2023). 90% of cars in outer London, affected by the 2023 expansion, were compliant (Transport for London, 2023). While the scale of those affected by the latest expansion is relatively small, ULEZ has remained a politically

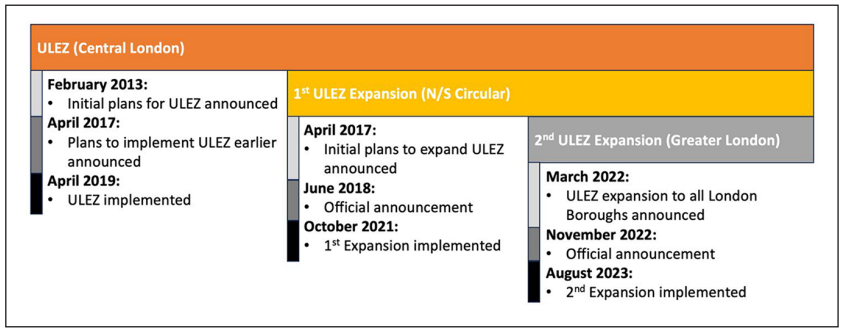

Figure 2. Timetable of ULEZ expansion.

salient issue in both Mayoral and local elections. It may be that drivers are unaware of the high compliance rate, and whether they will be required to pay. In addition, those who lose out with non-compliant cars are likely to be the most vocal, and there is a small but noisy group who are against ULEZ on the principle of being anti-road pricing (Mabbett, 2023). The costs to those with non-compliant vehicles can be mitigated through compensation schemes. In most cases, this is up to £2000 – which may be insufficient to replace with a compliant car – and was originally means-tested.

Which political parties do voters blame or credit?

Previous work studying the political effects of vehicle charging zones concentrated on those who 'lost-out'. Colantone et al. (2024) found that in Milan banned car owners were 13.5 percentage points more likely to vote for the measure opposing Lega party. There is limited empirical work showing the effects of other 'green' policies on political outcomes. Notably, wind turbine construction in one's vicinity decreases support for the incumbent (Stokes, 2016), or polarises through increased radical right support and green support (Otteni and Weisskircher, 2021), and natural gas taxation (with revenues used to subsidise renewables) increases radical right support for those effected (Voeten, 2025).

Although ULEZ imposes direct costs for individuals with non-compliant vehicles, benefits of reduced pollution are experienced by all (Hajmohammadi and Heydecker, 2022). Consequently, voters may blame or credit parties pursuing green policies. We think about this blame or credit in two ways. First, there may be aggregate effects; we examine net voting behaviour at the ward-level. Second, we consider average within-individual effects overtime, whereby we compare those who 'lose-out' by owning a non-compliant vehicle relative to the rest of the population within the ULEZ expansion area.

We see two avenues through which credit or blame could be attributed. First, as in Stokes (2016), to the incumbent who introduced the policy, Sadiq Khan, and potentially his party, Labour. Second, it could also be that voters perceive the Green Party as responsible for a wider 'green' agenda. The Green Party clearly advocated for ULEZ in 2016, when the Mayoral candidate Sian Berry promised a whole London ULEZ (Berry, 2016: 9).

At the ward-level, we hypothesise that voters will blame the incumbent (Labour). Contrastingly, and in line with Otteni and Weisskircher (2021), we expect the Green Party to win more votes, as some individuals see the benefits from 'green' policy. Their relatively low vote share means any existing supporters are likely to have strong 'green' values and are unlikely to be put off when the policy is enacted.

We note that prior to the 2021 Mayoral election, there is no major anti-ULEZ party. The Conservative Party under Johnson initiated ULEZ in 2013. The 2016 Conservative Mayoral candidate was not against a ULEZ expansion, but promised in his manifesto to consult possibly affected people about it (Goldsmith, 2016: 64). This was similar to Khan's (2016: 63) manifesto position to consult on bringing forward the expansion (see also Maltby (2022) on the London political consensus in Mayoral elections from 2008 to 2016 regarding air pollution). However, the Conservative position clearly changed by the 2021 Mayoral election, promising to 'cancel the rollout of the ULEZ expansion on day one' (Bailey, 2021: 38). Given that the Conservatives are anti-ULEZ in two of our designs (see below), we hypothesise that they will be the beneficiary at the ward-level. In the other, Design 1, which focuses on the 2014 and 2018 elections, we still expect the Conservatives to benefit as the main opposition to Labour, albeit this mechanism is not as strong.

The Mayoral election is the most obvious avenue for voters to cast (dis)approval. We also use the London local elections. While Councillors elected in local elections do not have a direct say on ULEZ, the elections may be an avenue for voters to voice (dis) approval for the political parties.

While it may be that the effect is diluted in the local elections relative to the Mayoral election, a manifesto analysis by London Funders indicated that climate change was among the top 3 election topics in London boroughs for the 2022 local elections.[4] Notably, opposition to ULEZ became a strategic focal point for Conservative council candidates, who framed it within broader concerns over traffic regulations to appeal to voters resistant to clean-air measures (Harper, 2023). Conservative candidates also leveraged opposition to ULEZ by positioning Labour as responsible for the expansion (Bexley Conservatives, 2022), while many ran targeted Facebook ads opposing ULEZ and low-traffic neighbourhoods, particularly in boroughs like Croydon and Enfield (McIntyre, 2022).

Meanwhile, Green Party candidates actively supported ULEZ expansion and advocated for additional measures to combat pollution and reduce car use (Greenwich and Bexley Green Party, 2022; Lambeth Green Party, 2022). Most Labour manifestos, though not always explicitly mentioning ULEZ, emphasised the importance of climate action and supported the Mayor's environmental initiatives (Hammersmith and Fulham Labour Party, 2022; Haringey Labour Party, 2022; Islington Labour Party, 2022; Sutton Labour Party, 2022; Wandsworth Labour Party, 2022). Some Labour candidates utilised this stance to set their party apart from the Conservatives' opposition to ULEZ in debates and public statements. An exception was the Hillingdon Labour Party, which opposed ULEZ in its manifesto (Hillingdon Labour Party, 2022). Collectively, this evidence highlights ULEZ as a prominent issue in local elections.

While ULEZ was not a central issue in the 2018 local elections, some indications of a division were already apparent at this stage, as evidenced by publicly available responses to the ULEZ consultation (Transport for London, 2017). Opposition to the expansion came entirely from the Conservatives and UKIP. Conservative groups, particularly the Greenwich and Waltham Forest Conservatives, strongly opposed ULEZ expansion beyond central London, citing concerns over boundary effects, increased local traffic, and adverse economic impacts. In contrast, Green Party groups across various London boroughs supported a faster and broader ULEZ implementation, with many advocating for London-wide coverage and stricter emissions standards. Labour responses were generally supportive but more nuanced. For example, Streatham Wells Labour supported ULEZ expansion but raised concerns about the boundary's impact on adjacent areas, suggesting further expansions to mitigate traffic displacement. This

Table 1. Summary of the three ward-level research designs.

	Design 1	Design 2	Design 3
ULEZ policy	Expansion from CC area to the North/South Circular. Announcement April 2017.	Expansion from CC area to the North/ South Circular. Announcement April 2017.	Expansion from North/ South Circular to all London Boroughs. Announcement March 2022.
Pre-policy election	2014 local elections	2016 London Mayoral election	2018 local elections
Post-policy election	2018 local elections	2021 London Mayoral election	2022 local elections
Treated Wards	2017 ULEZ announcement wards (green in **Figure 1**).	2017 ULEZ announcement wards (green in **Figure 1**).	2022 ULEZ announcement wards (light-blue in **Figure 1**).
Control Wards	Wards outside ULEZ expansion but still in London Boroughs (light-blue in **Figure 1**).	Wards outside ULEZ expansion but still in London Boroughs (light-blue in **Figure 1**).	London border wards with local elections in 2022 (outside the red border in **Figure 3**).

early divide reflects the emergence of ULEZ as a significant issue in local politics, with party lines shaping discussions in borough elections.

In parallel to the above logic at ward-level, we expect individuals with non-compliant cars within the ULEZ expansion to be less likely to vote for Labour Party or the Green Party, and more likely to vote Conservative, relative to the rest of the population with compliant vehicles or who do not own cars.

Data and empirical design

Ward-level analysis

We use two announcements of ULEZ expansion on which we base our ward-level designs. The London Mayoral election is conducted throughout Greater London using the supplementary vote electoral system; we count only first preference votes. Local elections are first-past-the-post.

In each research design our treatment group is the affected wards, which is if a ward's area is at least 90% within the respective ULEZ expansion. We use announcement date as the time at which wards are 'treated', given this is a highly salient issue. Following his election, Khan started early-stage work on the expansion in July 2016 via a 'Stage 1' consultation. However, his intention was clearly stated when he outlined his proposal and intention to consult in April 2017.[5] Khan did not confirm the consultation results until June 2018 – after the May 2018 local elections–we do not see this as problematic, given Khan's intentions were clear before this date, and the announcement was, in our view, perceived by most people as a formality. For Design 2 the announcement and consultation are between the pre- and post-treatment elections. In Design 3 we define the treatment date as the announcement of the policy by Khan, which occurred prior to the May 2022 local election. The consultation period finished after the local elections; we do not see this as problematic for the same reasons.

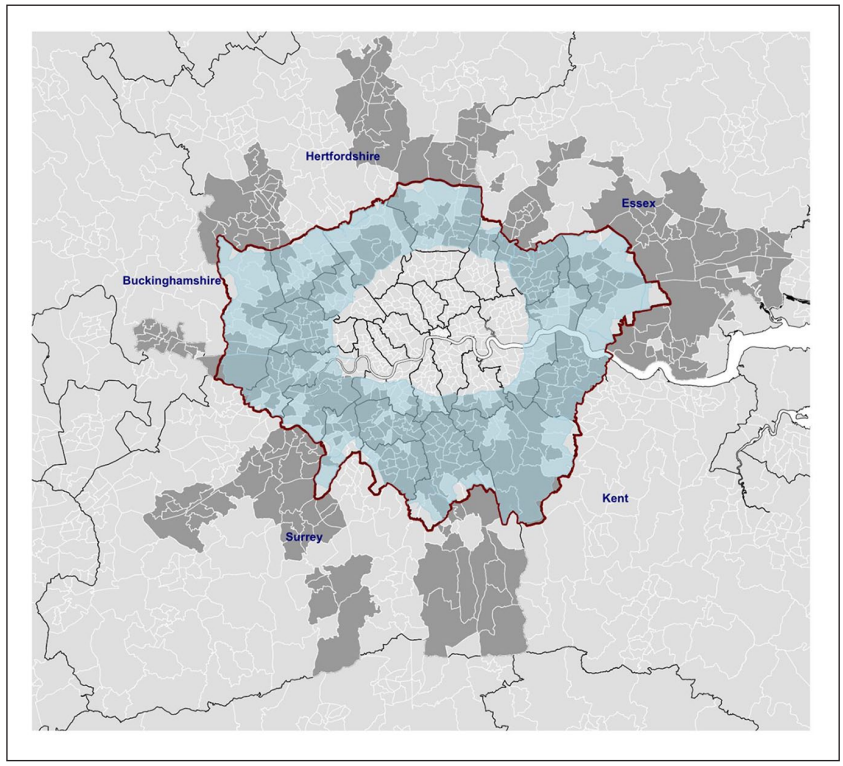

Figure 3. Map of 2022 electoral wards. Wards included in the analysis (dark-grey) outside North/South circular (light-blue area) and wards in bordering counties with the same electoral dates; Greater London border in red.

We exclude all wards which already had the Congestion Charge. A planned ULEZ in this area was first discussed in 2013 and formally announced in 2015 (the orange area in Figure 1). The control wards for Designs 1 and 2 are those in London Boroughs but outside the North and South Circular. These same wards become the treated in Design 3 under the March 2022 announcement of ULEZ expansion to all London Boroughs. There are a very small number of Wards on the London Boroughs' borders which are not fully in ULEZ, we include only Wards as treated where at least 90% of the boundary is within ULEZ. Fringe wards up to 20 kilometres outside the London border are controls. For Design 3, we restrict control border wards (outside the border in Figure 3) to those that operate on the same electoral schedule as London wards.[6] The key features of the three designs are described in Table 1. To further tighten the similarity between our treated and control wards, we analyse just those wards on the border of the relevant ULEZ expansion in Appendix C Tables 4 to 6. Results are generally in the same direction, albeit the estimates are more imprecise.

Given we only have two time periods, we use a conventional difference-in-difference model:

$$y_{it} = \beta_0 + \beta_1 TIME_t + \beta_2 ULEZEXPANSION_i + \beta_3 \left(TIME_t * ULEZEXPANSION_i\right) + \varepsilon_{it}$$

where y_{it} is the percentage share of Labour Party [Green Party/Conservative Party] voting in a ward $_i$ at time $_t$, TIME is a dummy variable for the post-treatment election,

ULEZEXPANSION denotes a treated ward, and $(TIME_t * ULEZEXPANSION_i)$ is our difference-in-difference term indicating any effect in a treated ward in the post-treatment election. Given the panel nature of our data we cluster standard errors at ward level.

The difference-in-difference approach relies on the assumption of parallel trends, Figure 4. Parallel trends are least clear in Design 3. Thus, we base our main conclusions on the first expansion, where we also have complementary evidence from a regression discontinuity design (explained below) and individual-level evidence. We still include Design 3 in the analysis, but our overall conclusions do not rely on this part; rather it adds weight to our substantive conclusions from Designs 1 and 2.

One potential concern may be that the boundary of ULEZ expansion is endogenous; Sadiq Khan could have picked the borders based on predicting political approval for the scheme. However, the boundaries are somewhat arbitrary. The construction of the North and South Circular roads was initiated in the 1920s and 1930s. The second expansion is to the remainder of the London Boroughs, which is pre-determined by the boundaries of London. Furthermore, the very area that is used as a control in Design 1, is later used as the treatment area in Design 3.

An alternative strategy is to use a spatial RDD, using the ULEZ boundary as the cut-off point to extrapolate the causal effect. In Appendix D, using various bandwidth specifications, we complete this analysis and find mostly null effects. We prefer our difference-in-difference estimates for two reasons. First, the RDD relies on similarity of wards across the cut-off; we show there are differences across the boundary. Second, the estimates are sensitive to the type of polynomial selected.

Individual-level analysis

To complement our analysis, we examine if there is any difference in voting patterns at an individual-level between those living in a household with a non-ULEZ compliant car relative to those in households with either a compliant car or no car.

We use a subset of data from the *UKHLS* (University Of Essex, Institute For Social and Economic Research, 2022), those individuals who live in the North/South Circular ULEZ expansion area. The data provides household car ownership information in several waves, including the car age and fuel type, from which we derive ULEZ compliance.[7] Given that UKHLS fieldwork is completed over approximately 24 months for each wave, we use the date at which each individual is interviewed and take the closest observation on either side of the announcement 'treatment' date, April 2017 (within a maximum of a 2-year window). To maximise our sample for the political support dependent variable, we merge two variables, 'vote3', which party one would vote for tomorrow, and 'vote4', which party one is closest to. Respondents answer 'vote3' if they do not answer 'vote4'.[8] We then form three binary variables, as to whether one supports the Labour Party [Conservative Party; Green Party], or not.

We use individual fixed effects models which estimate within-individual variation in party support pre- and post-treatment. Our estimates control for time-invariant variables are causal under the assumption that all unobserved heterogeneity is time-invariant. The regression takes the following form:

$$y_{it} = \beta_0 + \beta_1 TIME_t + \beta_2 ULEZCAR_{it} + u_i + \varepsilon_{it}$$

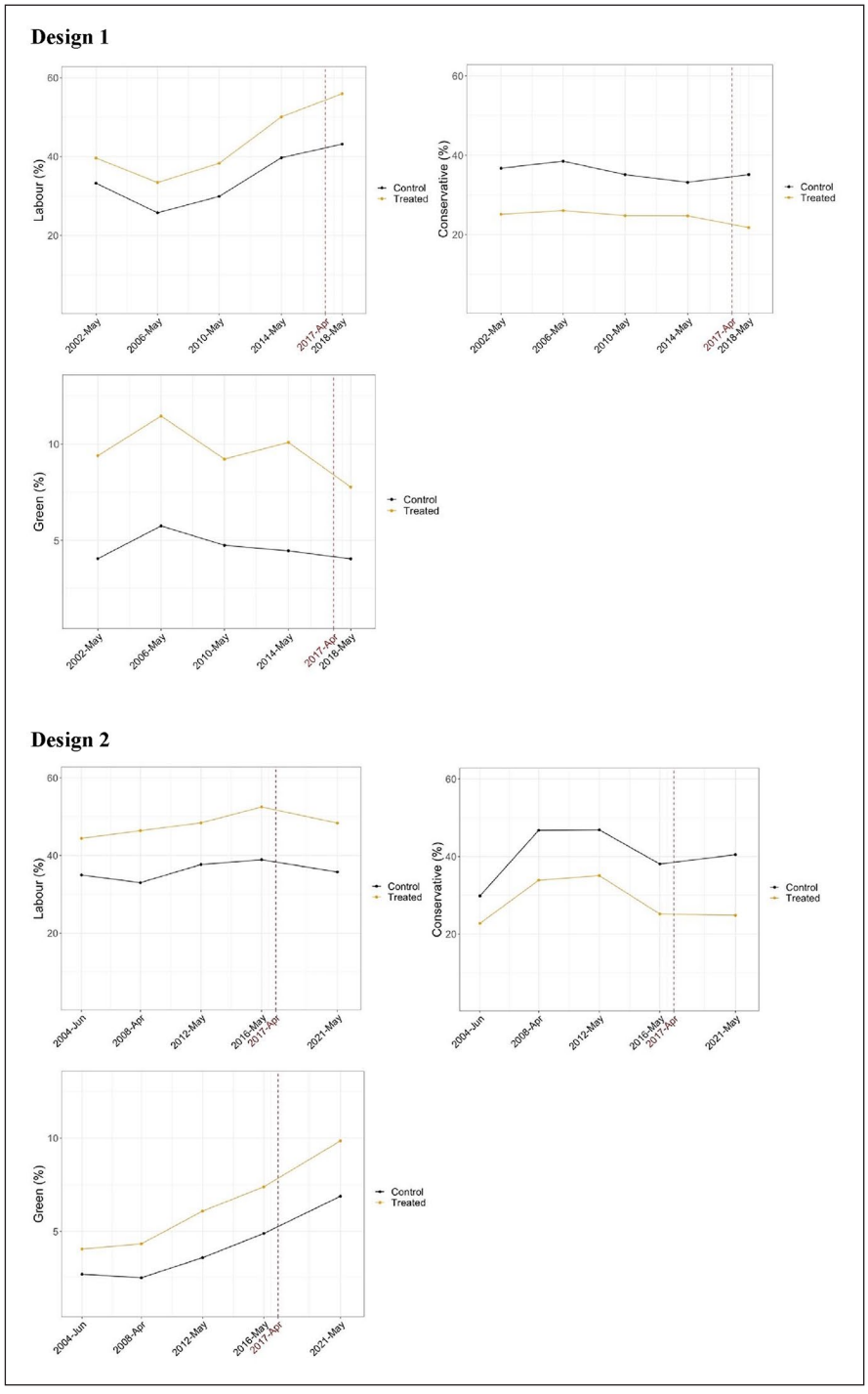

Figure 4. (Continued)

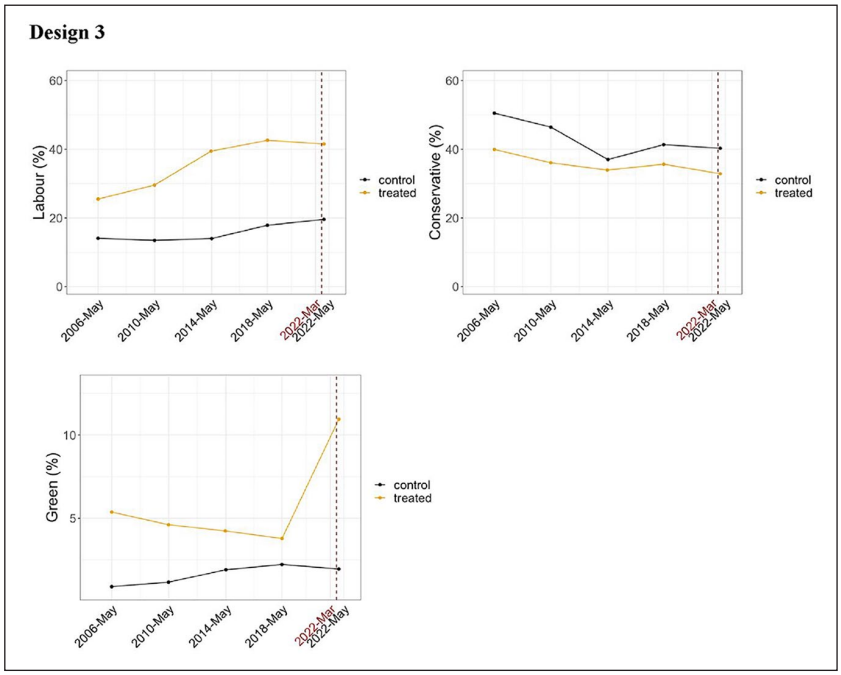

Figure 4. Parallel trends.
We only include wards for parallel trends without boundary changes.

where y_{it} is one of our three binary voting variables, $TIME_t$ is a time dummy, $ULEZCAR_{it}$ is a dummy as to whether the respondent's household has a non-compliant car (at t_0 all individuals cars will be compliant), and u_i controls for all individual level time-invariant confounders. We estimate linear probability models. In total, we have a sample of 574 individuals (1148 observations), 143 of whom owned a non-compliant car. The UKHLS data currently allows us to study only the first expansion.

The individual level analysis has the advantage over the aggregate level data that we are studying within-individual changes and, thus, avoids the problem that those in the 'control' areas may have a 'fuzzy' treatment if they drive into ULEZ. In Appendix C Table 8, we also provide a version where t_0 is prior to the initial announcement date, and t_1 is after the official consultation to alleviate concerns over the precise 'treatment' date. The results are substantively similar.

Findings

Ward-level

We summarise our results in Figure 5 – full regressions are available in Appendix C, Tables 1–3. In each research design, the effect of ULEZ expansion on Labour support is substantively small, less than 2.5 percentage points. The direction of the coefficient changes between models, from a small increase in Labour support in Design 1 (2.3

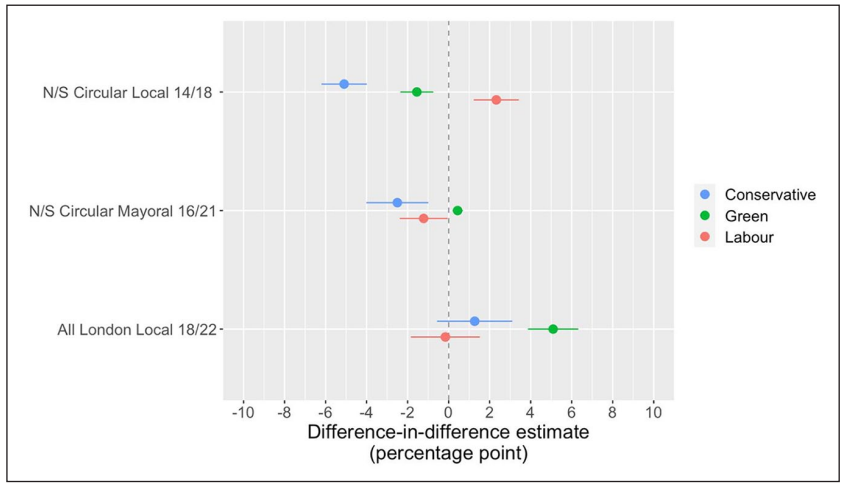

Figure 5. Summary of ULEZ ward-level estimates.
Bars are 95% confidence intervals.

percentage points, [$p < 0.001$]), to a small decrease in Design 2 (1.2 percentage points [$p = 0.041$]), and a negligible effect in Design 3.

Regarding Green Party support, our findings are once again inconsistent. In Design 1 where we study ULEZ expansion out to the North and South Circular for the 2014 to 2018 elections, the effect of being treated by being in the new ULEZ area is to decrease Green Party support by 1.55 percentage points [$p < 0.001$]. Contrastingly, we find that being in the treated area, that is, the outer London Boroughs increases Green Party support by 5.1 percentage points for the 2018 to 2022 local election [$p < 0.001$]. For the Mayoral election there is a small in magnitude increase in Green Party vote share of 0.437 percentage points [$p = 0.001$].

We find little support for our hypotheses regarding the Conservative Party. In the initial expansion to the North and South Circular, we find that Conservative support decreases by 5.1 percentage points [$p < 0.001$]. In the London Mayoral election there is a small, 2.5 percentage point, decrease in Conservative support [$p = 0.001$]. For the expansion to the outer boundaries, we find a small in magnitude, 1.2 percentage point, and non-statistically significant, increase in Conservative voting [$p = 0.20$].

Individual level

Our individual fixed effects models estimate the average effect of owning a non-compliant ULEZ car relative to owning a compliant car or not owning a car at all. Across the three models we find small in magnitude and non-statistically significant effects, see Figure 6 (full results in Appendix C, Table 7).

Due to data constraints, we are only able to capture the first ULEZ expansion. In Appendix C Table 8, we estimate a similar model whereby we include the post-treatment as responses after the official announcement. While we did try to use post-treatment as post implementation, we were left with too few observations to have any confidence in our estimates.

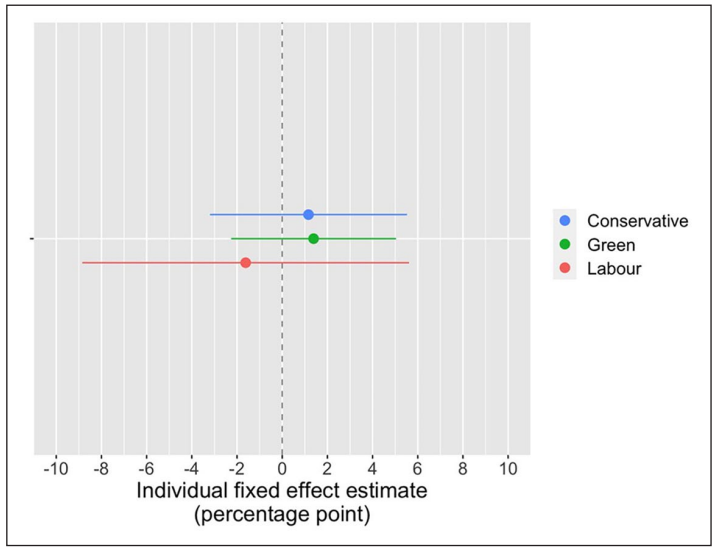

Figure 6. Summary of ULEZ individual-level estimates.
Bars are 95% confidence intervals.

Discussion

At the aggregate ward-level, we find that the announcement of ULEZ expansion had inconsistent and generally small in magnitude effects on the incumbent Labour Party, and similarly for the Conservative and Green Parties. Rather than this being a consequence of winners from cleaner air netting out with those who suffer losses because of non-compliant cars, our individual-level analysis suggests there is no effect for those with non-compliant cars relative to the rest of the population.

Recent evidence suggests that there is a political backlash from car restriction policies (Colantone et al., 2024) and more broadly 'green' policies (Otteni and Weisskircher, 2021; Stokes, 2016; Voeten, 2025). However, our findings do not build upon this. While we can only speculate as to why, it may be that the UK's political system with two major parties, a minor Green Party, and no clear anti-system party leaves those who 'lost-out' with no disaffection option.

Similarly, we may also be limited in identifying effects because of the lack of a clear anti-ULEZ party. The main alternative parties to Sadiq Khan's Labour were not consistently against ULEZ expansion. Under Boris Johnson's mayoralty, the Conservatives were the ones to initiate the original central London ULEZ. That said, Shaun Bailey's, the 2021 Conservative Mayoral candidate, manifesto clearly advocated for a rollback of ULEZ. This is contrasting to the Milan case, where the Lega was clearly against the 2018 Area B policy. Given this backdrop, it could be that there are political effects measured beyond political party support, for example, in attitudes towards environmental policy support, but this would not be detected through our dependent variable.

We argued that the announcement of the policy is the relevant timing. In the case of the outer London expansion, the result of the consultation and implementation was after our 'post-treatment' election. It is plausible that the issue only became salient to voters when ULEZ was implemented in their area, albeit we argue that the announcement was widely publicised and highly salient.

A potential limitation is that we have used our treatment as a hard boundary between expansions. Both, the benefits and costs of ULEZ may expand beyond its borders. For any driver of a non-compliant car wishing to enter ULEZ, they face the same costs as its residents. While we view our 'control' areas as non-ULEZ areas, there is spillover. That said, our lack of evidence at an individual level further supports the aggregate minor effects. The potential limitation at the individual level is that those individuals who we identify as driving non-compliant cars may be planning to switch to a compliant vehicle. This could be further incentivised by the available scrappage scheme which we are not able to control for. In the case of Milan, Colantone et al. (2024) find that recipients of compensation were not more likely to switch parties.

To summarise, in our study of one city, with two different expansions of the same traffic policy, across three elections, we find mixed results. Thus, trying to establish a wider political consequence of green policies across time and countries, with varying political institutions, seems overly simplistic. However, our findings contribute to the growing body of research on the complexities of public response to environmentally focused legislation, highlighting the need for caution in generalising the political effects of green policies from mixed evidence in a single case.

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Data availability

We will publish our code and all the used datasets are publicly available.

Supplemental material

Additional supplementary information may be found with the online version of this article.

Table 1. Difference-in-difference models of the impact of ULEZ expansion on Labour Party (incumbent) voting.

Table 2. Difference-in-difference models of the impact of ULEZ expansion on Green Party voting.

Table 3. Difference-in-difference models of the impact of ULEZ expansion on Conservative Party voting.

Table 4. Difference-in-difference models of the impact of ULEZ expansion on Labour Party voting – boundary wards.

Table 5. Difference-in-difference models of the impact of ULEZ expansion on Green Party voting – boundary wards.

Notes

1. https://www.gov.uk/government/speeches/pm-speech-on-net-zero-20-september-2023
2. https://news.sky.com/story/labour-split-as-partys-candidate-in-uxbridge-by-election-speaks-out-against-london-mayors-ulez-expansion-12915004
3. Based on the Uxbridge constituency prior to 2010.
4. https://londonfunders.org.uk/resources-publications/publications/mapping-manifestos-what-are-priorities-london
5. Using July 2016 as our 'treatment' date makes no difference to our control and treatment elections.
6. ULEZ area coverage of a 'London' ward needs to be at least 90%. Some ward boundaries changed over time and we had to exclude wards with boundary changes that could not be consolidated – see Appendix B for our consolidation approach. The strategy of limiting our control 'London fringe' to wards on the same electoral timetable while necessary for the design, does restrict the number of controls. For example, Kent wards are on a different local election cycle. In one sense, this is good for our design as we know that ULEZ was topical here, potentially because of 'spillover' in that Kent drivers may be travelling into ULEZ. On the other hand, this restriction may create bias, albeit an arbitrary one imposed by an electoral timetable.
7. We use the panel data to construct car ownership information for missing waves.
8. A small share of respondents answered both, in which case we keep 'vote4'.

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