Do Elections Increase Local Policy Responsiveness? Evidence from Elected Police Commissioners[*]

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Abstract

   Do elections increase local government responsiveness to public preferences? In 2012, directly elected police commissioners replaced a committee of appointed officials overseeing local policing in the UK. I pair police force-level data on arrests, stops, and voting behavior with a continuous difference-in-differences design to estimate the change in responsiveness. I find that, when police forces switched to directly-elected oversight, left-leaning districts reduced their drug arrest share relative to the change in right-leaning districts. I also present suggestive evidence that this effect is not concentrated in places with a change in the political party responsible for oversight, suggesting that reelection incentives may play a more important role in determining policy than party entry and selection.

1   Introduction

Democracies use elections as a tool for selecting competent caretakers and holding these representatives accountable. These forces might produce policies that reflect the preferences of the electorate (e.g., Besley and Coate 2003; Gailmard and Jenkins 2009; Sances 2016; Tausanovitch and Warshaw 2014), but they may struggle when voters cannot observe the official's actions or their consequences (e.g., Canes-Wrone, Herron, and Shotts 2001; Rogers 2017; Snyder Jr and Strömberg 2010). Since public attention is costly, democracies appoint officials to fill many other offices. Can changing the oversight of a policy domain from appointed to elected increase policy responsiveness?

I study this question by examining the case of elected police commissioners. Prior to 2012, committees made up of local appointees oversaw the behavior and budget of 41 police forces in England and Wales. In 2012, these police force areas replaced these appointed committees with a single elected official. I combine police force area-level data on arrests and stop and search activity with data on voting behavior, the partisan composition of the appointed committees, and the party of the elected commissioners. Using a continuous difference-in-differences design, I estimate the differential effect of switching to elect elected police commissioners on drug policing across places different preference on drug prohibition.

I find that the share of arrests and stops targeting drugs went down in places more supportive of relaxing drug laws following the introduction of elections relative to places less supportive of relaxing drug laws. Based on the estimate, places near the 75th percentile of left party voting decreased their drug arrest share by 1-percentage-point relative to the 25th percentile of left party voting. This translates to a roughly 14% difference relative to the average drug arrest share of 7 percentage points. These effects are not driven by differential changes in police capacity across places and not sensitive to using parliamentary voting as the measure of local preferences. These results suggest that the introduction of elections improved responsiveness in this particular policy area.

I also present suggestive evidence that the increase in responsiveness comes from a change in incentives rather than a change in partisan control. The two most notable mechanisms for increased responsiveness are a change in the people making policy decisions and a change in the incentives officials face (Caughey and Warshaw 2018; Feigenbaum and Hall 2015; Stimson, MacKuen, and Erikson 1995). Both may be responsible at the same time. I divide the police forces into those where party control switched and those where it did not, and I find that the differential effects on behavior was similar for switchers and non-switchers.

2 Local Elections and Policy Responsiveness

Elections are a tool for binding policy to public preferences. Political economy models of elections describe an agency relationship in which a representative voter intends to select candidates who have similar preferences as their own. This behavior creates an incentive for politicians to shift behavior when their preferences do not align with those the voter (Alt, Bueno de Mesquita, and Rose 2011; Ashworth 2012; Fearon 1999; Fouirnaies and Hall 2018). When voters cannot observe the policy choices or outcomes, these incentives may move policy away from the representative voter's ideal point (Canes-Wrone, Herron, and Shotts 2001). The median voter's controlling vote can also move policy in a way that disadvantages minority groups (Sances 2016).

Appointment processes shield officials from broad public preferences to some extent. When voters select a single politician to determine policy in a large number of areas, policy in any given area will favor the interests of highly motivated interests (e.g., Besley and Coate 2003). The official making the appointment may also be better able to monitor the behavior of the appointee while possibly biasing policy toward the preferences of the apointer and away from the median voter (Gailmard and Jenkins 2009).

Since attention is costly, the gains in responsiveness due to switching from appointment to direct election for a particular office depend on how many offices are already elected.

Each additional office has a smaller and smaller effect on policy responsiveness. Meanwhile, monitoring costs increase at a constant rate as new offices are introduced. Increasing the number of elected offices improves the fit between policy and voter preferences only to a point where the marginal cost of monitoring is below the benefit (Berry and Gersen 2009).

The conditions in local election make accountability more difficult: Limited information dampens the candidate-specific signal to the wider electorate (Hopkins 2018; Moskowitz 2018; Rogers 2017) and low turnout increases the influence of highly-motivated voters (Anzia 2011). Still, local elections are often able to achieve some degree of responsiveness (Arnold and Carnes 2012; Payson 2017; Tausanovitch and Warshaw 2014), and local politicians behave as though they are not free to depart from local preferences (Ferraz and Finan 2011; Ferreira and Gyourko 2009; Thompson 2019). Police in particular have been believed to be insulated from policy changes (e.g., Wilson 1978), but recent evidence suggests otherwise (Mummolo 2018).

3   Case: Drug Policing Under Elected Commissioners

3.1   Police and Crime Commissioners, A New Elected Office

From 1964 to 2012, oversight of local police in England and Wales was conducted by large committees of appointed officials known as police authorities. The 41 authorities were made up of an odd number of appointees,[1] typically 17. A bare majority of seats were given to elected officials sitting on local city and county councils, distributed to approximate the partisan makeup of these councils. Vacancies for seats dedicated to elected officials were filled by a vote of the existing authority members. The remaining bare minority of seats were held by local citizens. Vacancies were filled in a three step process wherein citizens applied, a

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[1] I will ignore the two police forces in London for the purposes of this discussion since their governance is non-standard and I do not include them in my analysis.

subset were approved by the national government, and the final choice was selected by the existing authority members from the approved list.

The perceived inability of police authorities to manage local police forces lead to a call for direct election. Writing in The Times in 2005, columnist and now Conservative member of Parliament Michael Gove argued that "the level of democratic accountability to which the police are subject in Britain is woeful."[2] This attitude extended to a broad enough group of Conservative and Liberal Democrat party members that the parties included it in their manifestos in the run up to the 2010 parliamentary election. In 2011, a bill replacing the police authorities with directly elected police and crime commissioners passed through Parliament. The first commissioner elections were held in November 2012, and commissioners took office shortly thereafter.

Scholars, politicians, and activists had a variety of expectations about the consequences of the institutional change. Many politicians and analysts were optimistic that an institutional change would increase responsiveness and improve the efficiency of the police forces (Caless and Owens 2016; Raine and Keasey 2012). Others raised issues like those I discussed above that might lead to the failure of local policy responsiveness. The populations overseen by a single commissioner are large enough that most are meaningfully covered in the media. But, some advocates and scholars worried at the time of the reform that tabloid coverage would offer commissioners incentives to pander (Jones, Newburn, and Smith 2012). Other advocates and scholars worried that the local policies would be overtaken by the national party agendas of the commissioners (Lister and Rowe 2015).

Figure 1: **Voters for Left Parties in Parliament Favor Relaxed Drug Laws.** Across four YouGov surveys of UK adults, those who reported voting for a Liberal Democratic or Labour candidate in the 2010 parliamentary election were more likely to support of discrimination or legalization of soft drugs such as marijuana than voters for the Conservative party.
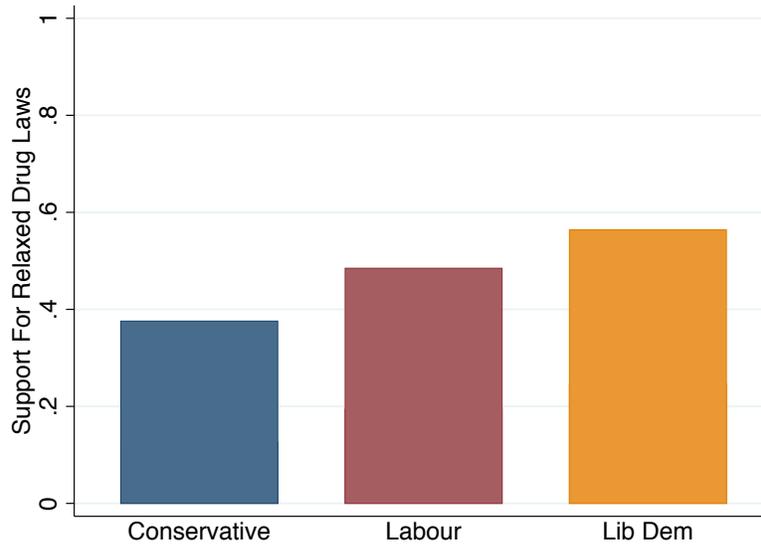
3.2 Left-Leaning Voters Are More Supportive of Relaxed Drug Laws

If the direct election of police commissioners improves the match between the preferences of the electorate and the policies officials implement, we should be able to see this in police behavior. But many policing preferences are likely similar across places—most people want to see their police arrest those who are credibly accused of violence or serious property crimes. To investigate the effect of direct elections on the match between policy and preferences, we need to study an outcome over which preferences vary across police force areas.

Drug policing is one domain in which we might expect to see different preferences across voters. Given the recent politics around drug policy in the UK,[3] I would expect Liberal

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[2]https://www.thetimes.co.uk/article/if-crimes-on-the-up-your-police-chief-must-explain-why-or-be-sacked-sl2582qsrns

[3]These include a tough criminalization proposal in the early 2000s by conservatives (https://www.telegraph.co.uk/news/uknews/1368775/Tory-crackdown-on-cannabis.html), the Conservative Prime Minister's stance against cannabis legalization (https://www.independent.co.uk/news/uk/politics/theresa-may-cannabis-legal-uk-law-william-hague-conservatives-latest-a8406111.html), a

Democratic and Labour voters to prefer more relaxed drug enforcement. Figure 1 presents evidence for this claim. YouGov surveyed thousands of British adults between December 2012 and August 2014 on the subject of drug policy. Across all four waves of the survey, respondents who reported voting for a Liberal Democratic or Labour candidate in the 2010 parliamentary election were more likely to support legalization or decriminalization of soft drugs such as marijuana. I cannot directly test the link between preferences about drug legalization or decriminalization and preferences for relaxed policing of drugs. Instead, the surveys provide suggestive evidence that drug policy is one domain where we might expect a divergence in preferences across parties.

This tendency for left party voters to support drug policy liberalization is also consistent with anecdotal evidence about the stances of police and crime commissioners from those parties (Austen 2016). For example, the Labour commissioner from Durham, Ron Hogg, called for a "radical change" in drug policy and emphasized that his goal was to "protect the most vulnerable and help those with a drug dependency to recover and turn their lives around."[4] The Labour commissioner from West Midlands, David Jamieson, followed suit with a proposal to "divert those suffering from addiction into treatment and away from the courts" and prescribe "heroin in a medical setting to people suffering from addiction."[5]

Drug policy was also not a minor issue in the discussion of police and crime commissioners. Some drug policy advocacy groups saw the commissioners as a pressure point to change policy.[6] The Guardian also listed changing drug policing as one of the top five reasons the new commissioners might be a successful institution worth keeping.[7]

Lib Dem proposal to legalize cannabis (http://www.bbc.co.uk/newsbeat/article/40819720/lib-dems-under-vince-cable-still-want-to-legalise-cannabis), and the Labour party leader's support for decriminalizing cannabis (https://www.independent.co.uk/news/uk/home-news/jeremy-corbyn-cannabis-decriminalisation-ridge-sunday-labour-a8425326.html).

[4] https://www.bbc.com/news/uk-england-45182442

[5] https://www.westmidlands-pcc.gov.uk/practical-proposals-to-tackle-the-scourge-of-drugs-announced-by-police-and-crime-commissioner/

[6] https://volteface.me/feature/drugs-policing-radical-changes-drugs-policy-first-great-harvest-police-crime-commissioners/

[7] https://www.theguardian.com/commentisfree/2013/nov/04/police-crime-commissioners-five-best-worst-ideas

Put together, this suggests a natural proxy for drug policy preferences: support for left parties in the 2010 parliamentary election. While I cannot directly measure the differences in these preferences across police force areas, I can readily measure how each district voted in the 2010 parliamentary election. Under the reasonable assumption that voters for the same national party have relatively similar drug policy preferences across places, differences in party strength across police force areas imply differences in drug policy preferences.

3.3 Election and Policing Data

In order to test the effect of police and crime commissioner elections on police behavior, I construct two datasets: left party vote shares in the 2010 parliamentary election and drug arrests as a share of total arrests, both by police force area. The election data originally comes from Pippa Norris's collection of 2010 parliamentary election results at the constituency level. I gathered digitized vector boundaries for parliamentary constituencies and police force areas from the British government. Using a spatial merge, I identified the share of each parliamentary constituency that falls within each police force area. Out of 573 parliamentary constituencies in England and Wales, only 3 are split across police force areas. When a constituency falls entirely inside a police force area, I assign all of its votes to that police force area. In the three cases when a constituency is split up, I assign its votes to each police force area based on the share of the constituency's land area that falls in each police force area's borders. Once I have assigned all of the votes to a police force area, I calculate the total votes cast for each party, and calculate vote shares by party. I define left party vote share as the share of votes cast for a Liberal Democratic, Labour, or Green party candidate.

I gather drug arrest data from reports issued by the UK Home Office. The reports, typically entitled "Police Powers and Procedures, England and Wales," contain tables listing the number or share of total arrests by offense type and police force area. These annual reports also include tables listing police stops and searches by the reason for the stop and police force area. I calculate the drug-related share of arrests and stops by totaling the

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arrests or stops for drug and dividing by the number of arrests or stops for any reason. All of these statistics are calculated by UK fiscal year, running from April to March. Going forward, I use the word year to refer to the year in which the fiscal year ends.

3.4 Empirical Strategy: Continuous Difference-in-Differences

For my main results, I estimate regression functions of the form

$$DrugShare_{ft} = \tau LeftShare_f * (Year_t > 2012) + \gamma_f + \delta_t + \epsilon_{ft}$$

where $DrugShare_{ft}$ is the share of arrests or stops primarily for drugs, falling between zero and one, and $LeftShare_f$ is the share of votes going to a Labour, Lib Dem, or Green candidate in the 2010 elections for parliament, also between zero and one. γ_f and δ_t are police force and year fixed effects, respectively. τ is an estimate of the effect elected police commissioners on the share of drug arrests in further left districts as compared to further right districts.

My design is akin to a classic difference-in-differences design, but with a few modifications. In the standard difference-in-differences set-up, we follow a group of units before and after they are exposed to a treatment and compare them to units never exposed to treatment. Here, I am following places that vote more for left parties before and after commissioners are introduced and comparing them to places that vote less for left parties, using a continuous measure of left party voting (Angrist and Pischke 2008; Card 1992).[8] For exposition, I will pretend as though there are only two groups.[9] Since both groups are subject to the treatment, I am no longer estimating the average treatment effect on the treated. Instead, I am estimating the difference in the conditional average treatment effect (CATE) between these two groups. This differential effect is identified under the usual difference-in-differences assumption, that the differences in police behavior across these places would have remained

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[8]For examples of recent work using this research design, see Feigenbaum and Hall (2015) and Lueders, Hainmueller, and Lawrence (2017).

[9]The intuition we gain from the two-group cases generalizes to the continuous case.

the same had police and crime commissioners not been introduced. This assumption is not directly testable, but it can be interrogated by assessing whether the police behavior is moving in parallel prior to the introduction of commissioners.

The difference in CATEs tells us the degree to which the policy pushed left-voting places and right-voting places in opposite directions. This is what we would expect if left-voting places prefer a different policy from right-voting places and elected officials are better at achieving the outcomes residents prefer. The differential effect does not tell us whether the introduction of elections had the same effect everywhere. For example, since we would expect elections to induce government officials to work harder everywhere, the differential effect would not be an appropriate estimand because it could mask effects on effort, even very large effects.

Classic cluster robust standard errors are known to be biased in small samples (Cameron, Gelbach, and Miller 2008). Given the limited number of police forces, I report standard errors from a clustered bootstrap procedure that tends to perform better in smaller samples, clustering on police force.[10]

4 Elected Police Respond to Public Preferences

4.1 Drug Policing Reduced in Left Stronghold Relative to Right Strongholds

An initial look at the raw data on policing suggests that the most left-voting places had a steeper drop in drug policing after the introduction of police and crime commissioners than did right-voting places. Figure 2 captures this pattern. Each line represents the average drug arrest share over time for each tercile of left party voting in the 2010 parliamentary election. The darkest line corresponds to the top tercile, the second darkest line to the middle tercile,

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[10]Despite the concerns described in Cameron, Gelbach, and Miller (2008), the estimated standard errors are similar using the clustered wild bootstrap procedure they describe, the blocked bootstrap procedure in Bertrand, Duflo, and Mullainathan (2004), and the classic cluster robust standard errors.

Figure 2: **Substantial Drop in Drug Arrest Share in Left-Leaning Districts Relative to Other Districts.** Comparing the top tercile of districts in terms of Labour, Lib Dem, and Green party voting in the 2010 parliamentary election to the bottom and middle terciles, districts favoring left wing and center left candidates more saw a larger drop in drug arrest share following the introduction of police and crime commissioners. Following the pruned columns in Table 1, the Dyfed-Powys and Merseyside police forces are removed from the plot due to their unusually-high pre-treatment drug arrest share values.
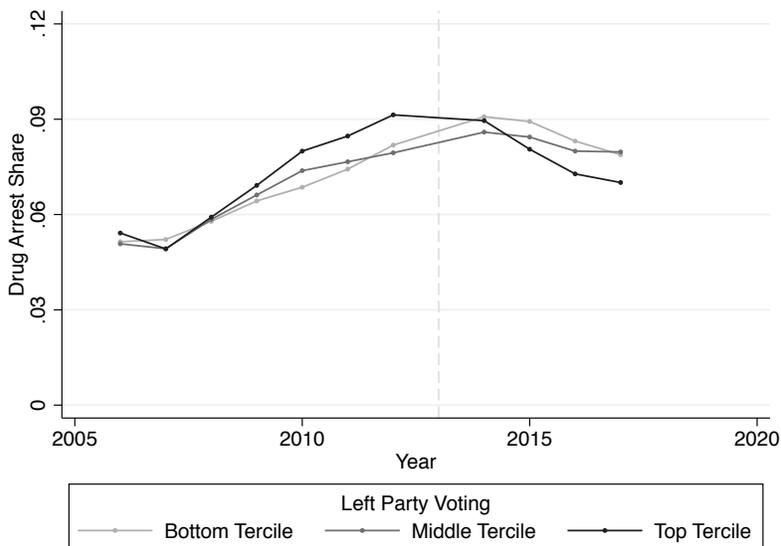
and the lightest line to the bottom tercile. The darkest is higher than the other two lines in the three years immediately preceding the introduction of police and crime commissioners. After police and crime commissioners are introduced, drug arrests remain relatively flat in the bottom and middle terciles but drop quickly in the top tercile.

This relative change in drug arrest behavior holds up across multiple versions of the analysis. Table 1 reports the formal estimates. The first column presents the continuous difference-in-differences estimate described above. In column two, I conduct the difference-in-differences analysis separately by population quintile by including year by population quintile fixed effects. I conduct the analysis separately by average pre-treatment drug arrest share terciles in column three, using year by drug arrest share tercile fixed effects. In the fourth column, I adjust for pre-trends by defining terciles of average drug arrest share for 2006 to 2009 and 2010 to 2012, taking the product of these to construct trend groups, and

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Table 1: **Elections Cause a Decrease in the Share of Arrests for Drugs in Left-Leaning Districts Relative to Right-Leaning Places.**

	Drug Arrest Share [0,1]							
Post * Left Share [0,1]	-0.07	-0.09	-0.07	-0.07	-0.08	-0.09	-0.08	-0.09
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Police Force Areas	41	41	41	41	39	39	39	39
Years	16	16	16	16	16	16	16	16
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Year × Pop Quntile FE	N	Y	N	N	N	Y	N	N
Year × Arrest Share Tercile FE	N	N	Y	N	N	N	Y	N
Year × Pre-Trend Group FE	N	N	N	Y	N	N	N	Y
Pruned	N	N	N	N	Y	Y	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the total vote share for Labour, Lib Dem, and Green candidates in the 2010 election for Parliament in the police force area. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Pop Quintile divides the police forces into quintiles based on population as of 2010. Arrest Share Tercile divides the police forces into terciles based on average drug arrest share between 2010 and 2012. Pre-Trend Group is the product of two terciles: average drug arrest share between 2010 and 2012, and average drug arrest share between 2006 and 2009. Pruned captures whether cases two standard deviations away from the average drug arrests in 2012, the year preceding the first commissioner election, are included in the regression or omitted. The first commissioner election year, fiscal year 2013, is held out of the analysis.

interacting a flag for each group with year dummies. Columns five through eight report estimates using the same regressions as columns one through four but after removing the two units that had drug arrest shares more than two standard deviations away from the mean in 2012.

Across all eight columns, the differential effect of police and crime commissioners is substantively large and statistically distinguishable from zero at conventional levels. To get a sense of the magnitude, take the estimate of -0.07. Note that the 25th percentile of left voting is 47% and the 75th percentile is 60%, 13 points apart. Based on our estimate of -0.07, we would expect drug arrests to drop by nearly one percentage point in the 75th percentile district relative to the 25th percentile district. The average drug arrest share is

Table 2: **Elections Cause a Decrease in the Share of Stops for Drugs in Left-Leaning Districts Relative to Right-Leaning Places.**

	Drug Stop Share [0,1]							
Post * Left Share [0,1]	-0.39	-0.35	-0.50	-0.52	-0.39	-0.38	-0.49	-0.50
	(0.12)	(0.16)	(0.12)	(0.12)	(0.11)	(0.16)	(0.12)	(0.10)
Police Force Areas	41	41	41	41	40	40	40	40
Years	14	14	14	14	14	14	14	14
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Year × Pop Quntile FE	N	Y	N	N	N	Y	N	N
Year × Arrest Share Tercile FE	N	N	Y	N	N	N	Y	N
Year × Pre-Trend Group FE	N	N	N	Y	N	N	N	Y
Pruned	N	N	N	N	Y	Y	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the total vote share for Labour, Lib Dem, and Green candidates in the 2010 election for Parliament in the police force area. Drug Stop Share is a share variable capturing the share of total stops for which a drug crime is the primary cause. Pop Quintile divides the police forces into quintiles based on population as of 2010. Arrest Share Tercile divides the police forces into terciles based on average drug arrest share between 2010 and 2012. Pre-Trend Group is the product of two terciles: average drug arrest share between 2010 and 2012, and average drug arrest share between 2006 and 2009. Pruned captures whether cases two standard deviations away from the average drug arrests in 2012, the year preceding the first commissioner election, are included in the regression or omitted. The first commissioner election year, fiscal year 2013, is held out of the analysis.

approximately 7%. This means that the move from the 25th percentile to the 75th percentile translates into a roughly 14% effect relative to the average drug arrest share.

Table 2 reports results for the same analysis on drug stops. The differential effects there are also substantively large though noisy. Making the same comparison as before—between a 25th percentile district and a 75th percentile district—the introduction of police and crime commissioners caused a gap of more than 5 percentage points in drug stop share. This is more than 10% of the average drug stop share.

4.2 Estimates Are Similar After Matching On Pre-2012 Trajectories

Despite the robustness checks embedded in Tables 1 and 2, the estimates may still be biased if the fixed effects do not produce comparisons among forces that have parallel trends or be misleading if the relationship between voting and changes in drug arrest share is not approximately linear. Even after limiting the comparison to relatively left-wing and right-wing police force areas with similar populations or pre-treatment drug arrest shares, the relatively left-wing places may still on a different trajectory from the relatively right-wing places. And, the interpretation would be quite different if the relationship were U-shaped, but estimating a linear relationship could obscure that.

To address these concerns, I implement a matching procedure that allows me to get the best possible match of pre-treatment trajectories between relatively left-wing and right-wing force areas. This approach, akin to a pair blocking exercise (Imai et al. 2009), finds the set of police force pairs that minimizes the distance between pair members in terms of the full time series of drug arrest share prior to 2012. I discuss the procedure in more detail in the Appendix. I am able to construct pairs such that the distance between the average within-pair left-wing district and average within pair right-wing district is always between -0.0025 and 0.0015 from 2006 to 2012 with an average difference of -0.0004 across all seven years. For a sense of scale, this average difference is approximately an order of magnitude smaller than the differential effect I estimate using this matching approach.

I then make within-pair comparisons, estimating the post-2012 split in drug arrest share between the relatively left-wing member of the pair and the relatively right-wing member of the pair. I do so by estimating regressions that include year-by-pair fixed effects, isolating only within-pair differences over time.

I find that, while the gap estimated in this analysis is somewhat smaller than the one I estimated in the earlier analysis, the direction of the relationship is the same and the induced gap continues to be substantial. Table 3 presents the formal estimates. The first row

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Table 3: **Elections Cause a Decrease in the Share of Arrests for Drugs in Left-Leaning Districts, Comparisons Within Matched Pairs.**

	Drug Arrest Share [0,1]			
Post * Left Share [0,1]	-0.05	-0.04		
	(0.03)	(0.02)		
Post * Most Left in Pair {0,1}			-0.004	-0.004
			(0.004)	(0.003)
Avg Diff btwn Left and Right in Pair	0.11	0.11	0.11	0.11
Police Force Areas	40	40	40	40
Years	11	11	11	11
Police Force FE	Y	Y	Y	Y
Year × Pair FE	Y	Y	Y	Y
Weighted Matching	N	Y	N	Y

Cluster robust standard errors clustered by police force in parentheses. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the vote share for Labour, Lib Dem, and green candidates in the 2010 election for parliament. Most Left is a flag taking the value one for each police force area that has a higher value of Left Share within matched pair. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Matched pairs are constructed to minimize the total within-pair distance between selected pairs of police forces in terms of drug arrests share from 2006 to 2012. Weighted Matching indicates whether the matching penalizes distances closer to 2012 more than distances earlier in the time series. The first commissioner election year, 2012, is held out of the analysis.

presents estimates analogous to those in the first row of Table 1. The second row removes the linearity assumption and estimates the average change in the drug arrest share gap between the relatively left-wing force and the relatively right-wing force within each pair. Looking at the third row, immediately below the divider line, we can compare the estimates in the first and second row. The average distance between the relatively left-wing pair member and the relatively right-wing member is 11 percentage points in terms of left party voting. If we multiply that by the changed gap of 0.04, we get an expected average within-pair difference of about 0.0044. This suggests that, while the linear estimator increases our power, the substantive interpretation of the effects is similar across both approaches.

Table 4: **Elections Cause a Decrease in the Share of Arrests for Drugs in Left-Leaning Districts After Adjusting for Employment Changes.**

	Drug Arrest Share [0,1]							
Post ∗ Parliament Left Share [0,1]	-0.07	-0.08	-0.05	-0.06	-0.06	-0.07	-0.04	-0.05
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Officers per 1,000 Residents	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Police Force Areas	41	41	41	41	39	39	39	39
Years	16	16	16	16	16	16	16	16
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Year × Pop Quntile FE	N	Y	N	N	N	Y	N	N
Year × Arrest Share Tercile FE	N	N	Y	N	N	N	Y	N
Year × Pre-Trend Group FE	N	N	N	Y	N	N	N	Y
Pruned	N	N	N	N	Y	Y	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the total vote share for Labour, Lib Dem, and Green candidates in the 2010 election for Parliament in the police force area. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Pop Quintile divides the police forces into quintiles based on population as of 2010. Arrest Share Tercile divides the police forces into terciles based on average drug arrest share between 2010 and 2012. Pre-Trend Group is the product of two terciles: average drug arrest share between 2010 and 2012, and average drug arrest share between 2006 and 2009. Pruned captures whether cases two standard deviations away from the average drug arrests in 2012, the year preceding the first commissioner election, are included in the regression or omitted. The first commissioner election year, fiscal year 2013, is held out of the analysis.

4.3 Differential Effects Not Driven by Changes in Capacity

During the period when police and crime commissioners were coming into office for the first time, the UK government was making large budget cuts. Police were not immune. These cuts could affect police by reducing their capacity for making more arrests on more serious crimes. Or, perhaps, it could mean that police cut back on the community policing that often results in drug arrests. Either way, if the effects of these cutbacks are not constant across

places, they could produce a change in drug arrest shares unrelated to the introduction of police and crime commissioners.[11]

Despite these concerns, I find that the differential effects are essentially the same after adjusting for the number of full time equivalent officers working in each police force area by year. The formal estiamtes are reported in the first row of Table 4. The estimates of the effect of commissioners on the drug arrest share, presented in columns one through four, are nearly identical, albeit noisier. The estimates of the effect on drug stop share are similar to before, but noisier and more sensitive to the regression specification.

Another readily available measure of capacity at the district-year level is the total number of arrests and stops. In Table A.4 in the Appendix, I extend this check by adjusting for the total arrests or stops. Since these variables are more likely to be a consequence of the treatment to some extent, they are more suspect as covariates. Nevertheless, the results again follow nearly the same pattern as in Table 1.

Overall, both sets of results suggest that changes in capacity are not an important driver of the increased gap in drug arrest shares between left-voting and right-voting districts.

4.4 Differential Effects Not Specific to Parliamentary Voting

I established that parliamentary voting appears to be related to drug policy preferences, but perhaps the relationship between parliamentary left party voting and changes in drug arrests is particular to a single parliamentary election. Since crime control is only a small part of the parliamentary bailywick, voters may not have crime in mind as much when voting in parliamentary elections. If this is the case, the results may be picking up some other underlying latent relationship between party voting and crime or arrests.

To ensure this isn't a fluke of parliamentary voting, I replicate my main results using the share of votes cast for left parties in the 2012 police and crime commissioner election.

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[11]For recent reporting on how these cuts influenced police, see Fewer Officers, More Calls: U.K. Police Are Stretched by Austerity in the New York Times (`https://www.nytimes.com/2019/02/01/world/europe/uk-police-crime-austerity.html`).

This measure may be a more sensible measure of underlying crime preferences, but it has a number of important drawbacks. First, many candidates ran as unafilliated with one of the major parties. This does not mean that they were not advocating a particular platform, but there is not an obvious way to group candidates in terms of their drug policy positions. Second, using this vote dampens an analyst's ability to determine whether the effects are driven by who is elected and the incentives they face. By using the success of one or more candidates to back out voter ideology, all of the mechanisms are by design lumped into one. Despite these caviats, I move forward in using the left part vote share from the commissioner election as an alternative to the parliamentary voting measure.

I find a similar pattern of results as before. Table A.1 in the Appendix reports the results. The point estimates are all attenuated to some extent, but they point in the same direction as before, and most of them are statistically distinguishable from zero at conventional levels.

Put together with the results from Table 1, these findings suggest that police and crime commissioner elections caused the gap in drug arrest share to increase between places more and less supportive of relaxed drug policy.

5   Candidate Types or Incentives?

The two primary mechanisms for policy responsiveness are a change in the ideological composition of an office and a change in the incentives the officers face. These proposed mechanisms raise a natural question: is the change in policy mostly located in places where the ideology of the officer overseeing the police changed, or was the change in policy broadly felt?

In order to to tease this apart, I find all police forces for which the party of the overseeing official changed. I do this by constructing an additional dataset that notes the party affiliations of all authority members prior to the introduction of commissioners, and I pair it with data on the party of the commissioners. I then remove the authority members who are independent community members and focus on the political members. I locate the median

Table 5: **Share of Police Forces by Partisan Control, Police Authority and Police and Crime Commissioners.**

		Commissioner Party		
		Left	Middle	Right
Authority	Left	0.24	0.03	0.11
Party	Middle	0.03	0.03	0.11
	Right	0.00	0.26	0.21

Each cell reports the share of police forces by the party controlling the police authority in 2012 and the party of the police and crime commissioner in 2013. The party controlling the police authority is the median party of elected members with conservatives defined as 1, Labour members, greens, and liberal democrats defined as -1, and all others defined as 0.

party member for each authority, labelling Labour, Lib Dem, and Green members as -1, Conservative and UKIP members as 1, and all others as 0. This allows me to compare the party of the median authority member to the party of the commissioner.

Very few police forces go from having a left-wing majority to a right-wing commissioner or vice versa, but many switch from a partisan authority to an independent commissioner or switch from an independent authority to a partisan commissioner. Table 5 reports the share of police forces by their original authority median and the party of their elected commissioner. More than half of the police forces controlled by a Conservative majority in their authority elected and independent as commissioner.

I find that the differential change in drug arrest share is similar in places where the party controlling oversight changed and places where it did not. Table 6 presents the formal estimates. The columns match the columns reported in Table 1, but I break out the differential change in drug arrest share for forces that switch party control and those that do not. The fact that estimates on the second row hover around zero suggests that the party in charge of overseeing the police force is not the most important factor in producing policy responsiveness.

Table 6: **Elections Cause a Similar Increase in Responsiveness for Police Forces Areas with a Party Switch.**

	Drug Arrest Share [0,1]							
Post * Left Share [0,1]	-0.11	-0.09	-0.09	-0.09	-0.09	-0.08	-0.06	-0.07
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Switch * Post * Left Share [0,1]	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Police Force Areas	41	41	41	41	39	39	39	39
Years	16	16	16	16	16	16	16	16
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Year × Pop Quntile FE	N	Y	N	N	N	Y	N	N
Year × Arrest Share Tercile FE	N	N	Y	N	N	N	Y	N
Year × Pre-Trend Group FE	N	N	N	Y	N	N	N	Y
Pruned	N	N	N	N	Y	Y	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the total vote share for Labour, Lib Dem, and Green candidates in the 2010 election for Parliament in the police force area. Switch is a binary variable that takes the value one if the median voter on the police authority is in a different party than the police and crime commissioner. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Pop Quintile divides the police forces into quintiles based on population as of 2010. Arrest Share Tercile divides the police forces into terciles based on average drug arrest share between 2010 and 2012. Pre-Trend Group is the product of two terciles: average drug arrest share between 2010 and 2012, and average drug arrest share between 2006 and 2009. Pruned captures whether cases two standard deviations away from the average drug arrests in 2012, the year preceding the first commissioner election, are included in the regression or omitted. The first commissioner election year, fiscal year 2013, is held out of the analysis.

These results do not rule out selection as an important mechanism by which voters can produce policy responsiveness. It is possible that independents have considerable ideological overlap with partisans on matters of drug policing or that there is considerable within-party heterogeneity among officials. If either of these facts are true, voters may be getting the policy the prefer by selecting the particular politician within a given party that shares their preferences, and party switching is not an important measure of this behavior.

Still, this analysis rules out one of the most commonly cited selection-based mechanisms for policy responsiveness and suggests that reelection incentives may be a more important reason for the responsiveness I observe.

6   Conclusion

This article investigates an example of the relatively rare occurrence of adding a powerful elected office to a mature democracy. While this does not happen often, these cases are useful because they give us a window into whether elections are creating the responsiveness we expect them to produce. These results suggest that, at least in a context where there are relatively few powerful local elected officials, adding a new one still improves policy responsiveness. This does not rule out welfare reducing reasons for improved responsiveness such as pandering, but it rules out complete failure to respond to citizen preferences. And this result does not necessarily imply that the reason for the drop in drug arrest share in left-wing places relative to right-wing places was the political preferences of the electorate. Still, from the perspective of the residents living in these police districts in England and Wales, the effects are observationally equivalent with induced responsiveness.

This case also helps clarify something that often gets lost in work on responsiveness: the appropriate standard by which to evaluate an institution is in comparison to other viable institutions. Here, we are able to compare an appointed committee with a directly elected official. Other cases will also provide some different comparison. Putting together results across many different institutions is necessary to test the ideas coming out of political economy models about when elections succeed to produce responsive government.

Of the two broad justifications for switching from an appointed to elected office, the expectations that it will induce more effort and produce greater responsiveness, I am only able to credibly assess the validity of one. But responsiveness was not a minor goal, it was a core justification. Nick Herbert, the police minister during the transition to police and crime commissioners and an advocate for the change, wrote prior to the change:

> "Over the years, the police have become estranged from the municipalities from which they sprang and increasingly look to the Home Office. ... From the first

elections in May next year, the public will have a real say over how their area is policed."[12]

Herbert also highlighted the mandate of police and crime commissioners to "tackle drugs and work with local authorities and agencies." Many of the explanations for why this goal may not be achieved were also evident at the time, including in a Guardian editorial in the months ahead of the first commissioner elections:

> "So far, barely a quarter of voters even know that elections for the new commissioners will take place in November. There are serious concerns about turnout not being high enough to give the bodies legitimacy. There are worries about the calibre of candidates, and the rules by which they will fight the elections."[13]

My findings suggest that this change had at least one observable part of the its intended effect. The big remaining question is whether this came at a cost in terms of unobservable policy choices and whether elections improved the quality oversight or the effort overseers exerted.

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[12]https://www.telegraph.co.uk/news/uknews/crime/8410429/Its-time-for-you-to-have-a-say-on-policing.html

[13]https://www.theguardian.com/commentisfree/2012/jan/08/police-crime-commissioners-ratcatcher-vote

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Online Appendix

Intended for online publication only.

Contents

A.1 Additional Statistical Results

A.1.1 Drug Arrest Share by Tercile of Left-Party Voting

In the body of the paper, I presented a figure illustrating the research design by breaking the police forces into terciles of left-party voting and plotting the average drug arrest share by tercile. I followed the procedures in the pruned columns of Table 1 for that figure by dropping the two police forces that have unusually high drug arrest shares prior to treatment and throw off the parallel pre-trends. Figure A.1 presents the same figure without pruning.

Figure A.1: **Substantial Drop in Drug Arrest Share in Left-Leaning Districts Relative to Other Districts.** Comparing the top tercile of districts in terms of Labour, Lib Dem, and Green party voting in the 2010 parliamentary election to the bottom and middle terciles, districts favoring left wing and center left candidates more saw a larger drop in drug arrest share following the introduction of police and crime commissioners. Following the unpruned columns in Table 1, the Dyfed-Powys and Merseyside police forces are included in the plot despite to their unusually-high pre-treatment drug arrest share values.
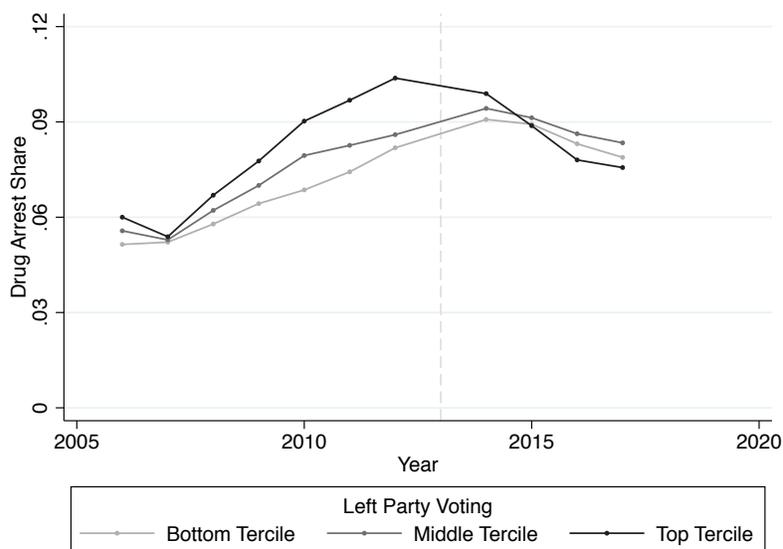
A.1.2 Results Using Alternative Measures of Ideology by District

In the body of the paper, I present results using left party voting in the 2010 parliamentary election as a measure of drug preferences. As a check, I re-ran the main analysis using three additional election-based measures of the ideology: voting for left parties in the 2012 commissioner election, the labour party in the 2012 commissioner election, and labour in the 2010 parliamentary election.

Table A.1: **Elections Cause a Decrease in the Share of Arrests and Stops for Drugs in Left-Leaning Districts, Commissioner Left Party Share.**

	Drug Arrest Share [0,1]				Drug Stop Share [0,1]			
Post * Commissioner Left Share [0,1]	-0.04	-0.04	-0.04	-0.04	-0.04	-0.05	-0.04	-0.05
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)
Police Force Areas	41	41	41	41	39	39	39	39
Years	16	16	16	16	16	16	16	16
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Police Force-Specific Trends	N	Y	N	Y	N	Y	N	Y
Pruned	N	N	Y	Y	N	N	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Commissioner Left Share is a share variable falling between zero and one that reports the vote share for Labour and Lib Dem candidates in the 2012 election for police and crime commissioner. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Drug Stop Share is a share variable capturing the share of total stops for which a drug crime is the primary cause. Pruned captures whether cases two standard deviations away from the average drug arrests or durg stops in the year preceding the first commissioner election are included in the regression or omitted. The first commissioner election year, 2012, is held out of the analysis.

Table A.2: **Elections Cause a Decrease in the Share of Arrests and Stops for Drugs in Left-Leaning Districts, Parliamentary Labour Share.**

	Drug Arrest Share [0,1]				Drug Stop Share [0,1]			
Post * Parliament Labour Share [0,1]	-0.06	-0.11	-0.07	-0.06	-0.30	-0.26	-0.33	-0.32
	(0.02)	(0.05)	(0.02)	(0.03)	(0.12)	(0.19)	(0.10)	(0.17)
Police Force Areas	41	41	39	39	41	41	40	40
Years	16	16	16	16	14	14	14	14
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Police Force-Specific Trends	N	Y	N	Y	N	Y	N	Y
Pruned	N	N	Y	Y	N	N	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Parliament Labour Share is a share variable falling between zero and one that reports the vote share for Labour candidates in the 2010 election for Parliament in the police force area. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Drug Stop Share is a share variable capturing the share of total stops for which a drug crime is the primary cause. Pruned captures whether cases two standard deviations away from the average drug arrests or durg stops in the year preceding the first commissioner election are included in the regression or omitted. The first commissioner election year, 2012, is held out of the analysis.

Table A.3: **Elections Cause a Decrease in the Share of Arrests and Stops for Drugs in Left-Leaning Districts, Commissioner Labour Share.**

	Drug Arrest Share [0,1]				Drug Stop Share [0,1]			
Post $*$ Commissioner Labour Share [0,1]	-0.04	-0.05	-0.05	-0.04	-0.25	-0.25	-0.24	-0.2:
	(0.02)	(0.04)	(0.02)	(0.02)	(0.09)	(0.14)	(0.09)	(0.1:
Police Force Areas	41	41	39	39	41	41	40	40
Years	16	16	16	16	14	14	14	14
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Police Force-Specific Trends	N	Y	N	Y	N	Y	N	Y
Pruned	N	N	Y	Y	N	N	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Commissioner Labour Share is a share variable falling between zero and one that reports the vote share for Labour candidates in the 2012 election for police and crime commissioner. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Drug Stop Share is a share variable capturing the share of total stops for which a drug crime is the primary cause. Pruned captures whether cases two standard deviations away from the average drug arrests or durg stops in the year preceding the first commissioner election are included in the regression or omitted. The first commissioner election year, 2012, is held out of the analysis.

A.1.3 Map of Parliamentary Voting by Police Force Area

My primary measure of preferences comes from parliamentary election data. I aggregate the votes to the police force area level using a geographic merge. Since nearly all parliamentary constituancies fit neatly inside a police force area, this is mostly just a technique for finding which constituencies go with which police forces efficiently. Below, I made a map plotting the police force boundaries I used and the left party vote share by police force area.

Figure A.2: **Map of Left Part Voting for Parliament in 2010 by Police Force Area.**
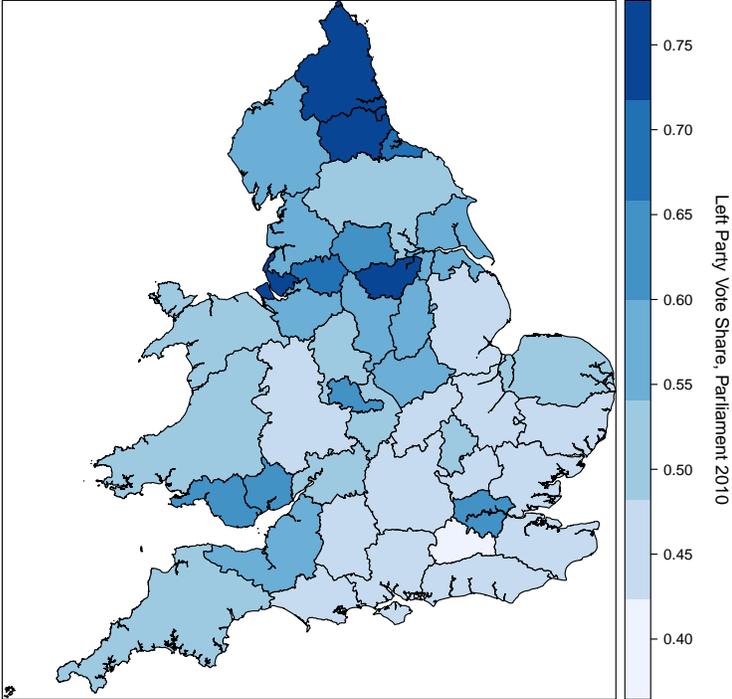
A.1.4 Differential Effect Not Driven by Changes in Capacity, Adjusting for Total Arrests

In the body, I presented estimates of the diferential effect of commissioners after adjusting for the number of full time employees each office has. In Table A.4, I adjust for total arrests and reach a similar conclusion.

Table A.4: **Elections Cause a Decrease in the Share of Arrests for Drugs in Left-Leaning Districts After Adjusting for Changes in Total Arrests.**

	Drug Arrest Share [0,1]							
Post ∗ Parliament Left Share [0,1]	-0.07	-0.08	-0.06	-0.07	-0.08	-0.09	-0.07	-0.08
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)
Arrests per 1,000 Residents	0.20	0.27	0.43	0.32	0.05	0.07	0.35	0.26
	(0.36)	(0.33)	(0.35)	(0.34)	(0.36)	(0.36)	(0.37)	(0.34)
Police Force Areas	41	41	41	41	39	39	39	39
Years	16	16	16	16	16	16	16	16
Police Force FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Year × Pop Quntile FE	N	Y	N	N	N	Y	N	N
Year × Arrest Share Tercile FE	N	N	Y	N	N	N	Y	N
Year × Pre-Trend Group FE	N	N	N	Y	N	N	N	Y
Pruned	N	N	N	N	Y	Y	Y	Y

Standard errors reported in parentheses estimated using 1,000 bootstrap samples blocked by police force. Post is a binary variable taking the value one for years after 2013. Left Share is a share variable falling between zero and one that reports the total vote share for Labour, Lib Dem, and Green candidates in the 2010 election for Parliament in the police force area. Drug Arrest Share is a share variable capturing the share of total arrests for which a drug crime is the primary cause. Pop Quintile divides the police forces into quintiles based on population as of 2010. Arrest Share Tercile divides the police forces into terciles based on average drug arrest share between 2010 and 2012. Pre-Trend Group is the product of two terciles: average drug arrest share between 2010 and 2012, and average drug arrest share between 2006 and 2009. Pruned captures whether cases two standard deviations away from the average drug arrests in 2012, the year preceding the first commissioner election, are included in the regression or omitted. The first commissioner election year, fiscal year 2013, is held out of the analysis.

A.2 Description of the Matching Procedure

The matching procedure I describe in Section 4.2 procedes in three steps:

1. *Calculate the distance between each unit and every other unit.* I calculate this distance by calculating the difference between the two units in every year between 2006 and 2012, squaring these differences, and adding them. This gives me a single distance measure between units, in this case the Euclidean distance. In a separate version, I add a weight to the squared differences in which 2006 received a weight of 1/7, 2012 receives a weight of 1, and the weight increases linearly with year over the intervening period. This penalizes distances closer to the policy change more.

2. *Drop the unit with the largest minimum distance it and any other unit.* Since there are an odd number of units, I drop the unit with the worst ability to match from the sample.

3. *Run nonbipartite matching algorithm to find pairs that minimize the total of within-pair distances.* Following the recommendation of described in Ryan T Moore and Keith Schnakenberg's discussion of blockTools, I use the nbpMatching package to find the pairs that minimize this total distance.