Constituent-Representative Interaction Outside of Elections: Theory and Evidence from the Early U.K. Women's Rights Movement *

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Abstract

Political economy theories of constituent-representative interactions typically focus on elections, yet many important issues arise between elections. We study how constituent and representatives interact outside of elections and how this interaction is shaped by the work of advocacy groups. In our model, representatives have an imperfect understanding of constituent preferences when faced with a novel policy issue and constituents face a coordination problem in signalling their preferences which advocacy groups can help overcome. To study these issues empirically we focus on a key period in the development of the women's rights movement in the U.K. (1860s-1880s), a setting where the availability of detailed data on constituent petitions offers unique visibility into constituent-representative interactions. Our results show that advocacy efforts can create persistent increases in constituent signalling and that constituent signals influences MP votes, but only in the absence of elections. We also show that advocacy and signalling focused on one policy can have spillover effects onto related policy areas, both by solving coordination problems and because representatives update their beliefs about constituent preferences.

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1 Introduction

Political economy theories describing the interaction between constituents and their representatives typically focus on elections. However, between elections representatives must decide how to vote on a large number of legislative measures that received little attention during election debates. For example, the early stages of the covid-19 pandemic, the 2009 financial crises, and the Ukraine War, are just three recent examples of cases where elected representatives had to decide on issues of great importance which were never debated in the previous election. In this paper, we take advantage of a unique historical context in order to explore, theoretically and empirically, how constituents and their representatives interact outside of elections as well as the role played by advocacy groups in this interaction.

Our interest in these issues is motivated by a series of events that played a critical role in the development of the women's rights movement in the U.K. Between 1864 and 1869, with essentially no public debate, Parliament passed a series of harsh laws, called the Contagious Disease Acts (CDAs), regulating prostitution in some parts of the country. Sex workers were subject to mandatory registration, invasive physical inspections, and forced isolation if they were found to be carrying a sexually transmitted infection (STI). However, in 1869 these laws eventually led to the emergence of a powerful advocacy organization, the Ladies National Association for the Repeal of the Contagious Disease Acts (LNA), that mobilized against the CDAs arguing the laws violated individual rights. Over the next few years, the LNA mounted a sustained attack on the CDAs, leading to an (ultimately unsuccessful) repeal vote in 1873 and eventually successful repeal in 1886. Historians have argued that the LNA advocacy activity played a critical role in the overall women's rights movement, including in several unsuccessful but important votes on women's suffrage that took place in the 1870s and 1880s (see, e.g., Caine (1997)).

Our analysis begins with a simple theory in which, faced with a particular policy proposal, the voting decision of a representative (hereafter, MP) depends on some combination of their own personal feelings toward the policy as well as the utility that the policy generates for their constituents—or at least a subset of their constituents that the representative cares about. However, the MP faces a critical problem: they have only imperfect information about the preferences of their constituents. To deal with this, constituents have the ability to send costly signals to the MP, such as by writing letters, calling their office, or—the dominant form of signal in the empirical setting we consider—sending a petition. This imperfect information about constituent's preferences, and constituents' ability to influence their MP through signalling, is the first key feature of our theory. A second key feature is that signalling involves a coordination problem, where the cost of sending a signal depends on how many others are also doing so. This idea, which traces its roots back to Olson (1965), reflects the presence of fixed costs in signalling, such as the cost of putting together and transmitting a petition, organizing a rally, etc. This coordination problem opens up an opportunity for advocacy groups which, by fostering coordination among supportive constituents, may be able

to shift them into a high-signalling equilibrium, and thereby influence the policy choices of MPs.

Our theoretical framework generates several predictions that can be examined empirically. First, because advocacy can shift constituents from one signalling equilibrium to another, temporary advocacy efforts can potentially have persistent effects on signalling behavior and ultimately on MP votes. Second, our framework suggests that advocacy efforts and constituent signals aimed at one policy can have spillover effects on MP attitudes and votes toward other policies. This spillover effect occurs through two channels. First, advocacy efforts that solve constituent coordination problems that facilitate signalling related to one policy may, as a side-effect, also facilitate signalling by the same constituent group on other related topics. We call this the "coordination" channel. Second, when MP's update their beliefs about constituent's preferences, this reassessment may not only change MP's assessment of how constituents feel about one policy (e.g., the CDAs), but also other policies that touch on related issues (women's rights more generally). We call this the "updating" channel.

The historical events that we consider in our empirical analysis offer a unique opportunity to explore these forces empirically. First, the passage of the CDAs led to the formation of an active single-issue advocacy group, the LNA, led by Josephine Butler. Using information gleaned from contemporary newspapers, we are able to track LNA activity in detail. In particular, we identify the location of LNA rallies against the CDAs that were held throughout the country starting in 1870. Second, we are able to observe in detail the key conduit for information flow from constituents to their MPs: petitions sent to Parliament. To do so, we draw on a rich new database covering over 300,000 petitions sent to Parliament from 1864 to 1883 on all topics, including information on the target policy, the location and nature of the petitioning group, etc. Given the limited set of alternative signalling mechanisms available in the historical setting we study, this provides a unique opportunity to observe, in detail, constituent signalling behavior and how it is related to advocacy efforts.

A third important feature of our setting is that we observe MP votes and speeches on the repeal of the CDAs as well as on a set of measures related to women's rights which dealt with different but overlapping policy issues. In particular, the CDAs and women's suffrage shared a common connection to women's rights, an issue that was beginning to be debated in the 1870s but where MPs likely had limited and imperfect information about the preferences of their constituents. Studying how LNA advocacy and constituent signalling focused on the CDA bills also influenced MP votes on women's suffrage—particularly in the period after these issues had emerged but before any general election had been held—allows us to understand how actions focused on one policy issue can have spillover effects onto other related policy areas.

Our empirical analysis begins by establishing the link between LNA advocacy and constituent signals. We apply a staggered-treatment event study analysis framework to study how petitions related to the CDAs from over 18,000 locations responded to LNA rallies held nearby. Our results show that LNA rallies substantially increased the number of petitions sent, that these effects are

smaller from locations further from the rallies, and that the increase in petitions persisted for several years. These patterns are consistent with the idea that advocacy can increase constituent signalling through overcoming collective action problems (though we note that a model based on collective action is only one of several that can rationalize this pattern). In addition, we observe flat pre-trends in this analysis, suggesting that rally locations were not chosen because they already had more political activity related to the CDAs. This suggests that the timing and location of LNA rallies provide a useful source of quasi-exogenous variation for constructing instruments for CDA petitions.

Next, we study how constituent signals influenced MP votes on the CDAs. We focus our analysis on a vote in 1873 that was the culmination of the first wave of advocacy efforts against the CDA. The 1873 vote is particularly interesting for us because it occurred after several years of vigorous LNA advocacy efforts but before any general election had taken place in which the CDAs were a meaningful issue. Thus, this was the type of between-election period in which we hypothesize that constituent signalling may play an important role in influencing MP votes. Our analysis begins with a set of simple OLS regressions showing that MPs whose constituents sent more petitions against the CDAs were more likely to vote to repeal the acts (nearly all petitions on the issue were in favor of repeal). To strengthen identification we use the timing and location of LNA rallies to generate an instrument for the number of CDA petitions sent by an MP's constituents. These IV regressions provide additional evidence showing the impact of constituent signals on MP votes on the 1873 repeal bill. Moreover, we also provide evidence that MPs who's constituents sent more CDA petitions between 1870 and 1873 were more likely to vote to repeal the CDAs in 1873 conditional on how they voted on an 1870 repeal bill. Together, these results indicate that CDA repeal petitions sent by constituents had a meaningful impact on MP votes.

To complement our analysis of MP votes, we study how the language used in Parliamentary debates shifted across our study period. We use ChatGPT to summarize the key arguments for and against repeal in debate speeches. This analysis shows that in early debates, such as the discussion that preceded the passing of the second CDA bill in 1866, concerns about women's rights were not an important debate topic. However, after the beginning of CDA advocacy in 1870, we see that women's rights becomes one of the most important critiques of the acts. Interestingly, the language that appears in Parliament debates closely resembles the language found in LNA propaganda. Thus, alongside changes in MP voting patterns, we also see changes in the nature of the debate over the CDAs once advocacy efforts began.

We then turn our attention to analyzing the spillover influence of advocacy and constituency signalling related to the CDAs on other women's rights legislation. Specifically, we study how advocacy related to the CDAs affected petitioning and MP votes on women's suffrage. Women's suffrage was first proposed in the UK Parliament by John Stuart Mill in 1870. It was then voted on several times over the next three years. This provides us with several votes that we can compare to patterns of CDA advocacy.

Our empirical analysis provides support for both the coordination and updating channels. To look at the coordination channel, we study how petitions on women's suffrage respond to LNA rallies. Using an event-study analysis framework, we show that LNA rallies led to an increase in women's suffrage petitions. Like the effect on CDA petitions, this increase is persistent over time and falls off rapidly for locations further from LNA rallies.

To study the updating channel, we look at two votes on women's suffrage that took place in 1872 and 1873. We start with two pieces of suggestive evidence. First, we show that MPs who voted to repeal the CDAs were more likely to vote in favor of women's suffrage. Of course, this could simply be the result of MP's having correlated preferences across these two related policy issues. More interestingly, we also show that MPs who voted to repeal the CDAs in 1873 were more likely to vote for women's suffrage in 1873 *conditional* on their vote on women's suffrage in 1870. This suggests a link between MP's CDA vote and a change in their opinion towards women's suffrage.

We then look at how MP's votes on women's suffrage are related to petitions sent by their constituents. We find that MPs who's constituents sent more petitions against the CDAs were more likely to vote for women's suffrage, even controlling for petitions on women's suffrage sent by their constituents. We then break these results down based on whether an MP ultimately voted to repeal the CDAs. Intuitively, this group of MPs who ultimately voted to repeal the CDAs is the group likely to have "received" their constituents signals and updated their assessment of constituent's preferences towards women's rights. Consistent with this intuition, we find that all of the influence of CDA petitions on MP women's suffrage votes operates through those MPs who ended up voting to repeal the CDAs. Finally, we tie MP's votes on women's suffrage directly to LNA advocacy activity, by showing that MP's whose constituents were more exposed to LNA rallies were more likely to vote in favor of women's suffrage. These results show that advocacy related to one policy issue can have spillover effects on other related issues, and shed light on the specific channels through which these spillover effects occur.

Related literature and contributions The primary literature this study contributes to is the large body of work in political economy studying the relationship between constituents and representatives. Following Downs (1957), the vast majority of this literature places elections at the center of this relationship. In these models, elections may serve to aggregate voter preferences, to hold representatives accountable, or to select among politicians with different abilities or preferences. An important branch of this literature emphasizes this relationship in a principle-agent framework in which constituents have imperfect information about representative actions (Barro, 1973; Ferejohn, 1986; Persson and Tabellini, 2000). Another important line of work emphasizes the importance of the identity of elected politicians (Osborne and Slivinski, 1996; Besley and Coate, 1997; Caselli and Morelli, 2004; Besley, 2006).[1]

What all of this work has in common is the central role played by elections. However, as

[1]See Gehlbach (2022) for a recent overview of work in this area.

our empirical example illustrates, many important issues arise, and must be dealt with, between elections. Thus, the critical difference between this paper and most previous work in this area is that we are interested in the interaction of constituents and their representatives between elections. While this interaction is likely to be influenced by concerns about future elections, without elections to convey information, constituents and their representatives must find other ways to interact.

In contrast to the literature centered on elections, political economy work examining how politicians may be influenced outside of elections is relatively sparse. Perhaps the most developed line of work in this area focuses on lobbying. Grossman and Helpman (1994) is a seminal work on this topic in the economics literature, while there is a larger literature on lobbying in political science, including papers such as Hall and Deardorff (2006). Victor (2020) provides a recent review of the political science literature. While somewhat related to our paper, lobbying is fundamentally different than the type of constituent-representative interaction that we are interested in.

Another line of work focuses on the role of protests, which offer another avenue through which constituents may signal their leaders.[2] Much of this literature is empirical and focused on understanding the factors, such as media exposure, social network, or beliefs about other's participation, that determine whether an individual chooses to participate in a protests (Enikolopov et al., 2020; González, 2020; Hager et al., 2020; Cantoni et al., 2019; Manacorda and Tesei, 2020; Bursztyn et al., 2021; Cantoni et al., 2022; García-Jimeno et al., 2022). Like much of this literature, collective action problems are important in the signalling game that we study. However, an important difference is that we are interested in how constituents' actions depend on their representative and how representatives' votes are influenced by constituent actions within a democratic system. Perhaps the closest paper to our study is Madestam et al. (2013), which looks at the influence of protest activity (the U.S. Tea Party Movement) influenced politician's votes. However, we differ from this paper in several important dimensions. First, we ground our analysis in theory. Second, we are able to observe constituent signals to their representatives. Third, we can study how signals related to one policy spillover onto other related policy decisions.

This paper is also related to work on the causes of the adoption of women's suffrage historically. There is now a rich literature describing the deep economic forces that contributed to the adoption of women's suffrage in Western democracies (Jones, 1991; Geddes and Lueck, 2002; Doepke and Tertilt, 2009; Bertocchi, 2011; Fernández, 2014; Tertilt et al., 2022).[3] Within economics, less attention has been paid to the role of women's organizations and advocacy efforts, despite the fact that researchers in other fields have argued that these organizations played an important role in determining the success of the suffrage movement (McCammon and Campbell, 2001; Przeworski, 2009; McConnaughy, 2013; Teele, 2018). We bridge these two strands of work, by bringing the quantitative and theoretical tools of economics to investigate the role of advocacy movements in influencing the attitudes of MPs toward women's suffrage.

[2]See Cantoni et al. (2024) for a recent review of this literature.
[3]See Moehling and Thomasson (2020) for a recent review of this literature.

To summarize, our contribution is to break new ground, both theoretically and empirically, in order to understand how constituents and representatives interact outside of elections. Given the number of issues that emerge and must be dealt with between general elections, we think that this contribution has a broad set of potential applications.

2 Empirical setting

2.1 The Contagious Disease Acts

During the Crimean War (1854-56), the work of Florence Nightingale and others drew attention to the poor health of British soldiers and sailors, many of whom died from disease rather than enemy action. After the war, the Army Sanitary Commission assigned to look into the issue identified STIs as a major cause of hospitalization and lost productivity in the military.[4] In response, in 1864 Parliament adopted the first CDA, which was applied on a trial basis to a set of military stations in the south of England. The primary objective of the act was to reduce STI prevalence. To achieve this aim, the act required that all sex workers in the district around each station be registered and undergo mandatory periodic medical inspections. If found to be infected with an STI, a sex worker could be forcibly isolated in a lock hospital. The initial act applied to eleven districts, while subsequent acts in 1866 and 1869 expanded the set of regulated locations covered and strengthened the regulations, including by expanding the period of forced isolation to up to nine months.

The CDAs were vigorously enforced. By 1870, more than 5,000 sex workers had been registered. In 1870, sex workers were forced to undergo more than 50,000 medical inspections (Goehring and Hanlon, 2025).[5] From 1870 to 1880, between 3,000 and 5,000 mandatory hospitalizations occurred per year.

These rigorous measures were highly effective from a public health perspective. As we show in a companion paper, they substantially reduced STI hospitalizations among soldiers and sailors, STI mortality among the general population, and even rates of childlessness (Goehring and Hanlon, 2025). Contemporaries were aware of these health benefits; though CDA opponents consistently argued that the acts were ineffective, a series of Parliamentary committees concluded (correctly) that the CDAs were achieving the public health improvements that they were designed to produce.[6]

Yet, despite the act's effectiveness in reducing STI rates among both the military and civilian populations, the acts were eventually repealed. This occurred in two steps. In 1883, Parliament passed a statement condemning compulsory examination, which rendered the acts largely ineffective. They were then completely repealed in 1886. Why? In the next section we discuss the key

[4] Blanco (1967).

[5] After 1870, the number of inspections fell, leveling off at around 40,000 per year (Goehring and Hanlon, 2025).

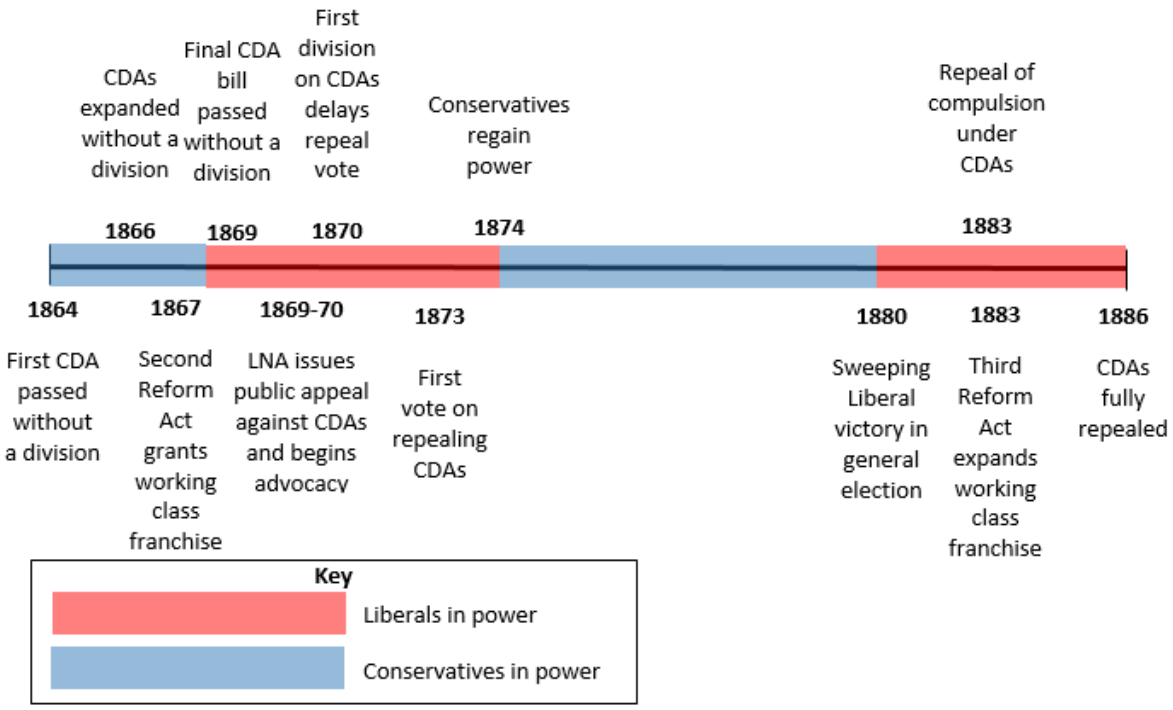
[6] For example in 1881, after extensive study, a Select Committee assigned to examine the CDAs found clear evidence that they reduced STI hospitalizations among soldiers and increased health among the civilian population in subjected districts. These results echoed the findings of a Royal Commission that looked into the CDAs in 1871. See *Report from the Select Committee on Contagious Disease Acts*, Parliamentary Papers, 7 August 1882.

steps that ultimately led to repeal.

2.2 Timeline of events

Figure 1 presents a timeline of the key events in our historical setting from 1864, when the first CDA was passed, until 1886, when the CDAs were finally repealed. This period can be split into four broad regimes. In the first, lasting from 1864-1869, a series of CDA bills were passed, in 1864, 1866, and 1869, under both Conservative and Liberal governments, with essentially no opposition. In fact, opposition to the Acts was so limited during this period that the laws were passed without a division (i.e., a vote), which take place only when there is evidence of sufficient opposition to a bill.[7] As we will show, concerns about women's rights played essentially no role in the early debates over the CDAs. Instead, the primary issues related to public health, the morality of the state sanctioning prostitution, and cost. This era ended in late 1869, when substantial public opposition to the CDAs began.

Figure 1: Timeline of key events



The exact origins of the public opposition to the CDAs are unclear. Josephine Butler gives

[7] That an Act can pass without a vote may seem surprising to those not familiar with the workings of the U.K. Parliament. As Parliament's website explains, "When a vote is held the Speaker in the Commons - or Lord Speaker in the Lords - asks Members to call out whether they agree or not. The Speaker will then judge whether there is a clear result. If this cannot be determined, the Speaker or Lord Speaker calls a division" (see https://www.parliament.uk/about/how/business/divisions/).

some credit to a series of articles by Harriet Martineau, an important figure in the slavery abolition movement, published in the *Daily News* in 1869.[8] The Rescue Society, an organization founded to save women and children from prostitution, also played a role.[9] In 1869, two Nottingham physicians, Charles Bell Taylor and Charles Worth, raised the issue at a meeting of the Social Science Congress in Bristol. Eventually, Josephine Butler, who had been actively working as an advocate for women's education, became involved. By late 1869, the LNA had been founded.[10] In the following years, Butler would become the leader of the repeal movement.

The first major act of the LNA was the publication of a public appeal on January 1, 1870 in the *Daily News*. The LNA appeal, which was reprinted in newspapers around the country, signalled the end of the era of unopposed legislation (Butler, 1896). We reproduce the text of the LNA protest in Appendix B. This appeal laid out the key critiques about the CDAs offered by the LNA. Among these was the "momentous change in the legal safeguards hitherto enjoyed by women in common with men" which "so far as women are concerned...remove every guarantee of personal security which the law has established and held sacred, and put their reputation, their freedom, and their person absolutely in the power of the police." In addition to violating the fundamental rights of women, the LNA argued that it was "unjust to punish the sex who are the victims of a vice, and leave unpunished the sex who are the main cause both of the vice and its dreaded consequences" and that "these measures are cruel to the women who come under their action–violating the feelings of those whose sense of shame is not wholly lost, and further brutalising even the most abandoned." Later, we will compare these points to the shifts that we observe in Parliamentary debates over the CDAs, which can reveal the impact of advocacy. Butler (1909) claimed that 120 names were attached to the original protest but that the number of signatories eventually reached over two thousand, including many notable women such as Harriet Martineau and Florence Nightingale.

Following the publication of this appeal, the LNA, led by Josephine Butler, vigorously advocated for the repeal of the CDAs. The LNA had initially written letters to all MPs, hoping to sway their views towards the acts. This had little effect, leading to a switch in strategy, described by Butler in her memoir:

"Our appeal, we decided, must be made to the Nation. Letters had previously been written by us...to every member of both Houses of Parliament, and to many leading men, lay and ecclesiastical...Having received so little encouragement from the person whom we had vainly imagined would have taken an interest in the question, we turned to the working populations of the Kingdom. Here our reception was wholly different."[11]

The centerpiece of these advocacy efforts was a set of rallies in locations around the country where Butler addressed crowds and worked to build support against the acts. Interestingly, often

[8] Butler (1896), p. 9-10.

[9] Walkowitz (1982), p. 91.

[10] Another organization, the National Association for the Repeal of the Contagious Disease Acts, was also founded in 1869. However, that organization excluded women and, ultimately, it would play a much less important role in advocacy against the CDAs.

[11] Butler (1896), p. 30.

Table 1: Breakdown of key CDA repeal votes of 1873 and 1883

	1873			1883		
Party	No	Yes	Share for repeal	No	Yes	Share for repeal
Conservative	132	16	0.108	80	15	0.158
Liberal	97	104	0.517	22	152	0.874
Other	9	10	0.526	8	16	0.667
Total	238	130	0.353	110	183	0.625
Liberal share of voters		0.546			0.594	

Note: Data are taken from Eggers and Spirling (2014).

only women were admitted to these rallies, in part because the CDAs were seen as touching upon what Victorians thought of as sensitive topics that could not be discussed in mixed company.

LNA advocacy was largely aimed at influencing Liberal MPs. The Liberals under William Gladstone had come into power in 1870, and the LNA viewed Liberal voters as the most likely supporters of repeal. To apply pressure, the LNA worked to convince Liberal voters to withhold their votes from Liberal candidates. This strategy was demonstrated in a by-election in Colchester that took place in November, 1870, where the LNA openly opposed and defeated a Liberal candidate who supported the CDAs. Butler wrote that "The moral of this election was not lost on the Government. They learned that this question was not one which they could trifle with or ignore" (Butler, 1896, p. 53).

The advocacy of the LNA led to the first vote on the CDAs in Parliament, which took place on 24 May, 1870. However, the actual motion voted on was whether or not to delay consideration of the acts in order to allow a Royal Commission to gather more information. This makes it challenging to interpret MPs votes, because it appears that some MPs who were critical of the acts voted for delay in order to increase the chances of a subsequent repeal.

The first clear repeal vote came two years later, in 1873. This vote will be the primary subject of our analysis in Section 5.2. After an extensive debate, the repeal bill was defeated, as shown in Table 1, with Liberal MPs almost evenly split on the issue and almost all Conservative MPs voting against repeal.

The defeat of the 1873 repeal bill, and the triumph of the Conservatives in the 1874 general election, paused legislative activity on the CDAs for several years. This quiet period lasted until the election of 1880, when the Liberals returned to power with a large majority. This began the fourth and final period of CDA activism. This culminated in an 1883 vote in which Parliament passed a resolution that eliminated compulsory inspection and isolation from the CDAs, rendering the laws completely ineffectual. They were fully repealed in 1886.

2.3 Petitioning in mid-19th century Britain

The middle of the nineteenth century was the "heyday" of petitioning in Britain, "distinguished by an intensification and institutionalization of mass petitioning to the Commons that was sustained over a long period" (Miller, 2023, p. 15). During this period, petitioning became the most important conduit for communication between constituents and their representatives outside of elections.[12] Relative to modern representatives, who have access to survey and polling data, local offices, and a variety of other connections to their constituencies, communication channels were much more limited in the nineteenth century. Petitioning filled this gap.

Nineteenth century petitions related to a wide range of topics. In Appendix D we provide a listing of the issues that attracted the most attention in the 1864-1874 period, which will be the main focus of our analysis. Among these, we see petitions on topics as varied as liquor sales, education, religious practices, prisons, elections and the franchise, the legalization of marrying a deceased wife's sister, and gas supply.

An interesting feature of petitioning is that it was not limited to the enfranchised population. At this time, a large fraction of adults, including all women and many poorer men, lacked voting rights at the national level. Petitioning offered one of the only means available to these groups for influencing government policy.

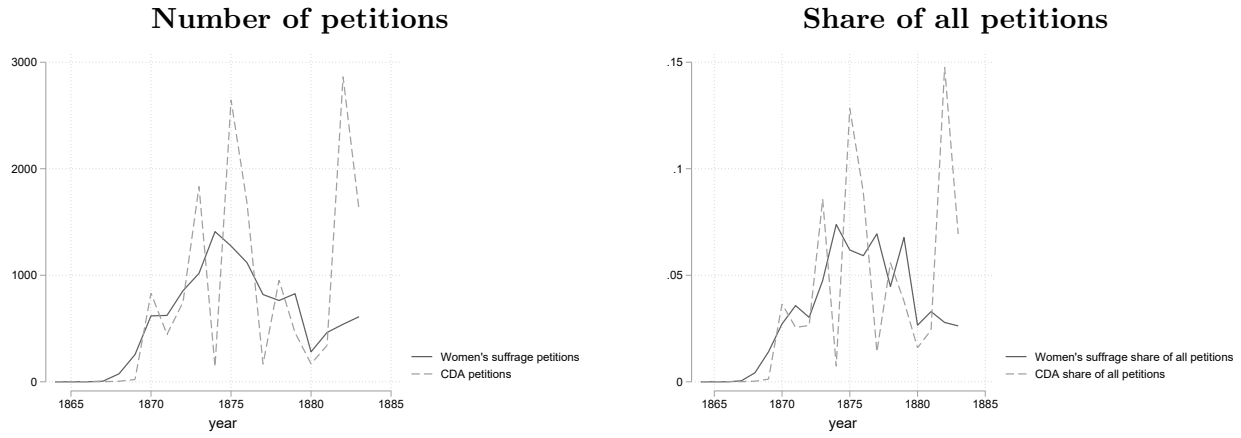
We can track the ebbs and flows of the effort against the CDAs in the petition data (which will be described in more detail in Section 4). Figure 2 plots the number and share of all petitions related to the CDAs and women's suffrage across the study period. As expected, we see very few CDA petitions before 1869, when the LNA began contesting the policy. Following that point, we see a high level of petitioning related to the CDAs from 1870-1875, with substantial spikes in 1870 and 1873. That was followed by a lull during the Conservative government of 1874-1880, and then another period of intense petitioning following the Liberal victory of 1880, peaking in 1883. It is important to note in these graphs the high level of activity that the CDAs generated. The right-hand graph shows that CDA petitions accounted for over 5% of all petitions across most of the period from 1870-1883, and as much as 15% in some years. It is also interesting to note that petitioning activity related to women's suffrage followed a similar pattern over time.

2.4 The CDAs and women's rights

Historians have suggested that the CDA repeal effort played a central role in the overall debate over women's rights going on during the 1870s. Feminist historian Barbara Caine, for example, wrote that "some would argue that the real turning point" in the British women's rights movement "was not so much the early campaigns of the 1850s and 1860s as the contagious disease agita-

[12] Huzzey and Miller call petitioning "a crucial site of representation between people and parliament" (Huzzey and Miller, 2020, p. 1). As a particularly notable example of this representation in action, Huzzey and Miller describe the enormous petition–stretching over five miles long when rolled out–for repeal of the CDAs, signed by a quarter of a million women and presented to Parliament on March 31, 1871.

Figure 2: Petitions related to the CDAs and women's suffrage, 1864-1883



tion, which...dominated feminist consciousness during the 1870s. The campaign...soon involved a national movement with a substantial membership, working through large-scale public meetings and demonstrations, direct political intervention in by-elections, and by producing effective propaganda."[13] Similarly, Szreter (2014) writes that "The successful battle to repeal the Contagious Disease Acts, 1864-86...was a powerful engine of mobilization for Victorian feminism." One reason for the movement's impact was how, "drawing on the model of the abolitionist movement, it...developed a powerful religious rhetoric which tied its specific legal objective, the end of the Contagious Disease Acts, with an ideal of moral and religious transformation–and the end of the sexual double standard."[14] However, existing evidence on whether and how the CDA agitation contributed to the broader women's rights movement remains almost entirely anecdotal. The empirical part of the paper will explore the relationship between these two movements quantitatively.

3 Theoretical framework

This section presents a simple theoretical framework for thinking about how advocates, constituents, and MPs interact outside of elections to determine MP's votes on policy proposals. In our framework, MPs care (to some extent) about how policies affect the utility of their constituents. However, MPs have only imperfect information about their constituents' preferences. Constituents may send signals, such as petitions, to help inform their MPs, but in doing so they face a collective action problem (Olson, 1965). This collective action problem creates an opening for advocacy groups to organize constituents in order to influence policy outcomes.

Policies: A policy R in our simplified model is represented as a vector of length K with components $r_k \in \{-1, 0, 1\}$. Each element represents an issue that a policy might touch on, and the value of r_k

[13] Caine (1997), p. 90-91.
[14] Caine (1997), p. 91.

signifies whether the policy has a negative, neutral, or positive effect on the particular issue. So, for example, a simplified version of the CDA acts could be thought of as a vector with four non-zero elements, corresponding to public health, military preparedness, women's rights, and fiscal cost, with components [1, 1,-1,-1], and with all other elements of the vector being zeroes. So, in this simplified representation, the CDAs embody a trade-off between improvements in public health and military preparedness against violations of women's rights and fiscal costs. To keep the model simple, we assume that R is public information and that everyone agrees on the value of each element.[15]

Constituents: Let A_j be a vector of constituent j's preferences composed of a set of elements $a_{jk} \in \{0, 1\}$, representing the weights that individual j places on each of the elements of a policy R. So, using the example of the CDA laws, the vector would reflect whether individual j cares about public health, military preparedness, women's rights, or costs. Constituent j's utility from a policy being adopted is given by $U(R|A_j) = \sum_{k \in K} a_{jk} r_k$.

MPs: MP's vote on a policy R depends on (1) their own preferences toward the policy, which is private information, and (2) their expectations over the preferences of their constituents regarding the policy. The critical issue faced by MPs in this setting is that they don't have perfect information on the preferences of their constituents. Instead, at any point in time they have a set of priors about their constituents' preferences $\tilde{A}_j$ with elements $\tilde{a}_{jk} = Pr(a_{jk} = 1)$. Over time, they may receive imperfect signals and update their beliefs accordingly, as described in more detail below.

MP i's evaluation of a policy R is:

$$V_i(R) = \gamma u_i + (1 - \gamma) \sum_{j \in J} \eta_j U(R|\tilde{A}_j)$$

where the first term on the right-hand side is the MP's own taste for the policy u_i, which is drawn from a uniform distribution on $[-1, 1]$, and the second term on the right-hand side is a weighted sum of the utility of the MP's constituents from the policy, $U(R|\tilde{A}_j)$, which depends on the MP's belief of the constituent's preference vector $\tilde{A}_j$. The $\gamma \in (0, 1)$ parameter reflects the weighting that MP's apply to their own feelings toward the policy relative to that of their constituents, which may depend on factors such as the competitiveness of their seat. The η_j parameters, which satisfy $\sum_{j \in J} \eta_j = 1$, reflect how much the MP cares about constituent j. Denoting each element of vector $\tilde{A}_j$ as $\tilde{a}_{jk}$, MP i's evaluation of a policy R can be rewritten as:

$$V_i(R) = \gamma u_i + (1 - \gamma) \sum_{j \in J} \eta_j \sum_{k \in K} \tilde{a}_{jk}\, r_k$$

MP's will vote in favor of a reform R whenever it delivers a $V_i(R)$ that is greater than the status quo policy. To simplify our exposition of the model, we will think of the status quo policy as being

[15] Naturally, that may not be true in reality. However, departing from this assumption would introduce an additional source of uncertainty into the model that would only serve to obscure the mechanism that we are interested in.

a vector of zeros. Thus, MP's will vote in favor of a policy R whenever $V_i(R) > 0$.

Signals: Constituents have the ability to send signals to their MPs in order to better inform the MPs about their preferences. In particular, we assume that a constituent can send a signal informing their MP about one element of their preference vector, a_{jk}.[16] However, the signal is not always effective at conveying the constituent's preferences to the MP. In particular, we assume that the MP receives the correct signal with probability $q \in (0.5, 1)$ and the incorrect signal otherwise.[17] So, if constituent j sends a signal indicating that their preference over the k'the element of the policy is 1, the MP receives the signal correctly with probability q but receives the incorrect signal, i.e., $a_{jk} = 0$, with probability $1 - q$.

Given a signal s_{jk} from constituent j, MP i updates his belief about the constituent's preference following Bayes rule. So, if MP i receives signal s_{jk} he updates his assessment of the preferences of constituent j according to:

$$\tilde{a}'_{jk}(s_{jk} = 1) = P(a_{jk} = 1|s_{jk} = 1) = \frac{q\tilde{a}_{jk}}{q\tilde{a}_{jk} + (1-q)(1-\tilde{a}_{jk})} \tag{1}$$
$$\tilde{a}'_{jk}(s_{jk} = 0) = P(a_{jk} = 1|s_{jk} = 0) = \frac{(1-q)\tilde{a}_{jk}}{(1-q)\tilde{a}_{jk} + q(1-\tilde{a}_{jk})}$$

The value of sending a signal depends in part on the likelihood that a constituent's MP ends up casting the pivotal vote on policy R. Constituents likely have very little information with which to calculate this probability. To reflect this, we suppose that all constituents operate under a common expectation that their MP is pivotal with probability Π. Given this, the benefit to constituent j of sending a signal s_{jk} is the product of (i) the probability that MP i casts the pivotal vote, (ii) the probability that the constituent's signal changes MP i's vote, and (iii) the utility (or disutility) that constituent i experiences from the policy relative to the status quo.

$$\Pi \left[Pr\left(V_i > 0|\tilde{a}'_{jk}(s_{jk})\right) - Pr\left(V_i > 0|\tilde{a}_{jk}\right) \right] U_j(R|A_j) \tag{2}$$

Given a set of MP beliefs about constituent preferences, the constituent's expected probability that an MP will vote in favor of the policy is given by:

$$Pr(V_i > 0) = Pr\left(u_i > -\frac{1-\gamma}{\gamma} \sum_{j \in J} \eta_j \sum_{k \in K} \tilde{a}_{jk}\, r_k \right)$$

[16] Alternatively, we could have modelled constituents as sending signals about their preference over a policy as a whole. We have chosen to make signals reflect only one element of the constituent's preference vector because we think that this is a better representation of how communication between MPs and constituents takes place, and because it generates a somewhat simpler and more transparent exposition.

[17] Put differently, we are assuming that the signal contains some information but not perfect information. If $q = 0.5$ the signal would be meaningless because the received signal would just be an unbiased coin flip. If $q = 1$ then the signal is perfect.

$$Pr(V_i > 0) = \begin{cases} 1 & if -\frac{1-\gamma}{\gamma} \sum_{j \in J} \eta_j \sum_{k \in K} \tilde{a}_{jk}\, r_k < -1 \\ \frac{1}{2} - \frac{1}{2}\left(\frac{1-\gamma}{\gamma}\right) \sum_{j \in J} \eta_j \sum_{k \in K} \tilde{a}_{jk}\, r_k & otherwise \\ 0 & if -\frac{1-\gamma}{\gamma} \sum_{j \in J} \eta_j \sum_{k \in K} \tilde{a}_{jk}\, r_k > 1 \end{cases} \tag{3}$$

We are interested in the intermediate case where the MP is not certain to either vote for or against the policy but instead is potentially open to persuasion. Within this range, the benefit B_j to constituent j from sending a signal is:

$$B_j = \Pi \left(\frac{1}{2}\right)\left(\frac{1-\gamma}{\gamma}\right) \eta_j \left[\tilde{a}_{jk} - \tilde{a}'_{jk}(s_{jk})\right] r_k\, U(R|A_j) \tag{4}$$

where $\tilde{a}'_{jk}(s_{jk})$ is given by Eq. 1. It is evident from Eq. 4 that each constituent will only receive positive benefits from either $s_{jk} = 0$ or $s_{jk} = 1$ and that the beneficial signal is the one that will increase (decrease) the probability that the policy is successful when the policy provides the constituent with positive (negative) utility.

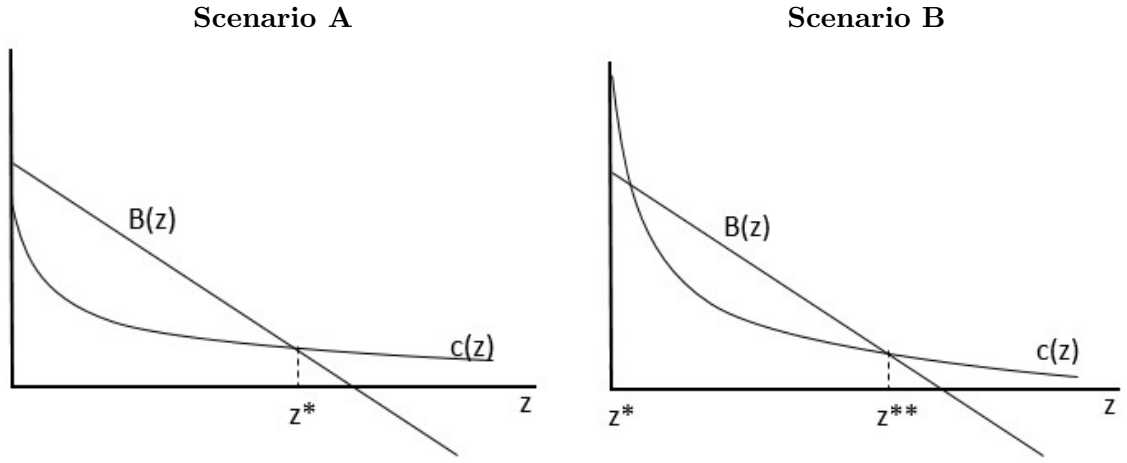
A key feature of the result described by Eq. 4 is that, within the range in which the MP is not certain to either vote for or against the policy, the benefit to constituent j of sending a signal is invariant to whether other constituents send a signal. This feature, which follows from the assumption that the MP's type is uniformly distributed, is useful for simplifying our analysis. In essence, it implies that there is neither increasing nor decreasing returns in the number of signals sent, within the range in which the MP is persuadable.

Constituents weight the benefits of sending a signal against the cost. A key assumption in our theory, one that traces its roots back to Olson (1965), is that there is a public goods aspect of signalling. Specifically, we assume that the cost to constituent j of sending a signal to their MP is $c(z)$ where z is the number of constituents sending a particular signal. We also assume that this function is positive, decreasing, and convex. Intuitively, this reflects the idea that there is likely to be some fixed cost involved in sending a signal, such as the cost of preparing and transmitting a petition, that must be paid regardless of whether the petition comes from one constituent or many.

Suppose that we order constituents in descending order according to the value they receive from sending a signal of a particularly type about a particular preference parameter and denote $B(z)$ the benefit that the z'th constituent obtains. We can then depict the equilibrium number of signals of a particular type as in Figure 3. The Scenario A panel of the figure describes the equilibrium when the fixed cost of sending a signal is not too high. In this case, there is a single equilibrium at z*. In the Scenario B panel, the fixed cost of sending a signal is larger and there are two stable equilibria, a low-signalling equilibria at z*=0 and a high-signalling equilibria at z**. It is this second scenario that we are particularly interested in, because in this case the constituents face a coordination problem in deciding whether or not to signal to their MP.

Advocates – We think of advocacy groups as outside groups (independent of both MPs and

Figure 3: Depiction of possible signalling equilibria under two alternative scenarios



Note: This figure depicts two possible signalling equilibria. In the left-hand graph, the fixed cost of sending a signal is not too high and there is a single unique equilibrium z*. In the right-hand graph, the fixed cost of sending a signal is higher and there are two equilibria, a low equilibrium a z*=0 and a high equilibria at z**.

constituents) that seek to influence the outcome of a vote over a particular policy. In principle, there are three avenues in our model through which advocacy groups could achieve this: (i) they could influence the MP's personal view regarding a policy u_i, (ii) they could seek to change constituent's preferences toward a policy A_j, or (iii) they could aim to solve the signalling coordination problem in order to increase the number of signals that constituents send to their MP regarding their view of a policy (specifically for those constituents with views aligned with the advocacy group). We are particularly interested in the third of these alternatives, because it offers advocacy groups the opportunity to achieve substantial results without undertaking the challenging and costly task of trying to alter individual's underlying preferences. In practice, in cases where constituents are stuck in an low-signalling equilibrium, one way that advocacy groups can shift the equilibria is by absorbing some of the fixed costs in order to shift the equilibrium from Scenario B to Scenario A. This could be done through, for example, holding a rally where a prepared petition is available for constituents to sign. Alternatively, an advocacy group may use other forms of persuasion to induce constituents to shift from a low-signalling to a high-signalling equilibria.

Implications – This framework has several implications that we will explore in our empirical analysis. First, our framework suggests that constituents will sometimes signal their MPs, and that when they do so the signal will influence the MP's vote with some probability. Second, advocacy work can potentially increase the signals sent to the MP by constituents that support the advocate's position. More interestingly, advocacy can also have durable effects, if it shifts the constituents from a low-signalling equilibrium into a high-signalling equilibrium, such as through the development of politically active local groups. Advocacy may also have spillover effects, if solving a coordination problem related to one policy makes it easier to solve a coordination problem related

to other policies.

A third implication of our framework is that, because signals received by MPs cause them to update their beliefs about their constituent's underlying preference vector, a signal sent by constituents about issue k in order to influence some policy R can also impact MP's votes on any future policy that relates to issue k. So, to tie this result to the context we are interested in, if constituents signal their support for women's rights in order to defeat the CDA policy, their MP's may update their beliefs about their constituents' views on women's rights, which will influence the MP's votes on any subsequent policy touching on women's rights issues.

4 Data

Petition data: The petitions data that we use come from a collection assembled by ProQuest covering 1833-1918.[18] We focus on the period from 1864 to 1883 in our analysis of the petitions data, a period across which we observe 333,494 petitions. When analyzing the impact of petitions on MP votes, we focus on a shorter period between the Second Reform Act of 1867 and the Third Reform Act of 1883, which covers the key votes we are interested and during which electoral constituencies are fairly stable.

One useful feature of the ProQuest petitions data is that they have been geolocated based on the location of the petitioning group, when that is provided. For the period 1864-83, 81.3 percent of petitions are geolocated (271,343). Most of the petitions without a location were from 1868, when no location information is provided. A map of the petition locations can be found in Appendix Figure B2. We combine this location information with a map of English and Welsh constituencies as of 1870 in order to map each petition to a Parliamentary constituency.[19]

The data also contain information on the policy that the petition was aimed at. We can use this information to identify those petitions related to issues such as the CDAs or women's suffrage. The data also contain information about the group that sent the petitions, such as, for example, "Members of the Leigh Chamber of Commerce," "Inhabitants of Handsworth near Birmingham," and "Licensed grocers of Crosshill." We use this information to study petition flows by the type of group that sent them, and in particular, to identify petitions sent by women's groups.

Finally, the petitions data include information on whether the petitioners were for or against a policy. In the case of the CDAs, the vast majority of the petitions were from groups that were in favor of repeal.

It is worth noting that the data include some information on the number of signatures on a petition, but many petitions just list a single signature (e.g. by the mayor for a petition sent by

[18] We are not the first to use petition data to study British politics in the 19th century. A recent paper by Figueroa and Fouka (2023) use data from 1788 to 1833 in their study of the origins of the slavery abolition movement.

[19] This shapefile was originally constructed by the Vision of Britain project (https://www.visionofbritain.org.uk/) but no longer appears on their website. The version that we use was generously shared with us by Jonathan Chapman.

"citizens" of a town, or a pastor for a petition sent by a congregation), so we do not use this information in the analysis.

LNA advocacy data: To track LNA advocacy work at the local level, we use information gleaned from the digitized historical newspaper articles in the British Newspaper Archive (BNA).[20] This database is the product of a partnership between the British Library and Find My Past that takes advantage of the British Library's extensive historical newspaper collection. As a result, it is one of the most complete historical newspaper archives available for any location (Beach and Hanlon, 2023). Despite the relatively high coverage rate, many newspapers that existed during our study period are still not included.

To track LNA activities, we search the BNA newspapers to identify all articles mentioning Josephine Butler, and then manually review each article to identify all of the rallies that she attended during the study period. We use this to build a database of the timing and location of every LNA rally from 1869 to 1883.[21] It is important to note that these rallies were essentially always mentioned in multiple newspapers, including newspapers outside of the rally location. This is a useful feature, because it means that we will be able to identify rallies even if there is no surviving digitized newspaper from the location where the rally was actually held. We geolocate each rally based on the location described in the newspaper articles (not the location of the newspaper). If

MP votes data: To study MP voting behavior, we use the dataset put together by Eggers and Spirling (2014). This dataset provides the votes of each MP in each division taken during the period we study, as well as the MP's constituency and additional information such as their party affiliation and age. Our main analysis focuses on divisions on the CDAs and women's suffrage occurring from 1870 to 1874, though we also examine the divisions in the early 1880s when the CDAs were repealed.

5 Analysis

Our analysis starts at the level of locations, where we study the impact of the LNA's advocacy work on petitioning activity. Next, we shift our focus to MP voting behavior, where we look at how MP voting behavior is influenced by constituent petitioning activity. Finally, we examine the spillover effects of CDA advocacy on MP votes on other women's rights legislation.

5.1 Advocacy and petitioning

To examine the impact of advocacy on petitioning, we begin with a panel spanning each of the 18,300 unique locations that sent petitions to Parliament between 1864 and 1874. We focus our analysis on the period up to 1874 for two reasons. First, this focuses our attention on the first period of advocacy before the lull caused by the Conservative victory of 1874. This period is of

[20] See britishnewspaperarchive.co.uk.

[21] Our manual review allows us to exclude mentions of Josephine Butler attending events other than LNA rallies.

particular interest because it was an era during which the CDAs became a major issue of public debate but before any election had been held. Thus, it allows use to analyze communication between constituents and representatives on issues that had not been litigated during an election campaign. Second, this avoids complications due to the fact that Butler revisited some locations later in the 1870s or early 1880s, which can make it difficult to separate the persistent effects of a rally from the impact of a second visit.

To assess the effect of rallies on petitions, we estimate the following equation:

$$CDA_{it} = \alpha + \beta RALLY_{it} \times Post_t + \varphi X_{it} + \alpha_i + \alpha_t + \epsilon_{it} \tag{5}$$

The dependent variable in this analysis, CDA_{it}, is the number of petitions related to the CDAs that were sent from each location i in year t. The key explanatory variable in our regression, $RALLY_{it}$ is either whether a location was the site of a LNA rally, or whether the location was in close proximity (5km or 10km) of an LNA rally, in a particular year. $Post_{it}$ is an indicator equal to one for years after location i received a rally. Some specifications will contain controls, X_{it}, the primary one being the amount of total petitioning from a location. α_i and α_t are location and year fixed effects, respectively. β is the parameter of interest that captures the increase in CDA petitions after LNA rallies. When we estimate event studies, $Post_{it}$ will be replaced with event-time fixed effects to assess the dynamic effects of LNA rallies on petitioning. Since this is a staggered difference-in-difference regression framework, our main analysis follows the approach from Callaway and Sant'Anna (2021), though we also explore the robustness of our results to alternatives.

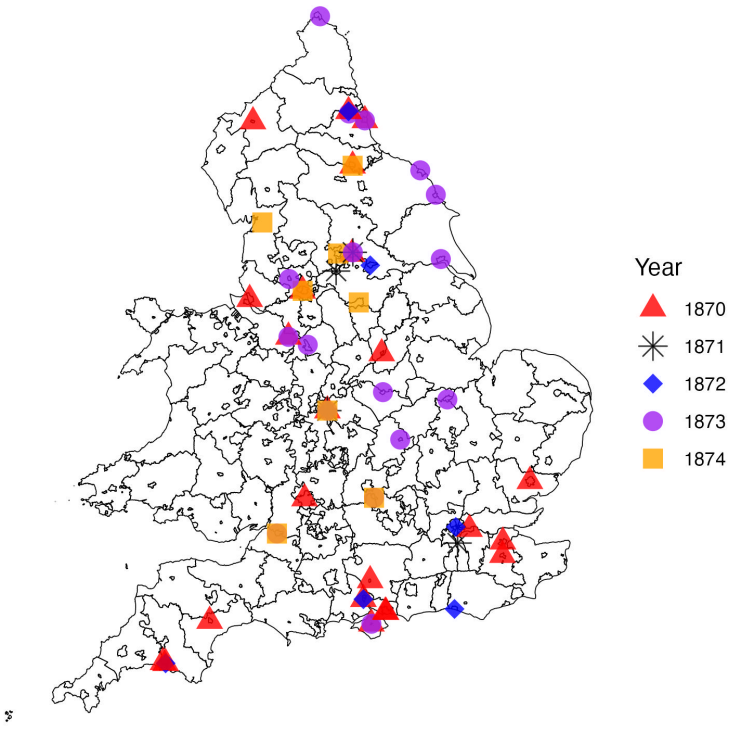
To provide a sense of the variation in the explanatory variable, Figure 4 maps the LNA rallies by location and year onto a map of 1870 electoral constituencies. We can see that rallies were sprinkled throughout the country. They were held in both larger cities such as London, Manchester and Birmingham, and in smaller towns such as Crewe and Darlington. Rallies were also held in several locations subject to the CDAs, including Chatham, Plymouth, Portsmouth, and Woolwich. In terms of timing, the rallies were spread fairly evenly across the 1870-74 period, excepting a lull in 1871.

Another feature to notice in Figure 4 is the odd and irregular shape of electoral constituencies in the context we study. While the map is dominated by the larger county constituencies, embedded within these we see many borough constituency islands. The former tended to be dominated by Conservatives, while the latter were typically more Liberal. Most LNA rallies took place in boroughs, but they may have had spillover effects on nearby parts of county constituencies. It will be important to account for this structure later, when we look at how rallies affected petitioning patterns at the constituency level.[22]

The identifying assumptions in this analysis approach is that petitions in treated locations, where the LNA held rallies, and in control locations, where they did not, would have evolved on

[22]This structure means that it makes less sense to think about issues such as spillovers across constituency boundaries in our setting than it would be in, say, U.S. representative districts.

Figure 4: Location and timing of LNA rallies, 1870-74



parallel trends in the absence of treatment. Our event-study plots shows that this is true in the pre-treatment period, which suggests that this assumption is likely to be reasonable. However, it may still be violated if there were time-varying events correlated with the LNA rallies that also influenced petitioning patterns. While we cannot test this directly, we have scoured the historical record without finding evidence of any other events corresponding in both location and timing to the LNA rallies that were likely to influence petitioning rates. Our high-frequency analysis using quarterly instead of annual data helps address concerns that coinciding events, rather than rallies, drive the results.

Of course, this naturally raises questions about why exactly Josephine Butler and the LNA chose to hold rallies where and when they did. In term of location, it is clear that several motivations were at work. Some locations, particularly larger cities, were presumably chosen because Butler could expect to attract a large crowd. Butler was also more likely to visit districts where the CDA was in force, and districts that had contested by-elections (elections occurring between general elections, e.g., because an MP died or left their seat for other reasons). In terms of timing, the rallies began in early 1870 following the publication of the LNA appeal and continued at a rapid pace through 1875 before slowing down thereafter. Thus, nothing in the record suggests that the timing or location of LNA rallies was dictated by other time-varying factors that were likely to influence the petitioning patterns related to the CDA or women's rights. Note, however, that it is likely that the locations where the rallies were held were those most likely to be responsive to advocacy efforts. This feature affects our interpretation of the coefficients we estimate, but does not invalidate our identification strategy.

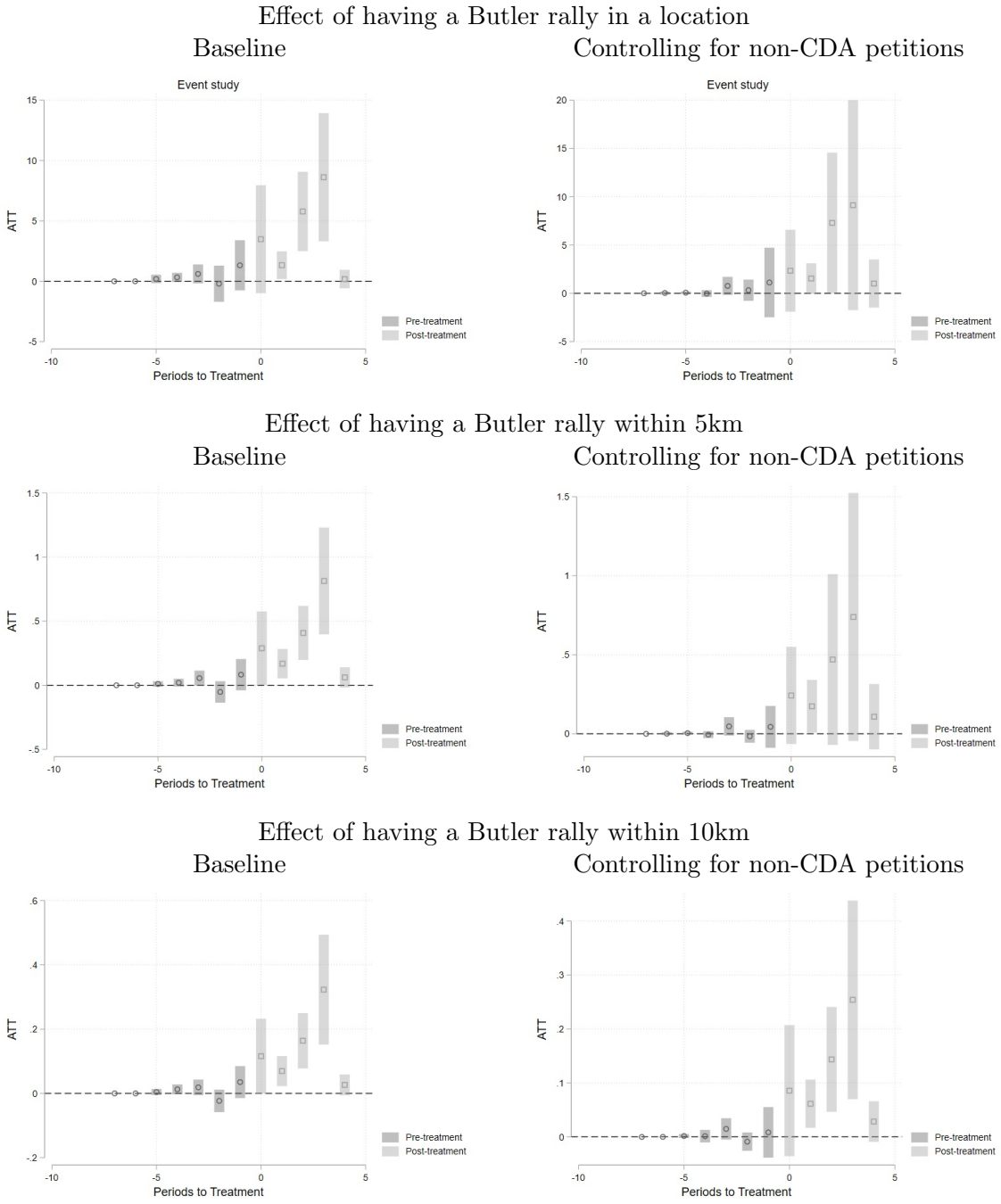
Figure 5 presents results looking at the impact of LNA rallies on CDA petitions. In the top row, treated locations are those locations where LNA rallies were held. The middle and lower row expand this to include, respectively, locations within 5km or 10km of the rally. The figures on the left use our baseline specification without any controls, while the figures on the right add in controls for all non-CDA petitions.[23]

Across all six panels, we consistently observe pre-treatment estimates that are clustered around zero with no noticeable trend. After treatment, we observe elevated levels of petitions related to the CDAs for the next four years, and then no effect at year t+4. This makes sense given that the t+4 coefficient is based on petitioning patterns in 1874, when overall CDA petitioning fell sharply following the legislative defeat of 1873. Another notable pattern in these figures is that we observe much larger (but also noisier) coefficients when looking at locations where Butler rallies occurred and smaller coefficients when we start to add in nearby locations. This makes sense given that we expect the effect of a local rally to fall off for more distant locations.

Table 2 summarizes these effects by presenting the ATT estimated across all treated observations. These results suggest that an LNA rally increased CDA petitions from a location by around

[23]Note that when using the Callaway and Sant'Anna (2021) method only the pre-treatment period values of the controls are used in the regression.

Figure 5: Event-study estimates of the impact of LNA advocacy on CDA petitions



Estimates obtained using the method from Callaway and Sant'Anna (2021).

4 per year over the following years. The effect is smaller as we widen the set of nearby locations included, but also more precisely estimated given that we have more treated locations to study.

A primary worry with the results presented so far is that the LNA may have been holding rallies in locations where concern about the CDAs was rising. While the lack of differential pre-trends

Table 2: Estimated ATT of LNA rallies on CDA petitions

Treatment:	Rally locations		Rally within 5km		Rally within 10km	
ATT	3.907***	3.976*	0.343***	0.338**	0.137***	0.112***
	(0.936)	(2.044)	(0.0857)	(0.172)	(0.0349)	(0.0373)
Controls:		All other petitions pre-1870		All other petitions pre-1870		All other petitions pre-1870
Mean dep var:	0.0256	0.0256	0.0256	0.0256	0.0256	0.0256
SD dep var:	0.555	0.555	0.555	0.555	0.555	0.555
Observations	142,980	142,980	142,980	142,980	142,980	142,980

This table presents ATT coefficient estimates and standard errors obtained using the method of Callaway and Sant'Anna (2021) including as a control the number of petitions in the last pre-treatment period. The analysis is conducted at the location x year level, though equivalent results are obtained if we conduct the analysis at the grid cell level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

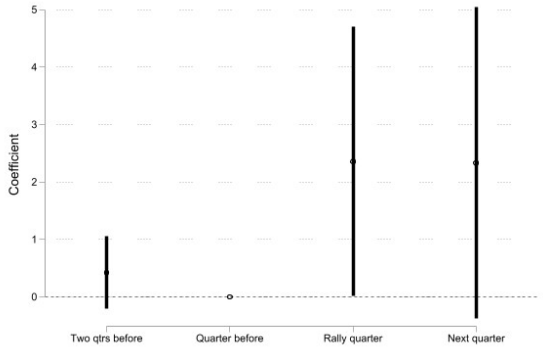
in Figure 5 suggests that this is unlikely, we can examine this issue in more detail by examining patterns over shorter time periods. In particular, in the next set of results we study petitioning patterns in the two quarters before an LNA rally compared to the two quarters starting from the month in which the rally took place. To reduce the sparsity of the data as we zoom into finer time windows, we collapse our locations into grid cells measuring 0.1 degrees of latitude by 0.1 degrees of longitude. At the latitude of London, this yields grid squares that are approximately 11km North-South by 7km East-West. These gridded locations will capture the effect of rallies on locations within a few kilometers of the rally site.

For each month in which an LNA rally occurs, we construct a four-quarter panel that includes the treated locations as well as any control location where no rally took place either before or during the time window spanned by the panel. We then stack the panels and run regressions estimating the impact of a rally on petitions in the two quarters starting from the rally month compared to the two quarters just before, clustering standard errors by grid cell.

Figure 6 present the quarterly analysis results for the impact on LNA rallies on CDA petitions. The first key pattern to notice is that there is no evidence of differential pre-trends in petitioning before an LNA rally. This provides a valuable piece of evidence in support of our identification strategy. After a rally, however, we see a clear increase in CDA petitions sent from treated locations. In terms of magnitudes, these results suggest that about two additional petitions were produced by locations within the grid cell where treatment occurred, which falls between the effect on rally locations reported in Table 2 and the effect on other locations within 5 or 10km.

As a second check on our identification strategy, in the next set of results we estimate placebo regressions looking at the impact of LNA rallies on petitions on topics that are plausibly unrelated to the CDAs or women's rights. Specifically, we focus on the set of petition topics for which one thousand or more petitions were sent in the 1864-1874 period. We analyze the relationship between LNA rallies and each of these placebo topics, working at the 0.1 x 0.1 degree grid cell level to reduce

Figure 6: Quarterly analysis of LNA rallies on CDA petitions



This figure plots estimated coefficients and 95% confidence intervals for stacked two way fixed effect panel estimates of the impact of an LNA rally occurring in a 0.1 x 0.1 degree grid cell on the number of CDA petitions sent from that cell. Treated quarters are the quarter starting from the month in which the rally occurred. Each panel covers all locations treated by an LNA rally in a particular month (treated locations) as well as all other locations (controls) where no rally took place prior ton that month or within the two quarter treatment period (i.e., only locations that were never-treated within the four-quarter period covered by a panel). Standard errors are clustered by grid cell to allow serial correlation and account for the fact that locations may appear as controls in more than one panel. The regression includes a control for the total number of petitions sent from the grid cell in the quarter.

the sparsity of the data and to capture spillover effects of rallies on nearby locations. This analysis is done at the annual level by estimating Eq. 5 separately for each petition topic using the same method from Callaway and Sant'Anna (2021) as the results shown in Table 2.

Table 3 presents results for CDA petitions, in the first column, and all of the other major petition topics (except women's suffrage) in the remaining columns. Panel A shows results without controlling for the number of petitions from a location while Panel B adds this control (which, in the Callaway and Sant'Anna (2021) approach, is based on petitions in the location in the last pre-treatment period interacted with post-treatment period dummies). We can see that none of the other topics has as strong a relationship to treatment as CDA petitions and for none of the other topics is the relationship statistically significant after the petitions control is included. Moreover, as shown in Appendix E, event study plots of results for all of these topics exhibit flat pre-trends in the periods leading up to LNA rallies. That pattern provides further evidence that the timing and location of LNA rallies was not the product of some other time-varying change in political activity in treated locations.

Our data also allow us to break down the impact of LNA rallies on petitions using information on the type of petitioner. Of particular interest is the impact of LNA advocacy on CDA petitions sent by women groups, which we expect to be particularly affected given that many LNA rallies admitted only women. Indeed, in Appendix F, we show that there was a clear increase in CDA petitions by women's group following LNA rallies.

Table 3: Estimated ATT of LNA rallies on placebo topics

CDA	Burials	Liquor	Educ.	Irish Church	Marry DWS	Monas.	Pub. wrshp	Prison	Elect.	Relig other
A. Without petitions control										
5.487***	-0.974	-0.617	-0.967	-3.313***	0.679	1.869**	2.986***	-0.0979	0.163	0.236
(1.323)	(0.746)	(3.275)	(1.560)	(0.904)	(0.813)	(0.768)	(0.569)	(0.414)	(0.190)	(0.186)
B. With petitions control										
10.34*	-2.787	-21.20	22.34	-30.69	-66.74	-29.08	-11.35	-5.307	-4.342	-16.76
(5.476)	(2.776)	(16.68)	(16.34)	(27.35)	(50.05)	(22.39)	(9.319)	(3.676)	(3.201)	(11.84)

This table presents ATT coefficient estimates and standard errors obtained using the method of Callaway and Sant'Anna (2021) including as a control the number of petitions in the last pre-treatment period. Each coefficient is from a separate regression with petitions related to the topic indicated at the top of the column as the dependent variable and using data from 1864-1874. Note that the data have been collapsed to 0.1 x 0.1 degree grid cells spanning all of England and Wales, in order to reduce the sparsity of the data in particular year-grid cell observations. This explains why we obtain larger coefficients than those reported in Table 2.

5.2 Petitioning and MP votes

Next, we explore the impact of constituent petitioning on MP votes. Our primary focus is on the 1873 vote to repeal the CDAs. This is the most interesting outcome vote to consider for three reasons. First, the 1873 vote was a clear referendum on repeal, unlike the 1870 vote. Second, it took place after LNA advocacy had begun but before a general election had taken place in which the CDAs were a meaningful issue. Third, the 1873 vote was not along party lines (see Table 1). In particular, Liberals were divided almost evenly for or against repeal, unlike later votes in which the issue had become much more partisan. Thus, the 1873 vote provides a particularly clean context in which to study constituent signalling in the absence of an election.

One potential identification concern when comparing the number of petitions sent by an MP's constituents and the MP's votes is that locations that send more petitions may also have MPs that vote differently for reasons other than petitions. To deal with this issue, we will utilize an instrumental variables strategy that uses the timing and location of LNA rallies to obtain plausibly exogenous variation in the number of CDA petitions sent by constituents of an MP. To construct our instrument, we start with the estimated relationship between LNA rallies and CDA petitions from Table 5. Using this, we calculate the predicted number of CDA petitions for each location and year based only on the timing and location of LNA rallies:

$$\hat{PET}_{jt} = \sum_{\tau=0}^{4} \hat{\beta}_t RALLY_{j\tau} \,.$$

where $\hat{\beta}_t$ is the estimated ATT effect of LNA rallies on petitions obtained using the method of Callaway and Sant'Anna (2021). We then map these predicted petitions to MP constituencies, and then sum up the predicted number of petitions from 1870 to 1873 at the constituency level. So, for each constituency c, our instrument is:

$$PredPet_c = \sum_{t=1870}^{1873} \sum_{j \in c} \hat{PET}_{jt}$$

The result is a prediction for the number of recent petitions related to the CDAs sent by the constituents of each MP from 1870-1873. This variable exploits both the location and timing of the LNA rallies. For example, an LNA rally held in 1870 will have more impact on predicted petitions than one held in 1872, because the rally will increase petitions over more years. It also accounts for the fact that some constituencies, such as county constituencies, may be geographically large and so even if a location on the periphery of the constituency was exposed to an LNA rally the impact on overall petitioning from the constituency is small. In contrast, a rally in a geographically small but densely populated borough constituency may have a much larger impact on the total number of CDA petitions sent by constituents.

Following this procedure, we construct two predicted petition variables, one based on the effect of LNA rallies on petitions from locations where the rally took place, and a second based on the effect of rallies on locations within 5km.[24] Appendix Table B5 present first-stage regression results showing the relationship between the predicted number of CDA petitions sent by constituents of each MP and the number of actual CDA petitions. We can see that both the predicted number of petitions based on having a rally in a location and the one based on nearby rallies provide sufficiently strong predictors of actual CDA petitions.

Table 4 presents results looking at the relationship between petitioning and MP's votes in the 1873 division on CDA repeal. The unit of observation in this analysis is an MP and the dependent variable is an indicator for whether an MP voted to repeal the CDAs. Our primary explanatory variable of interest is the number of CDA petitions sent by groups in the MP's constituency in the years leading up to the vote, 1870-73 (recall that essentially all petitions were in favor of repeal). We control for the number of petitions on all other subjects sent from the constituency up to 1870, which will help account for differences in the size and level of political activity in different constituencies. We also control for the MP's party, age, and whether they had a CDA district in their constituency.

Column 1 of Table 4 presents results from our baseline specification. We can see that the number of CDA petitions from a constituency is positively related to whether an MP voted for repeal. In addition, it is clear that Conservative Party MPs and those from CDA districts are much more likely to vote against repeal. The second of these results is particularly interesting, because it suggests that direct exposure to the CDAs increased support for the acts, while opposition came almost entirely from other locations.

In Column 2, we add in a control for the number of petitions sent from the MP's constituency in 1864-1870.[25] This helps control for differences in the overall level of political activity in a

[24] We do not use predicted petitions by locations within 10km of a rally as an instrument because it does not generate clear first-stage results.

[25] We also obtain similar results if we instead control for all non-CDA petitions from 1870-1873. However, this is

constituency. The fact that this control has no perceptible influence suggests that our results are not being driven by differences in the size or political activism of locations but instead by CDA petitions themselves.

In Columns 3 and 4, we present reduced-form results using predicted petitions based on either locations where an LNA rally took place (Column 3) or locations within 5km of an LNA rally (Column 4). Column 5 of Table 4 presents IV results where we use whether a location had an LNA rally or whether there was an LNA rally within 5km of a location to construct two instruments. All of these results show evidence that CDA petitions influenced MP votes.[26]

The primary identification concern in the results in Columns 3-5 is that the timing and location of LNA rallies may have been chosen based on other factors that made MPs more likely to vote to repeal the CDAs. One way to evaluate this concern is to look at whether MP's votes in the 1870 CDA division predict the timing and location of LNA rallies in 1871-73. We evaluate this relationship in Appendix Table B4. Those results show no statistically significant relationship between MP's 1870 vote on the CDAs and the number of petitions predicted from a location in 1871-73 based on LNA rallies. What does predict the timing and location of LNA rallies are (1) whether the MP was a Liberal, and (2) whether the location was in a constituency with a CDA district. In particular, consistent with the historical narrative described above, we find that LNA rallies were aimed at Liberal MPs.

One way to check our results is to conduct placebo regressions looking at how the estimated impact of CDA petitions on the 1873 CDA repeal vote compares to the impact of CDA petitions on all other votes taken in 1873. Including the CDA repeal vote, there were 219 divisions in 1873. For each of these, we run regressions using the specification used in Columns 2 and 4 of Table 4. Figure 7 plots the distribution of the t-statistics obtained from these regressions, with the vertical lines indicating the t-statistic from the regression where the CDA repeal vote is the outcome. In both of these figures, our estimate of the impact of CDA petitions, or predicted petitions, on the CDA repeal vote lies toward the edge of the distribution. When using actual petitions as the explanatory variable, we find that less than 0.1 percent of t-statistics are greater than the estimated impact on the CDA repeal vote. When using predicted petitions in the right-hand panel, none of other votes have t-statistics greater that for the CDA repeal vote. Together, these results indicate that it is extraordinarily unlikely that we would observe such a strong relationship between CDA petitions, or predictions predicted based on LNA rallies, and the CDA repeal vote simply by random chance.

We can push identification further by focusing on a subset of MPs that voted in both the 1870 and 1873 CDA divisions. Recall that the 1870 division is somewhat difficult to interpret, because the vote itself was over whether to delay consideration of repeal. As a result, some MPs that likely

likely to be a bad control because, as shown in Section 5.4, LNA rallies or other events that raise the number of CDA petitions may also increase the number of non-CDA petitions if they help overcome coordination problems.

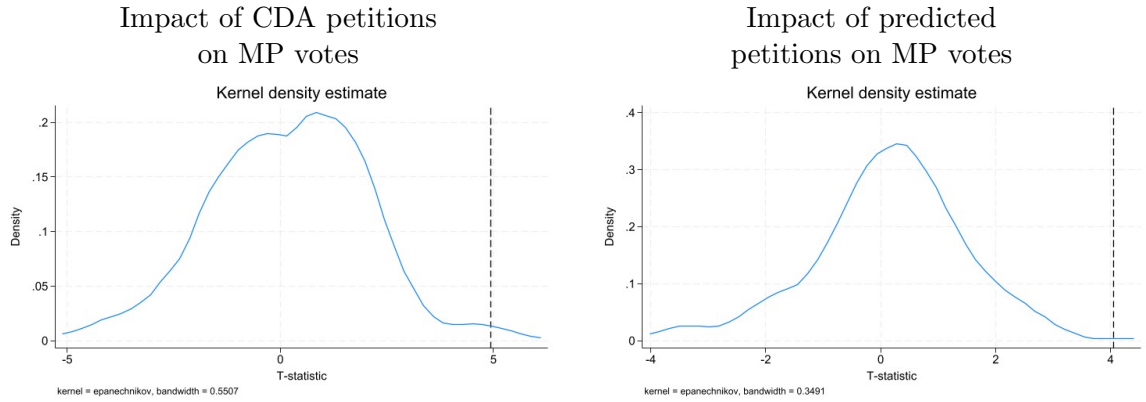
[26]Note that, if LNA rallies generated signals for MPs beyond what we can observe in the petitions (e.g., if MPs were influenced by reading newspaper articles about the rallies) then the exclusion restriction on the IV results will not hold. Given this, the reduced form results may be more relevant, but we include the IV results for completeness.

Table 4: The effect of petitioning on MP votes for the 1873 repeal bill

	DV: Indicator for vote in favor of repeal				
	OLS	OLS	RF	RF	IV
	(1)	(2)	(3)	(4)	(5)
CDA Petitions	0.00474***	0.00501***			0.00777***
	(0.00106)	(0.00115)			(0.00251)
Predicted CDA petitions – rally loc.			0.0490***		
			(0.0188)		
Predicted CDA petitions – within 5km				0.0516***	
				(0.0129)	
All pets. pre-1870		-8.17e-05	0.000135	4.71e-05	-0.000208
		(0.000143)	(0.000171)	(0.000150)	(0.000156)
Conservative	-0.372***	-0.371***	-0.366***	-0.381***	-0.357***
	(0.0491)	(0.0492)	(0.0511)	(0.0485)	(0.0518)
CDA district	-0.221*	-0.226*	-0.316**	-0.245*	-0.228*
	(0.117)	(0.117)	(0.148)	(0.126)	(0.118)
MP age	-0.00169	-0.00170	-0.00123	-0.00126	-0.00220
	(0.00214)	(0.00215)	(0.00217)	(0.00211)	(0.00216)
Constant	0.540***	0.550***	0.524***	0.531***	0.558***
	(0.114)	(0.117)	(0.118)	(0.115)	(0.115)
IV F-stat					12.8
Observations	304	304	304	304	304
R-squared	0.206	0.206	0.193	0.205	0.196

Standard errors are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1. Kleibergen-Paap F-statistics are reported for the IV results. In the IV results, the instruments are the number of predicted petitions based on locations with an LNA rally, as well as the number of predicted petitions based on locations within 5km of an LNA rally. The sample is the set of MPs from England and Wales that voted in the 1873 CDA division.

Figure 7: Distribution of t-stats across all 1873 votes



The left-hand figure presents the kernal distribution of t-statistics obtained from regression MP votes in 219 divisions that took place in 1873 on the number of CDA petitions sent by each MP's constituents from 1870-1873. The right-hand panel is the density when predicted CDA petitions (based on locations within 5km of CDA rallies) is used as the explanatory variable in place of actual CDA petitions. The vertical lines indicate the t-statistics obtained when analyzing votes in the 1873 CDA repeal division. All specifications include controls for all petitions sent from a constituency from 1864-1869, MP party, MP age, and whether the MP was from a CDA district. Standard errors are clustered by constituency.

opposed the CDAs may have still voted to delay rather than to immediately move to repeal the laws. Despite this complication, the 1870 vote did carry some information. In Table 5, we look at the impact of CDA petitions on the 1873 repeal vote controlling for MPs vote in the 1870 division. We can see that MP's vote in 1870 is a strong predictor of their vote in 1873. Yet even given this fact, MPs with constituents that sent more petitions from 1870-1873 were more likely to vote to repeal the CDAs even controlling for their vote in 1870, though the IV estimates in Column 2 lack sufficient power to make precise statements.

Next, we alter our analysis approach to account for the fact that many MPs chose not to vote in the CDA repeal division. In these results, we think of MPs as choosing between three options: not voting, voting against repeal, or voting for repeal. To study how petitioning influenced this decision, we apply multinomial logit regressions, treating not voting as the base outcome.

Column 1 of Table 6 offers the simplest specification looking at how CDA petitions influenced MP decisions. The results in Column 1 shows that receiving more petitions against the CDAs made MPs less likely to vote against repeal (top panel of results, relative risk ratios below one), relative to not voting, and more likely to vote for repeal (bottom panel of results, relative risk ratios above one). In both cases the results are statistically significant. Column 2 adds in controls for MP party and other characteristics. Columns 3 and 4 present results using predicted petitions instead of actual petitions, mirroring the reduced form results in Columns 3 and 4 of Table 4. Again, we see evidence that CDA petitions reduced the chances of MPs voting no and increased the chances of MPs voting yes on CDA repeal.

In Appendix I, we present additional results that include controls for whether an MP voted in

Table 5: Change in MP votes between 1870 and 1873

DV: Indicator for vote in favor of repeal		
	OLS	IV
	(1)	(2)
CDA Petitions	0.00334**	0.00536
	(0.00153)	(0.00344)
All pets. pre-1870	-0.000331**	-0.000410**
	(0.000140)	(0.000194)
CDA vote 1870	0.621***	0.607***
	(0.0606)	(0.0614)
Conservative	-0.264***	-0.255***
	(0.0578)	(0.0587)
CDA district	-0.146	-0.150
	(0.100)	(0.101)
MP age	-0.00302	-0.00315
	(0.00216)	(0.00215)
Constant	0.486***	0.483***
	(0.125)	(0.123)
IV F-stat		11.1
Observations	169	169
R-squared	0.489	0.485

Standard errors are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1. IV results use two instruments, one based on whether an LNA rally was held in a location and the second based on whether a rally was held within 5km of a location. Kleibergen-Paap F-statistics are reported for the IV results. The sample is the set of MPs from England or Wales that voted in both the 1870 and 1873 CDA divisions.

the 1870 CDA repeal division and how an MP voted in that petition, as a multinomial analog of the results presented in Table 5. Even with those controls included, we continue to find that CDA petitions were associated with a lower probability of voting against repeal and a higher probability of voting for repeal.

It is interesting to contrast these results with estimates looking instead at the 1883 repeal vote, which are available in Appendix J. Those results show no clear link between petitioning and votes in 1883. What had changed? There are two likely answers to this question. First, between the 1883 repeal vote and the start of CDA advocacy, two general elections had taken place, in 1874 and 1880. Thus, by 1883, MPs had been able to observe, twice, how constituent's preferences related to the CDA had translated into votes, which likely made the information carried by petitions much less important. Second, by 1883, the CDA vote had become much more partisan. While the Liberal Party was evenly split on the CDAs in 1873, by 1883 the vast majority of Liberal MPs (more than 87%) would vote for repeal. The combination of information from elections and rising partisan alignment on the CDAs likely made petitions much less important. Thus, our results suggest that signalling may matter a lot in the absence of an election, when MPs are uncertain about how constituent's preferences on an issue will translate into voting behavior, while once elections have taken place the additional information contained in signals such as petitions is much less influential.

Our data also allow us to explore how the influence of petitions differed based on the characteristics of MPs or of petitioners. In Appendix K, we look at how the influence of petitions varied depending on MP's party. Consistent with the historical narrative, we find that CDA petitions were disproportionately sent to Liberal MPs, an pattern that contrasts with the relatively even balance of petitions across all other topics.

One possible explanation for this pattern, suggested by our model, is that constituents will be less likely to petition Conservative MPs if they think that Conservative MPs will be less responsive. This could be because Conservatives are less responsive to petitions overall (higher γ), but that explanation is inconsistent with the fact that constituents petition Conservative MPs at a roughly equal rate for topics other than the CDAs. An alternative explanation is that Conservative MPs care less (lower η_j) about those constituents that are more concerned about the CDAs.

If this second explanation is correct, then we should observe that Conservative MPs are less responsive to the CDA petitions that they do receive. We explore this possibility in Appendix Table B9, where we run the analysis separately for Liberal and Conservative MPs. Our results show that the overall effect of petitions on voting patterns is driven entirely by Liberal MPs. In contrast, Conservative MPs appear to be fairly unresponsive to petitions.[27]

We are also able to examine how the influence of petitions differed depending on the identity of the petitioner. Most interestingly, the petition data allow us to separately identify CDA petitions

[27]Naturally, this raises a question about why constituents chose to petition an unresponsive MP. A primary answer to this question is that some Conservatives shared multi-member constituencies with Liberal MPs. In those cases, constituents may have been petitioning in order to influence a Liberal MP without any expectation of a response from their Conservative MP.

Table 6: Multinomial logit results for the impact of petitions on CDA repeal votes

	(1)	(2)	(3)	(4)
Vote against repeal (relative risk ratios)				
CDA Petitions	.9837279**	.9831114*		
	(.0076152)	(.0091541)		
Predicted CDA pet – rally locs			.8526947**	
			(.0604114)	
Predicted CDA pets – within 5km				.833182**
				(.0600914)
All pets. pre-1870		1.000388	.9998312	1.000124
		(.0007227)	(.000756)	(.0006783)
Conservative		1.199022	1.141684	1.238947
		(.2423074)	(.2327711)	(.2492662)
CDA district		.8696142	1.091886	.9070799
		(.4011703)	(.5594377)	(.4422049)
MP age		.9936533	.9945131	.9942661
		(.0087663)	(.0087195)	(.0087583)
Vote for repeal (relative risk ratios)				
CDA Petitions	1.017444***	1.017277***		
	(.0056541)	(.0054476)		
Predicted CDA pets – rally locs			1.085243	
			(.0814767)	
Predicted CDA pets – within 5km				1.126303**
				(.0625932)
All pets. pre-1870		1.00012	1.000886	1.00069
		(.000602)	(.0006662)	(.0006467)
Conservative		.1516996***	.154059***	.1440616***
		(.0543927)	(.0542121)	(.0507582)
CDA district		.2911472	.2465198	.2803914
		(.2233913)	(.2122766)	(.2219674)
MP age		.9817327*	.9856055	.9851944
		(.0107513)	(.0107787)	(.0107994)
N	480	473	473	473

This table presents coefficients, in relative risk ratios, and standard errors, in parenthesis, obtained from multinomial logit regressions. The dependent variable is an MP's vote on the 1873 CDA repeal bill, with the base category being not voting. Standard errors are clustered by constituency.

from women's groups from those coming from all other groups (some of which also included many women). Petitions by women's groups make up around 10% of the total set of CDA petitions and were sent to Liberal and Conservative representatives at rates that were similar to all other CDA petitions.

In Appendix Table B10 we separately estimate the impact of CDA petitions from women's groups and all other CDA petitions. While we do not have enough women's petitions to draw strong conclusions, the point estimates in these regressions suggest that petitions by women's groups were just as influential as those by other groups. It may seems surprising that petitions by women were influential during this period despite the fact that women were not able vote. However, this finding is consistent with existing work on the U.S. suggesting that women's groups had a substantial influence on social policy before they achieved suffrage (Skocpol, 1995). However, it is also worth keeping in mind that the fact that only a small fraction of petitions came from women's groups may indicate an endogenous choice by women not to send petitions except when they thought they would be influential, as our model would suggest.

To summarize, the results in this section show that MP voting patterns responded to the signals (petitions) sent by their constituents. Moreover, the IV results tie these voting responses directly back to LNA advocacy efforts. Thus, we have built a causal chain linking LNA advocacy, constituent signalling, and representative voting patterns. Next, we complement these results by looking at how the terms of the debate over the CDAs changed over this period.

5.3 Changing terms of the debate

A complementary way to study the impact of advocacy on debates over the CDAs is to analyze the text of Parliamentary debates over the acts. This can put the voting results in the previous section into context, while also allowing us to extend our investigation back into the 1860s, when the acts were first passed. In particular, we are able to analyze Parliamentary debates starting with the 1866 CDA bill despite the fact that no division on that bill occurred.

We are specifically interested in understanding how the terms of the debate over the CDAs changed before and after the emergence of LNA advocacy. To analyze this, we feed the debate text into ChatGPT and ask it to produce summaries of the key arguments made for and against the CDAs in each of the major debates (1866, 1873, and 1883) and then use those summaries to understand how the key issues changed after the beginning of advocacy efforts in 1870. Figure 8 provides the summary of the key arguments for and against the CDAs from the 1866 Parliamentary debate.

The important thing to note in the summary in Figure 8 is that women's rights plays almost no role. While the summary mentions concerns related to a failure to provide opportunities for women to reform, there is no mention of women's rights or unequal treatment relative to men. Now consider the summary of the 1873 debate, in Figure 9, which occurred after three years of LNA advocacy. While many key arguments remained the same, the main difference relative to the

Figure 8: ChatGPT summary of key arguments in the 1866 CDA bill debate

Arguments Against the Acts:

1. Immorality and Hypocrisy: MR. AYRTON criticized the Act as institutionalizing vice, claiming it was a disgrace to public morality by providing health certificates to immoral women for the benefit of soldiers and sailors.
2. Lack of Reclamation Focus: Critics argued that the Act failed to provide meaningful opportunities for women to reform, reducing them to tools of a morally questionable system.
3. Ineffectiveness: MR. HENLEY highlighted reports indicating little to no reduction in disease due to these measures, questioning their practical value.
4. Public Expense for Vice: Opponents claimed that taxpayer money was being used to support and sustain vice, rather than addressing root causes or fostering moral improvement.
5. Ethical and Religious Concerns: Critics questioned whether legislation that condoned vice could expect to yield positive societal blessings or benefits.

Arguments For the Acts:

1. Public Health: LORD CLARENCE PAGET argued that the Act aimed to preserve the health of soldiers and sailors by controlling the spread of diseases in ports, as recommended by medical experts.
2. Continuity of Existing Measures: Proponents viewed the legislation as an extension of a system already approved by Parliament, reflecting ongoing efforts to address public health concerns.
3. Moral and Practical Efforts: Supporters like MR. AYRTON pointed out reclamation efforts to restore unfortunate women to their families, showing the Act's positive social impact in some cases.
4. Professional Medical Oversight: LORD CLARENCE PAGET emphasized the importance of health measures and protested against misconceptions that the Act sanctioned or promoted immoral behavior.
5. Select Committee Review: Advocates suggested referring the Bill to a Select Committee to ensure thorough consideration and mitigate concerns.

1866 debate is the emergence of concerns about women's rights. In point 1, we see critiques based around the "unequal treatment of men and women, with women disproportionately penalized" and, in point 2, additional concerns about how "Women's liberties were curtailed under vague and discriminatory criteria." These issues were completely absent in the 1866 debate, where criticisms instead focused on the effectiveness of the intervention, the cost of the program, and the morality of government legitimizing the sex trade.

Clearly, somewhere between 1866 and 1873, the key terms of the debate over the CDAs had changed in a way that elevated concerns about women's rights. While we cannot link these changes directly to the advocacy work of the LNA (given that fewer than a dozen speakers spoke at any

given debate, a quantitative analysis is not possible), it is striking how the issues raised in the LNA appeal of 1870 in Appendix B are echoed in the Parliamentary debate of 1873, while being absent from the debate of 1866. Concerns about women's rights would become even more prominent by the 1883 debate, a summary of which can be found in Appendix M.

Figure 9: ChatGPT summary of key arguments in the 1873 CDA bill debate

Arguments Against the Contagious Disease Acts

1. Immorality and Double Standards: The Acts were seen as immoral for licensing vice and creating unequal treatment of men and women, with women disproportionately penalized. Prostitution was treated as a necessity for men, while women bore the brunt of regulation and stigma.
2. Infringement of Rights: Police powers were deemed excessive, often based on mere suspicion. Women's liberties were curtailed under vague and discriminatory criteria.
3. Ineffectiveness: Opponents argued the disease had been declining even before the Acts, rendering them unnecessary. The effectiveness of medical examinations and treatments provided under the Acts was questioned.
4. Social and Ethical Concerns: Critics denounced the idea of the state implicitly endorsing or managing prostitution. The Acts were seen as ignoring broader societal issues, such as the economic conditions driving women to prostitution.

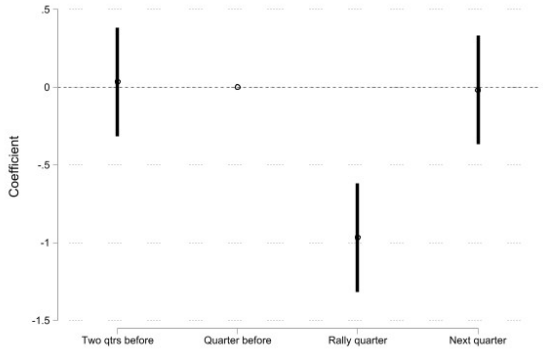
Arguments For the Contagious Disease Acts

1. Public Health and Morality: Proponents highlighted the Acts' success in reducing disease among soldiers and sailors, improving public health outcomes. They argued the measures reduced visible vice and improved conditions in areas like military camps.
2. Moral Reform: The Acts were viewed as a way to reform prostitutes by providing medical treatment and reducing their presence in public areas. Supporters cited examples of improved behavior and fewer instances of juvenile prostitution.
3. Protecting the Vulnerable: Advocates claimed the Acts protected innocent women and children from the spread of disease by addressing its sources. They emphasized the practical benefits seen in districts where the Acts were enforced.
4. Evidence of Effectiveness: Supporters presented statistical and anecdotal evidence showing reduced instances of disease and vice in areas covered by the Acts. Testimonies from medical professionals and military authorities supported the continuation of the legislation.

5.4 Spillover effects

Perhaps the most interesting prediction of our theory is that activism aimed at defeating one policy might also influence votes on other related policies. These spillover effects can occur through two channels. First, activism that helps constituents overcome the coordination problem in order to send signals to their MP related to one policy might, as a side-effect, also overcome the coordination

Figure 10: Quarterly analysis of LNA rallies on women's suffrage petitions



This figure plots estimated coefficients and 95% confidence intervals for two-way fixed effect stacked panel regressions of the impact of an LNA rally occurring in a 0.1 x 0.1 degree grid cell on the number of womens suffrage petitions sent from that cell. Treated quarters are the quarter starting from the month in which the rally occurred. Each panel covers all locations treated by a rally in a particular month (treated locations) as well as all other locations (controls) where no rally took place prior to that month or within the two quarter treatment period (i.e., only locations that were never-treated within the four-quarter period covered by a panel). Standard errors are clustered by grid cell to allow serial correlation and account for the fact that locations may appear as controls in more than one panel. The regression includes a control for the total number of petitions sent from the grid cell in the quarter.

problem for sending signals about other related policies. We label this the "coordination" channel. Second, when MPs learn about the preferences of their constituents as a result of signals related to one policy, that may affect their estimate of constituent's preferences toward other policies that also have similar characteristics. We label this the "updating" channel. In this section, we assess both of these potential channels. To do so, we look at how LNA rallies influenced petitions related to another policy that was distinct from, but shared key characteristics with, the CDAs. Specifically, we look at petitions related to women's suffrage, which was becoming an important issue in the early 1870s.

As a first step in this analysis, it is important to establish that LNA rallies were focused on the CDAs and not simultaneously advocating for women's suffrage. To do so, in Figure 10, we look at the short-run relationship between LNA rallies and women's suffrage petitions using the same quarterly data and estimation approach applied in Figure 6. The first pattern to note in these results is that we observe no evidence of a pre-trend in the quarters leading up to an LNA rally. This provides additional evidence supporting our overall identification strategy. Second, we see that women's suffrage petitions actually fall in the quarter in which an LNA rally took place. This is clearly inconsistent with the idea that LNA rallies were simultaneously advocating for women's suffrage and CDA repeal. Instead, it suggests that, in the short run, political action related to the CDAs was crowding out activity related to women's suffrage. Thus, the patterns documented in Figure 10 indicate that LNA rallies were not directly aimed at increasing petitioning related to women's suffrage, suggesting that any relationship between LNA rallies and women's suffrage petitions we document are the result of spillover effects.

While LNA rallies do not increase women's suffrage petitions in the short term, they may still help solve coordination problems in a way that facilitates women's suffrage petitioning over longer timeframes. To examine this possibility, we zoom out to the annual level and analyze the relationship between LNA rallies and women's suffrage petitions in an event-study framework. Figure 11 presents the results using data up to 1875 and the same methods applied to CDA petitions in Section 5.1 where we estimate Eq. (5) with the number of suffrage petitions as the variable of interest. These graphs show evidence of parallel pre-trends and a substantial positive effect of LNA rallies on subsequent women's suffrage petitions that grows over time. As before, the results on the left-hand side present our baseline results, while the results on the right-hand side include a control for all other non-CDA non-women's suffrage petitions. Table 7 presents corresponding ATT estimates.

These results suggest that LNA rallies were followed by increases in petitions related to women's suffrage, though not all of the estimates are statistically significant. This pattern is consistent with the idea that, over the medium term, advocacy can have spillover effects by solving coordination problems. These results provide support for the "coordination" channel through which CDA advocacy can have spillover effects on other policy areas.

Table 7: Estimated ATT of LNA rallies on women's suffrage petitions

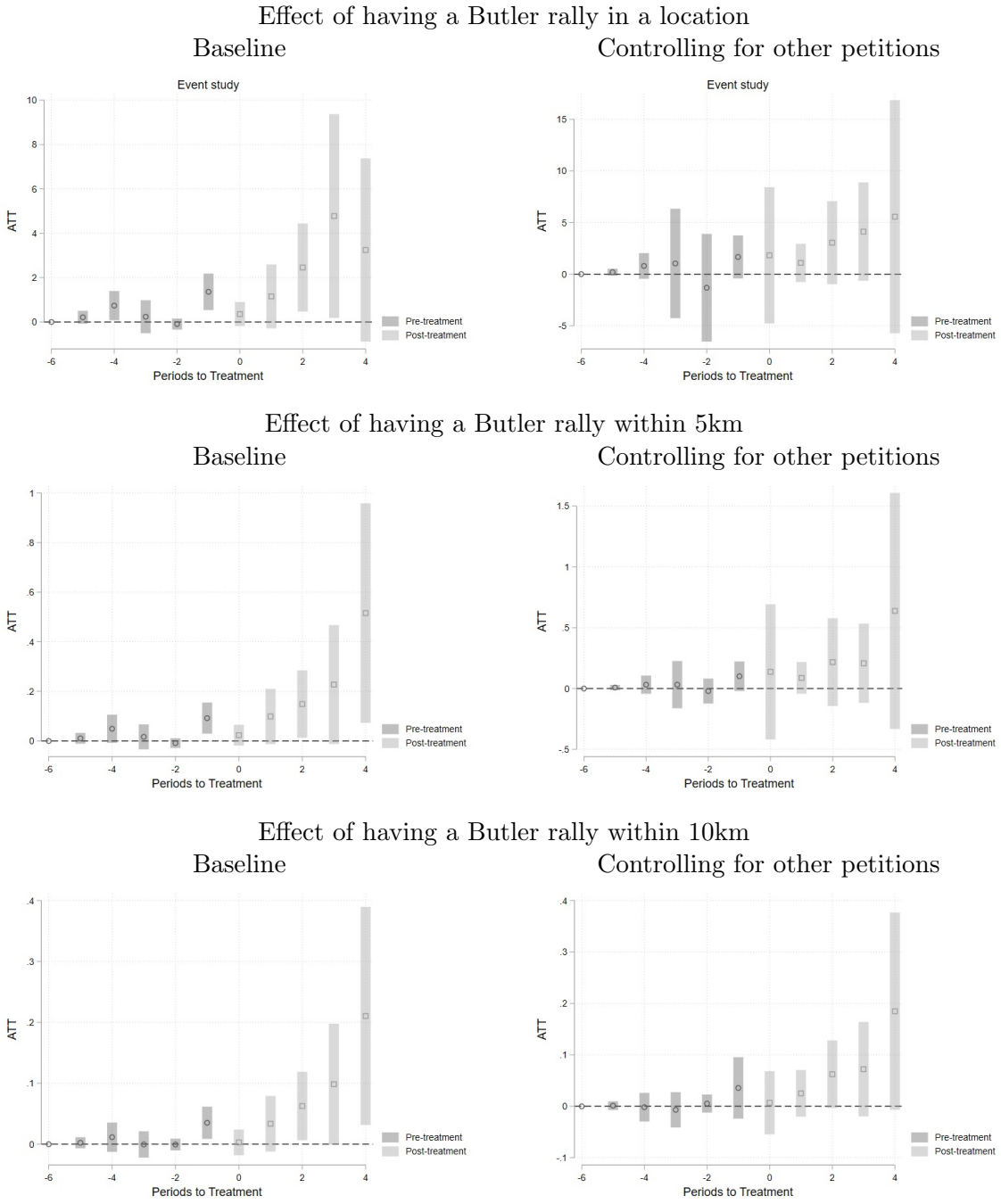
Treatment:	Rally locations		Rally within 5km		Rally within 10km	
ATT	2.075**	2.773	0.169**	0.223	0.0671**	0.0578*
	(1.000)	(2.301)	(0.0752)	(0.206)	(0.0307)	(0.0346)
Controls:		All other petitions pre-1870		All other petitions pre-1870		All other petitions pre-1870
Mean dep var	0.0298	0.0298	0.0298	0.0298	0.0298	0.0298
SD dep var	0.694	0.694	0.694	0.694	0.694	0.694
Observations	142,980	142,980	142,980	142,980	142,980	142,980

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Next, we shift our attention to MP votes. Here we focus primarily on two important divisions on the Women's Disability Bill, in 1872 and 1873. While both of these votes failed, they were an early demonstration of substantial support for women's suffrage. In the first vote, 142 out of 363 MPs supported suffrage, and the share was 156 out of 376 in the second. Moreover, neither vote was split along party lines. Appendix Table B11 shows that both parties were split on the issue. One reason for this was that, while the Liberals were ideologically more inclined to support women's suffrage, the general view was that women were more likely to vote Tory.

As a preliminary step, in Table 8 we look at the relationship between MP's votes on the CDA repeal and on women's suffrage. These results are not intended to reveal causal effects. Rather, our goal here is to establish basic patterns that will inform subsequent analysis. The first two columns of the table show the strong correlation between votes against the CDA and votes in favor

Figure 11: Event-study estimates of the impact of advocacy on women's suffrage petitions



Estimates obtained using the method from Callaway and Sant'Anna (2021).

of women's suffrage in 1872 and 1873. This pattern indicates the clear relationship between these two issues. Note that the sample size here is smaller than the number of MP's voting on the CDA repeal of 1873, since MPs had to vote in both that and the women's suffrage vote to be included in this analysis.

The second two columns are more interesting. These show the relationship between the 1872 or 1873 women's suffrage votes and the CDA repeal vote while controlling for an MP's vote on women's suffrage in 1870. Thus, we are looking at whether MPs who voted to repeal the CDAs were more likely to *change* their vote on women's suffrage. The results show that this was the case, which suggests a possible connection between CDA advocacy and changing MP views towards women's suffrage.

Table 8: Relationship between CDA repeal and women's suffrage votes

DV: Women's suffrage bill vote				
Vote:	1872	1873	1872	1873
	(1)	(2)	(3)	(4)
Vote for CDA repeal 1873	0.313***	0.384***	0.152*	0.144*
	(0.0763)	(0.0732)	(0.0838)	(0.0776)
1870 Women's Suffrage Vote			0.685***	0.702***
			(0.0833)	(0.0850)
Conservative	-0.107	-0.0479	-0.0341	-0.0104
	(0.0709)	(0.0717)	(0.0777)	(0.0726)
CDA district	-0.115	-0.0921	-0.126	-0.0865
	(0.137)	(0.138)	(0.123)	(0.128)
MP age	0.000299	0.00334	0.00232	0.00463
	(0.00277)	(0.00275)	(0.00336)	(0.00334)
Constant	0.265*	0.0742	-0.0288	-0.184
	(0.155)	(0.151)	(0.190)	(0.200)
Observations	192	198	109	107
R-squared	0.140	0.177	0.524	0.605

Linear probability model regressions with robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Data covers all MPs that voted in both the 1873 CDA repeal petition and either the 1872 or 1873 Women's Disability Bill votes.

Table 9 looks at the impact of CDA and women's suffrage petitions on MP votes on women's suffrage. These results can help us sort out the "updating" channel from the "coordination" channel. In particular, if we find that CDA petitions had an effect on MP votes while controlling for women's suffrage petitions, that would suggest that the updating channel is operating alongside the coordination channel.

The first two columns show that CDA petitions influenced women's suffrage votes even when controlling for women's suffrage petitions, particularly in the 1873 women's suffrage vote (Column 2). In terms of magnitude, the effect of CDA petitions is about one-half to two-thirds as large as the effect of a women's suffrage petition, though the statistical significance of these results is marginal. In Columns 3 and 4, we break out the effect of CDA petitions depending on whether the MP voted for or against the repeal of the CDAs. We can think of this as breaking out the effect of petitions on "compliers"–MPs that voted to repeal the CDAs after receiving CDA petitions–versus "defiers"

who received petitions but did not ultimately end up voting against the CDAs. These results show that CDA petitions had a clear effect, particularly on the 1873 women's suffrage vote, but only when MPs voted to repeal the CDAs. Another useful set of results, in Appendix Table B12, shows that the influence of CDA petitions on MP women's suffrage votes was driven entirely by Liberal MPs. This pattern is consistent with our earlier results showing that the influence of petitions on CDA votes was confined to Liberal MPs.[28] Overall, these results suggests that the updating channel was operating alongside the coordination channel to translate the impact of political activity related to the CDAs into a shift in MP views towards other women's rights issues.

Table 9: Relationship between CDA petitions and women's suffrage votes

DV: Women's disability bill vote				
Vote:	1872	1873	1872	1873
	(1)	(2)	(3)	(4)
Women's suffrage petitions	0.00341**	0.00381**	0.00440*	0.00370
	(0.00145)	(0.00169)	(0.00263)	(0.00266)
CDA Petitions	0.00206	0.00249*		
	(0.00153)	(0.00143)		
CDA petitions x			-0.00574	-0.00895***
1[MP votes against CDA repeal]			(0.00424)	(0.00320)
CDA petitions x			0.00129	0.00332**
1[MP votes for CDA repeal]			(0.00188)	(0.00159)
All pets. pre-1870	-5.49e-06	-0.000226	2.10e-06	-0.000111
	(0.000156)	(0.000141)	(0.000297)	(0.000237)
Conservative	-0.166***	-0.0674	-0.184***	-0.143**
	(0.0608)	(0.0596)	(0.0699)	(0.0699)
CDA district	-0.161	-0.166	-0.146	-0.141
	(0.114)	(0.133)	(0.152)	(0.157)
MP age	-0.00178	0.00169	-0.000350	0.00229
	(0.00220)	(0.00236)	(0.00279)	(0.00269)
Constant	0.474***	0.332***	0.427***	0.318**
	(0.122)	(0.126)	(0.154)	(0.146)
Observations	285	304	192	198
R-squared	0.079	0.056	0.095	0.127

Standard errors in parentheses are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1. Data cover all MPs from England and Wales that voted in either the 1872 or 1873 Women's Disability Bill divisions.

The next set of results, in Table 10 ties the shift in MP votes more directly to LNA activity, though without separating out the contribution of the updating and coordination channels in this relationship. The key explanatory variables in this relationship are the number of CDA petitions that we predict would have been sent by constituents of each MP based on the timing and location of LNA rallies, which was used as an instrumental variable in Section 5.2. Here, we focus on reduced

[28] Interestingly, this pattern contrasts with the impact of women's suffrage petitions, which influence MPs of both parties.

form results because the impact of LNA rallies on MP votes on women's suffrage could operate through multiple channels (updating or coordination). These reduced-form results will capture the impact through both.

Using either the impact of LNA rallies in a location on petitions from that location, in Columns 1 and 3, or the impact on petitions in nearby locations, in Columns 2 and 4, we see evidence of an impact on MP votes on the women's suffrage bills in 1872 and 1873, with a stronger relationship observed in 1873. These results suggest a direct link between CDA advocacy and MP attitudes towards women's suffrage.[29]

Table 10: Relationship between LNA rallies and women's suffrage votes

DV: Women's disability bill vote				
Vote:	1872	1872	1873	1873
	(1)	(2)	(3)	(4)
Predicted CDA petitions – rally locations	0.0230*		0.0252*	
	(0.0137)		(0.0142)	
Predicted CDA petitions – within 5km		0.0232		0.0295**
		(0.0150)		(0.0133)
All pets. pre-1870	0.000266	0.000239	8.33e-05	2.46e-05
	(0.000191)	(0.000186)	(0.000157)	(0.000146)
Conservative	-0.166***	-0.186***	-0.0656	-0.0826
	(0.0636)	(0.0610)	(0.0615)	(0.0602)
CDA district	-0.232*	-0.172	-0.232	-0.174
	(0.126)	(0.113)	(0.157)	(0.141)
MP age	-0.00128	-0.00127	0.00244	0.00256
	(0.00221)	(0.00224)	(0.00234)	(0.00236)
Constant	0.441***	0.452***	0.287**	0.290**
	(0.125)	(0.126)	(0.128)	(0.127)
Observations	285	285	304	304
R-squared	0.058	0.057	0.030	0.034

Standard errors in parentheses are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1. Data cover all MPs from England and Wales that voted in either the 1872 or 1873 Women's Disability Bill divisions.

6 Conclusions

Political economy has been a vibrant area of research over the past two decades, yet the vast majority of the work on interactions between constituents and their representatives has focused on elections. While elections clearly matter, many important issues—ranging from global pandemics to financial crises to terrorist attacks—must be confronted between elections. How do representatives

[29]Note that we don't want to estimate regressions using predicted CDA petitions as instruments for actual CDA petitions here, because the impact of LNA rallies on MP women's suffrage votes may operate through channels other than CDA petitions, such as by directly increasing women's suffrage petitions.

respond to issues that were never up for debate during the last election? Our results suggest that this response is shaped, at least in part, by the information signals received from constituents, that advocacy groups can play an important role in facilitating constituent signalling, and that signals related to one policy can have broader spillover effects into other related issues.

While our empirical analysis focuses on a specific empirical setting, one where we have unique visibility into constituent signalling, we think that the key elements that we emphasize are likely to be present in many other settings, including in modern democracies. Today, petitioning is less important as a signalling channel, in part because constituents have a broader set of ways to make their voices heard between elections. However, many of the channels still used today, from calling representatives to organizing marches and rallies, exhibit the features emphasized in our model. Many modern signalling channels are still characterized by coordination problems and, as in the past, advocacy groups likely play an important role in solving these problems through activities ranging from rally organization to distributing representative's contact information and encouraging constituents to make phone calls. At the same time, while representatives may have more information about their constituent's preferences, their understanding clearly remains imperfect.

References

Barro, R. (1973). The control of politicians: An economic model. *Public Choice 14*(1), 19–42.

Beach, B. and W. W. Hanlon (2023). Historical newspaper data: A researcher's guide. *Explorations in Economic History 90*, 101541.

Bertocchi, G. (2011). The enfranchisement of women and the welfare state. *European Economic Review 55*(4), 535–553.

Besley, T. (2006). *Principled Agents?* Oxford: Oxford University Press.

Besley, T. and S. Coate (1997). An economic model of representative democracy. *The quarterly journal of economics 112*(1), 85–114.

Blanco, R. L. (1967). The attempted control of venereal disease in the army of mid-victorian britain. *Journal of the Society of Army Historical Research 45*(184), 234–241.

Bursztyn, L., D. Cantoni, D. Y. Yang, N. Yuchtman, and Y. J. Zhang (2021). Persistent political engagement: Social interactions and the dynamics of protest movements. *American Economic Review: Insights 3*(2), 233–250.

Butler, J. (1896). *Personal Reminiscences of a Great Crusade*. London: H. Marshall.

Butler, J. (1909). *Josephine E. Butler. An Autobiographical Memoir.*

Caine, B. (1997). *English Feminism 1780-1980*. Oxford: Oxford University Press.

Callaway, B. and P. H. Sant'Anna (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics 225*(2), 200–230.

Cantoni, D., L.-J. Heizlsperger, D. Y. Yang, N. Yuchtman, and Y. J. Zhang (2022). The fundamental determinants of protest participation: Evidence from hong kong's antiauthoritarian movement. *Journal of Public Economics 211*, 104667.

Cantoni, D., A. Kao, D. Y. Yang, and N. Yuchtman (2024). Protests. *Annual Review of Economics 16*.

Cantoni, D., D. Y. Yang, N. Yuchtman, and Y. J. Zhang (2019). Protests as strategic games: experimental evidence from hong kong's antiauthoritarian movement. *The Quarterly Journal of Economics 134*(2), 1021–1077.

Caselli, F. and M. Morelli (2004). Bad politicians. *Journal of Public Economics 88*, 759–82.

Doepke, M. and M. Tertilt (2009). Women's liberation: What's in it for men? *Quartely Journal of Economics 124*(4), 1541–1591.

Downs, A. (1957). *An Economic Theory of Democracy*. New York: Harper and Row.

Eggers, A. C. and A. Spirling (2014). Electoral security as a determinant of legislator activity, 1832–1918: New data and methods for analyzing british political development. *Legislative Studies Quarterly 39*(4), 593–620.

Enikolopov, R., A. Makarin, and M. Petrova (2020). Social media and protest participation: Evidence from russia. *Econometrica 88*(4), 1479–1514.

Ferejohn, J. A. (1986). Incumbent performance and electoral control. *Public Choice 50*(1-3), 5–26.

Fernández, R. (2014). Women's rights and development. *Journal of Economic Growth 19*(1), 37–80.

Figueroa, V. and V. Fouka (2023, September). Structural transformation and value change: The british abolitionist movement. NBER Working Paper No. 31708.

García-Jimeno, C., A. Iglesias, and P. Yildirim (2022). Information networks and collective action: Evidence from the women's temperance crusade. *American Economic Review 112*(1), 41–80.

Geddes, R. and D. Lueck (2002). The gains from self-ownership and the expansion of women's rights. *American Economic Review 92*(4), 1079–1092.

Gehlbach, S. (2022). *Formal Models of Domestic Politics*. Cambridge: Cambridge University Press.

Goehring, G. and W. W. Hanlon (2025, February). Prostitution regulation and the fight against sexually transmitted infections before modern medicine. Mimeo.

González, F. (2020). Collective action in networks: Evidence from the chilean student movement. *Journal of Public Economics 188*, 104220.

Grossman, G. and E. Helpman (1994). Protection for sale. *American Economic Review*, 833–850.

Hager, A., L. Hensel, J. Hermle, and C. Roth (2020, July). Strategic interdependence in political movements and counter movements. Warwick Economics Research Papers No. 1281.

Hall, R. L. and A. V. Deardorff (2006). Lobbying as legislative subsidy. *American Political Science Review 100*(1), 69–84.

Huzzey, R. and H. J. Miller (2020). Petitions, parliament, and political culture: Petitioning the house of commons, 1780-1918. *Past and Present* (248).

Jones, E. B. (1991). The economics of woman suffrage. *The Journal of Legal Studies 20*(2), 423–437.

Madestam, A., D. Shoag, S. Veuger, and D. Yanagizawa-Drott (2013). Do political protests matter? evidence from the tea party movement. *The Quarterly Journal of Economics 128*(4), 1633–1685.

Manacorda, M. and A. Tesei (2020). Liberation technology: Mobile phones and political mobilization in africa. *Econometrica 88*(2), 533–567.

McCammon, H. J. and K. E. Campbell (2001). Winning the vote in the west: The political successes of the women's suffrage movements, 1866-1919. *Gender & Society 15*(1), 55–82.

McConnaughy, C. M. (2013). *The Woman Suffrage Movement in America*. Cambridge, UK: Cambridge University Press.

Miller, H. J. (2023). *A Nation of Petitioners*. Cambridge, UK: Cambridge University Press.

Moehling, C. M. and M. A. Thomasson (2020). Votes for women: An economic perspective on women's enfranchisement. *Journal of Economic Perspectives 34*(2), 3–23.

Olson, M. (1965). *The Logic of Collective Action*. Cambridge:: Harvard University Press.

Osborne, M. J. and A. Slivinski (1996). A model of political competition with citizen-candidates. *The Quarterly Journal of Economics 111*(1), 65–96.

Persson, T. and G. Tabellini (2000). *Political Economics: Explaining Economic Policy*. Cambridge: MIT Press.

Przeworski, A. (2009). Conquered or granted? a history of suffrage extensions. *British Journal of Political Science 39*(2), 291–321.

Skocpol, T. (1995). *Protecting soldiers and mothers: The political origins of social policy in the United States*. Harvard University Press.

Szreter, S. (2014). The prevalence of syphilis in england and wales on the eve of the great war: re-visiting the estimates of the royal commission on venereal diseases 1913–1916. *Social History of Medicine 27*(3), 508–529.

Teele, D. L. (2018). *Forging the Franchise*. Princeton: Princeton University Press.

Tertilt, M., M. Doepke, A. Hannusch, and L. Montenbruck (2022). The economics of women's rights. *Journal of the European Economic Association 20*(6), 2271–2316.

Victor, J. N. (2020). *The Oxford Handbook of Political Persuasion*, Chapter Lobbying Networks, pp. 754–768. Oxford: Oxford University Press.

Walkowitz, J. R. (1982). *Prostitution and Victorian society: Women, class, and the state*. Cambridge, UK: Cambridge University Press.

Appendix

A Locations covered by the CDAs

Table B1 describes the locations included in the CDAs, including details on the Act in which the location was included and the year in which enforcement actually began. Note that there may be some delay between when the Act was passed covering a location and when enforcement began. This delay was due to the need in some locations to expand hospital facilities to accommodate women who were being isolated.

Table B1: Locations covered by the CDAs

Location	**Country**	**Primary service**	**Authorizing act year**	**Enforcement begins**
Portsmouth	England	Both	1864	1864
Plymouth/Devpt	England	Both	1864	1865
Woolwich	England	Army	1864	1866
Greenwich	England	Navy	1864	1870
Chatham	England	Both	1864	1865
Sheerness	England	Navy	1864	1865
Deal*	England	Both	1864	1870
Aldershot	England	Army	1864	1867
Colchester	England	Army	1864	1869
Shorncliffe	England	Army	1864	1868
The Curragh	Ireland	Army	1864	1870
Cork	Ireland	Army	1864	1870
Queenstown	Ireland	Navy	1864	?
Windsor	England	Army	1866	1868
Canterbury	England	Army	1869	1870
Dover	England	Both	1869	1870
Gravesend	England	Navy	1869	1870
Maidstone	England	Army	1869	1870
Southampton	England	Navy	1869	1870
Winchester	England	Army	1869	1870

* Deal was not listed separately in the acts, but was included as part of Sheerness. For English stations, the date when enforcement begins is from The *Annual Report, for 1874, of Captain Harris, Assistant Commissioner of Police of the Metropolis, on the Operation of the Contagious Disease Acts*, 12 March 1875.

B Text of the LNA Appeal

Figure B1: Text of the LNA appeal

We, the undersigned, enter our solemn protest against the Acts.

(1) Because, involving as they do such a momentous change in the legal safeguards hitherto enjoyed by women in common with men, they have been passed not only without the knowledge of the country, but unknown in great measure to Parliament itself; and we hold that neither the Representatives of the People nor the Press fulfill the duties which are expected of them when they allow such legislation to take place without the fullest discussion.

(2) Because, so far as women are concerned, they remove every guarantee of personal security which the law has established and held sacred, and put their reputation, their freedom, and their person absolutely in the power of the police.

(3) Because the law is bound, in any country professing to give civil liberty to its subjects, to define clearly an offence which it punishes.

(4) Because it is unjust to punish the sex who are the victims of a vice, and leave unpunished the sex who are the main cause both of the vice and its dreaded consequences; and we consider that liability to arrest, forced medical treatment, and (where this is resisted) imprisonment with hard labour, to which these Acts subject women, are punishments of the most degrading kind.

(5) Because by such a system the path of evil is made more easy to our sons, and to the whole of the youth of England, inasmuch as a moral restraint is withdrawn the moment the State recognises, and provides convenience for, the practice of a vice which it thereby declares to be necessary and venial.

(6) Because these measures are cruel to the women who come under their action–violating the feelings of those whose sense of shame is not wholly lost, and further brutalising even the most abandoned.

(7) Because the disease which these Acts seek to remove has never been removed by any such legislation. The advocates of the system have utterly failed to show, by statistics or otherwise, that these regulations have in any case, after several years' trial, and when applied to one sex only, diminished disease, reclaimed the fallen, or improved the general mortality of the country. WE have on the contrary the strongest evidence to show that in Paris and other continental cities, where women have long been outraged by this system, the public health and morals are worse than at home.

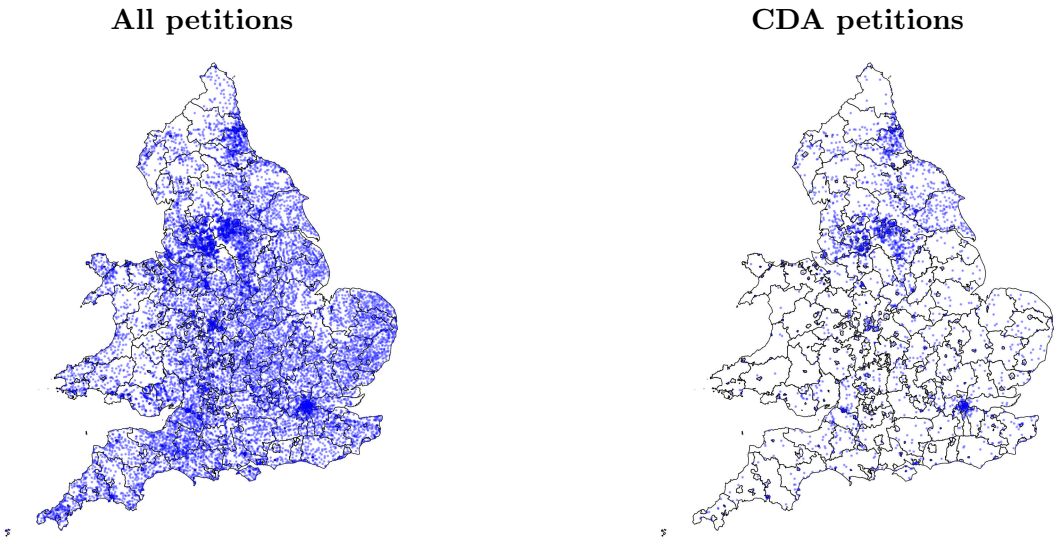
(8) Because the conditions of this disease in the first instance are moral not physical. The moral evil, through which the disease makes its way, separates the case entirely from that of the plague, or rather [sic] scourges, which have been placed under police control or sanitary care. We hold that we are bound, before rushing into experiments of legalising a revolting vice, to try to deal with the causes of the evil, and we dare to believe, that with wiser teaching and more capable legislation, those causes would not be beyond control.

Source: Quoted from Butler (1909).

C Maps of the petition data

Figure B2 presents maps of the petitions data. The left-hand panel maps the location of all petitions found in the data, where locations are known, from 1864-1883. The right-hand panel maps locations that sent CDA petitions. We can see that petitions were sent from locations all around the country, with particular concentrations around the major cities of London, Birmingham, Manchester and Liverpool, as well as in the industrial areas of Lancashire and the West Riding. In the right-hand graph we can see that more CDA petitions were sent from locations in the North of England than in other parts of the country. This makes sense given the petitions were typically aimed at Liberal politicians and the North was a Liberal stronghold.

Figure B2: Map of locations in the petition data, 1864-1883



D Major petition topics, 1864-1874

Table B2 lists the issues that attracted the largest number of petitions in the period from 1864-1874. These topics are identified based on the information included in the petitions data, which we have manually reviewed in order to try to combine petitions related to the same topic but mentioning different specific pieces of legislation. This helps us deal with the fact that the title of bills on the same issue can change over time.

The topic that attracted the most attention by far was liquor regulation, followed by education. There are several topics related to religious issues, including the regulation of monastic institutions, burials, the Irish Church (disestablishment), and regulations related to public worship. Petitions related to the CDAs make up 2.5 percent of petitions across this period, but note that almost no petitions on this topic were sent prior to 1870, so the share related to the CDAs in the early 1870s was much higher. A similar caveat applies to petitions related to women's suffrage, which were also rare before 1870. It may surprise some to see that marriage with a deceased wife's sister was an important topic for petitions during this period. However, this was an important and controversial issue in the second half of the 19th century, one that was voted on more than a dozen times before the practice was finally legalized in 1907.

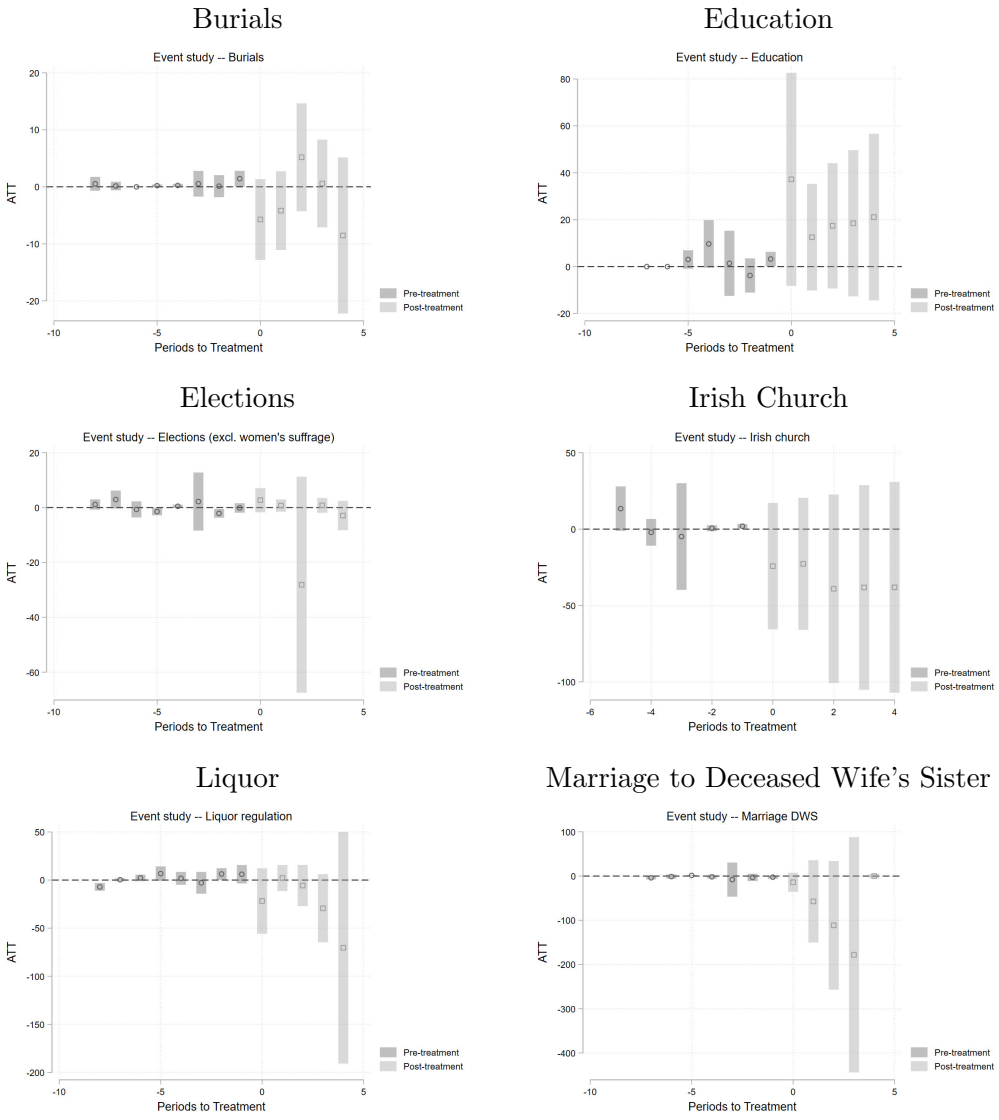
Table B2: Topics with most petitions, 1864-1874

Topic	Petitions	Share
Liquor regulation	38,790	0.263
Education	8,937	0.061
Monastic institutions	4,902	0.033
Burials	4,812	0.033
Marriage with deceased wife's sister	4,513	0.031
Women's suffrage	4,314	0.029
Contagious Disease Acts	3,659	0.025
Irish Church	2,980	0.020
Elections (excl. women's suffrage)	2,928	0.020
Public worship	1,895	0.013
Religion, other	1,743	0.012
Prisons	1,530	0.010

E Event study results for placebo petition topic regressions

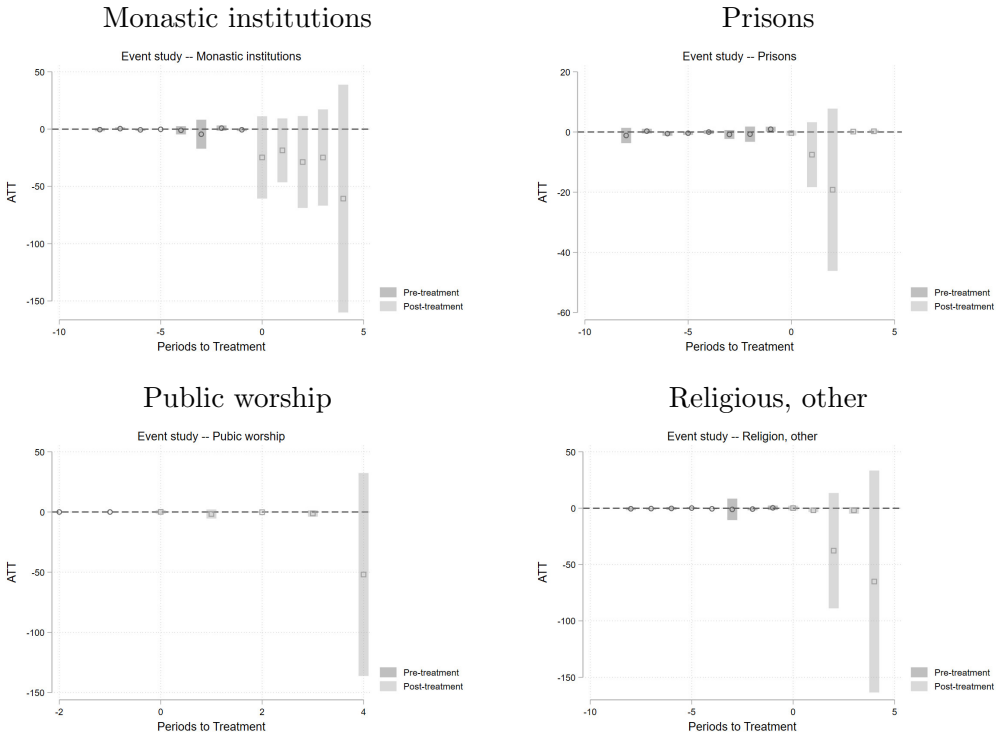
Figures B3 and B4 present event-study regression results for each of the major petition topics, other than the CDAs and women's suffrage, for the 1864-1874 period. These estimated results are based on the method of Callaway and Sant'Anna (2021) with a control for the total number of petitions in a location.

Figure B3: Event-study graphs of the impact of LNA rallies on placebo petitions (1)



Estimates obtained using the method from Callaway and Sant'Anna (2021).

Figure B4: Event-study graphs of the impact of LNA rallies on placebo petitions (2)



Estimates obtained using the method from Callaway and Sant'Anna (2021).

F LNA rallies and petitions by women

Figure B5 shows event-study plots of the impact of LNA rallies on CDA petitions by women's groups. Table B3 presents corresponding ATT results. Both sets of results show flat pre-trends and a clear increase in CDA petitions by women's group following LNA rallies.

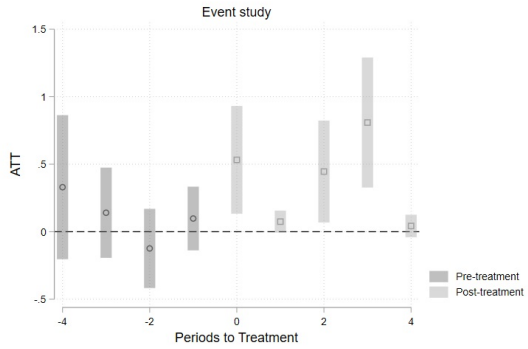
Table B3: Estimated ATT of LNA rallies on CDA petitions by women

Treatment:	Rally locations	Rally within 5km	Rally within 10km
ATT	0.380***	0.0292***	0.0104***
	(0.0800)	(0.00687)	(0.00293)
Mean dep var	0.002	0.002	0.002
SD dep var	0.081	0.081	0.081
Observations	142,980	142,980	142,980

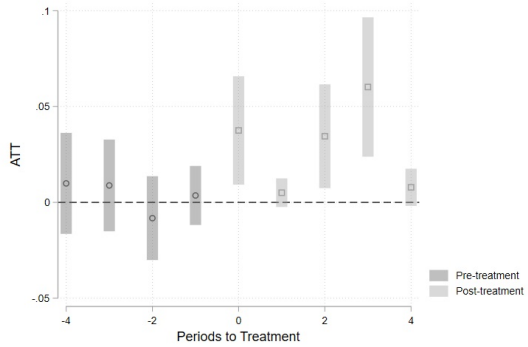
Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure B5: LNA advocacy and CDA petitions by women

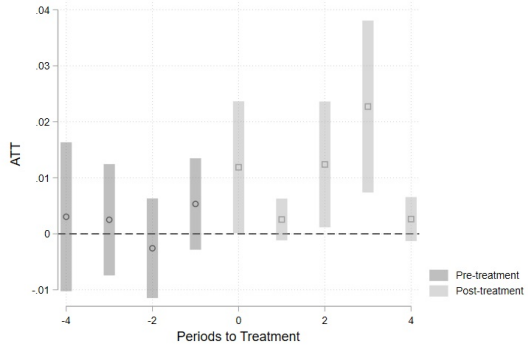
Effect of having a Butler rally in a location



Effect of having a Butler rally within 5km



Effect of having a Butler rally within 10km



Estimates obtained using the method from Callaway and Sant'Anna (2021).

G MP votes and LNA rally locations

Table B4: MP votes in 1870 and predicted CDA petitions from 1871-73

Dep. var:	Predicted petitions based on LNA rallies in a location	Predicted petitions based on LNA rallies within 5km
	(1)	(2)
CDA vote 1870	0.134	0.199
	(0.200)	(0.126)
All pets. pre-1870	-0.000330	0.000462
	(0.000226)	(0.000429)
Conservative	-0.314**	0.0844
	(0.132)	(0.106)
CDA district	-0.271***	-0.143**
	(0.0958)	(0.0603)
MP age	0.00365	0.000512
	(0.00533)	(0.00420)
Constant	0.213	0.0237
	(0.325)	(0.271)
Observations	268	268
R-squared	0.026	0.036

Standard errors in parentheses clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1.

H Estimates of the relationship between CDA petitions and predicted petitions based on LNA rallies

Table B5: First-stage estimates using LNA rally locations

	DV: CDA petitions by constituency, 1870-1873		
	(1)	(2)	(3)
Predicted CDA petitions – rally locations	6.311***		3.497***
	(1.625)		(1.084)
Predicted CDA petitions – within 5km		5.727***	3.905***
		(1.543)	(1.456)
All pets. pre-1870	0.0450***	0.0342***	0.0369***
	(0.0147)	(0.0109)	(0.0114)
Conservative	-0.571	-2.924**	-1.382
	(1.318)	(1.379)	(1.312)
CDA district	-10.64*	-0.724	-7.049
	(6.106)	(3.361)	(4.837)
MP age	0.0757*	0.107**	0.0805*
	(0.0434)	(0.0539)	(0.0468)
Constant	-3.022	-2.996	-3.153
	(3.036)	(3.113)	(2.885)
Observations	558	558	558
R-squared	0.419	0.450	0.494

Standard errors in parentheses are clustered by constituency to account for the fact that the unit of analysis is the MP level but petitions are measured at the constituency level and some constituencies have more than one MP. *** p<0.01, ** p<0.05, * p<0.1

I Multinomial logit analysis of 1873 votes controlling for 1870 votes

This appendix presents additional multinomial logit regression results looking at MPs vote on the 1873 CDA repeal bill. In particular, these results include two controls reflecting how MPs voted in the 1870 CDA repeal division. Including these controls allows us to look at how petitioning changed MPs decisions between the two votes. The two controls are: *1870 CDA vote*, an indicator for whether the MP voted in the 1870 repeal division, and *1870 CDA yes*, an indicator for whether the MP voted for repeal in the 1870 repeal division.

Even with these controls included, we continue to observe evidence that petitions reduced the chances that an MP would show up and vote against the CDA repeal and increased the chances that an MP would show up and vote for repeal. Voting in 1870 is associated with a higher probability of an MP voting in the 1873 vote, while voting for repeal in 1870 is strongly associated with an MP voting for repeal in 1873.

Table B6: Multinomial logit results for the impact of petitions on CDA repeal votes with 1870 vote controls

	(1)	(2)	(3)	(4)
Vote against repeal in 1873 (relative risk ratios)				
CDA Petitions	.984169*	.9825296*		
	(.0080459)	(.0098064)		
Predicted CDA pets – rally locs			.8464828**	
			(.0602984)	
Predicted CDA pets – within 5km				.8388123**
				(.0636177)
1870 CDA vote	2.182384***	2.310226***	2.272801***	2.261357***
	(.4829422)	(.5467666)	(.5308732)	(.5314351)
1870 CDA yes	.1159037***	.0998677***	.100128***	.1029766***
	(.0605287)	(.0517974)	(.0524493)	(.0541943)
All pets. pre-1870		1.00037	.9998029	.9999944
		(.0007167)	(.000711)	(.0006519)
Conservative		1.487946*	1.391571	1.491303*
		(.3223852)	(.3033823)	(.3218032)
CDA district		.6584507	.886773	.7023692
		(.291231)	(.4356089)	(.3210705)
MP age		.9941738	.9952345	.9946656
		(.0092355)	(.0091831)	(.0091907)
Vote for repeal in 1873 (relative risk ratios)				
CDA Petitions	1.016196***	1.014397**		
	(.0054506)	(.0059076)		
Predicted CDA pets – rally locs			1.073115	
			(.0874042)	
Predicted CDA pets – within 5km				1.138531**
				(.0697912)
1870 CDA vote	1.41068	1.10038	1.039483	1.064623
	(.4592883)	(.3739963)	(.3549288)	(.3679454)
1870 CDA yes	3.273299***	4.649596***	5.017709***	5.05502***
	(1.10679)	(1.808759)	(1.966944)	(1.985597)
All pets. pre-1870		1.000384	1.000974	1.000721
		(.0006069)	(.0006071)	(.0005995)
Conservative		.13274***	.1299834***	.120229***
		(.0483571)	(.0473249)	(.0443918)
CDA district		.3033747*	.2824458*	.3055623*
		(.2127082)	(.215373)	(.2196757)
MP age		.9775407**	.9807221*	.9802818*
		(.0113187)	(.0110009)	(.0109408)
N	480	473	473	473

This table presents coefficients, in relative risk ratios, and standard errors, in parenthesis, obtained from multinomial logit regressions. The dependent variable is an MP's vote on the 1873 CDA repeal bill, with the base category being not voting. Standard errors are clustered by constituency.

J Petitions and 1883 repeal votes

Table B7 present results looking at the impact of CDA petitions on MP's vote in the 1883 division. The first two columns look at petitions from MP's constituents from 1880-1883, while Columns 3-4 look at all petitions from 1870-1883. We consider two types of controls for the overall level of political activity and petitioning in a location. In Columns 2 and 5 we control for all non-CDA and non-women's suffrage petitions from an MP's constituents over either the 1880-83 period (Column 2) or the 1870-1883 period (Column 5). One might be concerned that this is a bad control if advocacy efforts related to the CDAs helped overcome coordination problems that increased petitioning even for issues other than the CDAs or women's suffrage. To address this potential concern, in Columns 3 and 6 we instead control for the number of petitions from a constituency in 1864-1869, before CDA advocacy began. Overall, these results do not suggest any clear pattern of influence of petitioning on MP votes. This is interesting when contrasted with the clear results observed in the 1873 vote.

Table B7: Analysis of 1883 repeal votes

	DV: Indicator for vote in favor of repeal in 1883					
	Petitions 1880-83			Petitions 1870-83		
	(1)	(2)	(3)	(4)	(5)	(6)
CDA Petitions	0.000617	-0.000292	-3.12e-05	0.000448**	2.76e-05	0.000186
	(0.000497)	(0.000562)	(0.000576)	(0.000213)	(0.000243)	(0.000273)
All petitions pre-1870			0.000308*			0.000242
			(0.000175)			(0.000198)
All non-CDA non-WS pets.		0.000296**			7.51e-05**	
		(0.000118)			(3.44e-05)	
Conservative	-0.670***	-0.689***	-0.686***	-0.664***	-0.678***	-0.679***
	(0.0499)	(0.0490)	(0.0492)	(0.0503)	(0.0489)	(0.0505)
CDA district	-0.163***	-0.127***	-0.132***	-0.164***	-0.132***	-0.138***
	(0.0392)	(0.0430)	(0.0440)	(0.0390)	(0.0420)	(0.0446)
MP Age	0.00452**	0.00415**	0.00404**	0.00446**	0.00405**	0.00408**
	(0.00192)	(0.00193)	(0.00191)	(0.00191)	(0.00190)	(0.00191)
Observations	255	255	255	255	255	255
R-squared	0.495	0.505	0.502	0.499	0.506	0.502

Standard errors are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1.

K Influence of petitions by MP party

In this appendix, we explore how these results differ by the MP's party. Table B8 shows the number of CDA petitions and total petitions tabulated by MP party, for all MPs that voted in the 1873 CDA repeal. The main message from this table is that Liberal MP's constituents sent petitions related to the CDAs at roughly double the rate of constituents of Conservative MPs. Interestingly, this pattern is not observed for petitions overall, which are sent at roughly equal rates for MPs of the two parties. Thus, the discrepancy appears to be specifically related to CDA petitions.

Table B8: Petitions by MP party, 1870-73

Party	CDA petitions	Total petitions	MPs voting in 1873	CDA petitions per voting MP	Total petitions per voting MP
Liberal*	2,413	52,326	184	13.11	284.38
Conservative	910	31,086	122	7.46	254.80

*Liberal includes Liberal Unionist MPs. Columns 1 and 2 present the number of CDA petitions and total petitions for each MP summed across all MPs in a party. Note that petitions will be double-counted in constituencies where there is more than one MP. This includes only those MPs who voted in the 1873 CDA repeal vote. Columns 3 shows the number of MPs who voted by party. Columns 4 and 5 show the ratio of CDA and total petitions per MP, respectively.

Next, Table B9 breaks down the impact of petitions on MP votes by MP party. We find that all of the effect of petitions operated through Liberal MPs. In contrast, Conservative MPs do not appear to have been influenced by petitions.

Table B9: Impact of petitions on MP votes by party

	DV: Indicator for vote in favor of repeal			
	Conservative MPs		Liberal MPs	
	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)
CDA Petitions	0.000986	0.0200	0.00568***	0.00680***
	(0.00289)	(0.0175)	(0.00122)	(0.00204)
All pets. pre-1870	-9.97e-06	-0.000782	-6.92e-05	-0.000121
	(0.000255)	(0.000717)	(0.000177)	(0.000178)
CDA district	-0.119***	-0.0835*	-0.275*	-0.278*
	(0.0311)	(0.0471)	(0.166)	(0.165)
MP age	0.00171	0.00197	-0.00489	-0.00526*
	(0.00265)	(0.00303)	(0.00306)	(0.00306)
Constant	0.0281	-0.0189	0.702***	0.714***
	(0.147)	(0.154)	(0.160)	(0.157)
IV F-stat		4.18		12.99
Observations	121	121	183	183
R-squared	0.008	-0.238	0.079	0.077

Standard errors are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1. IV results use two instruments, one based on whether an LNA rally was held in a location and the second based on whether a rally was held within 5km of a location. Kleibergen-Paap F-statistics are reported for the IV results.

L Influence of petitions by women's groups

In Table B10 we separately estimate the impact of CDA petitions from women's groups and all other CDA petitions. Column 1 includes only CDA petitions by women, Column 2 looks at all other CDA petitions, and in Column 3 we include both. While our estimates of the effects of petitions by women are noisier, a consequence of the fact that this variable is based on substantially fewer petitions, these results do not suggest that petitions by women were less effective than other petitions. In Column 3, for example, we observe almost identical point estimates for petitions from women compared to all other petitions, though the precision of the estimate is much lower for women's petitions.

Table B10: Effect of petitions on 1873 vote by petitioner identity

DV: Indicator for vote in favor of repeal			
	Women	Men	Both
	(1)	(2)	(3)
CDA Petitions – by Women	0.0301***		0.00592
	(0.0115)		(0.0119)
CDA Petitions – all others		0.00538***	0.00493***
		(0.00123)	(0.00156)
All pets. pre-1870	2.55e-05	-7.67e-05	-8.22e-05
	(0.000155)	(0.000145)	(0.000143)
Conservative	-0.381***	-0.372***	-0.371***
	(0.0500)	(0.0491)	(0.0492)
CDA district	-0.238**	-0.223*	-0.226*
	(0.115)	(0.117)	(0.117)
MP age	-0.00102	-0.00173	-0.00169
	(0.00221)	(0.00215)	(0.00216)
Constant	0.532***	0.552***	0.550***
	(0.120)	(0.117)	(0.118)
Observations	304	304	304
R-squared	0.188	0.206	0.206

Standard errors are clustered by constituency. *** p<0.01, ** p<0.05, * p<0.1.

M Summary of the 1883 debate

Figure B6: ChatGPT summary of key arguments in the 1883 CDA bill debate

Arguments Against the Contagious Disease Acts:

Violation of Rights and Morality: The Acts are viewed as unjust and oppressive, infringing upon personal freedoms and particularly targeting women unfairly.

Ineffectiveness: Critics argue that the Acts have failed to achieve significant improvements in public health or disease control.

Ethical Concerns: The compulsory examination of women is condemned as a violation of dignity and morality, fostering societal harm.

Arguments For the Contagious Disease Acts:

Public Health Protection: Proponents claim the Acts are necessary for controlling disease spread and ensuring safety in specific districts.

Effectiveness: Some argue that the measures have yielded improvements in health outcomes and are thus justified.

Administrative Support: The Acts are seen as part of a longstanding administrative effort, with continued support from multiple administrations.

N Votes on 1872 and 1873 Women's Disability Bills by party

Table B11 shows the breakdown of votes in the 1873 and 1874 women's disability bill votes by party.

Table B11: Votes on 1873 and 1874 Women's Disability Bills by party

	1872		1873	
Party	For	Against	For	Against
Conservative	32	104	46	101
Liberal	99	109	99	109
Other	11	8	11	10
Total	142	221	156	220

Based on data from Eggers and Spirling (2014).

O Women's suffrage vote results by party

Table B12 shows the impact of CDA and women's suffrage petitions on MP votes on women's suffrage by party.

Table B12: Petitions and women's suffrage votes by party

DV: Women's suffrage bill vote				
Vote:	1872		1873	
MP Party:	Liberal	Conservative	Liberal	Conservative
CDA Petitions	0.00257	-0.000378	0.00315**	-0.00101
	(0.00176)	(0.00421)	(0.00151)	(0.00448)
Women's suffrage petitions	0.00270*	0.00591*	0.00352**	0.00614*
	(0.00156)	(0.00346)	(0.00172)	(0.00348)
All pets. pre-1870	-0.000107	0.000143	-0.000369	-2.72e-05
	(0.000310)	(0.000309)	(0.000224)	(0.000316)
CDA district	-0.153	-0.231***	-0.231	0.0155
	(0.132)	(0.0620)	(0.146)	(0.288)
MP age	-0.00153	-0.00186	0.00185	0.00178
	(0.00310)	(0.00294)	(0.00321)	(0.00351)
Constant	0.474***	0.294*	0.342**	0.240
	(0.165)	(0.161)	(0.165)	(0.191)
Observations	172	113	178	126
R-squared	0.042	0.078	0.063	0.041

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Note that the number of voters differs from the numbers in Table B11 because we are only able to use MPs from England and Wales in the analysis.