

Keep Winning with WinRed? Online Fundraising Platform as the Party's Public Good

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Abstract

We argue that WinRed, the newly emergent online campaign fundraising platform of the Republican Party, is evidence of parties as endogenous institutions (Aldrich, 2011) actively evolving to help its members achieve their ambitions. We show that given historical contexts of coordination failures and higher fundraising pressures, the Republican Party implemented a top-down centralization in 2019 to enforce member contributions to a “public good,” i.e., coordinating on a single platform. After analyzing the party’s theoretical motivations, we investigate the characteristics that explain which congressional candidates in the 2020 general election complied with the party’s efforts. Finally, we examine whether joining the platform was beneficial to individual candidates in fundraising outcomes using a matching approach. Although superior fundraisers did self-select into WinRed, joining the centralized platform had short-term benefits, especially for non-incumbents and House candidates, and more small-dollar donations. We discuss the implications of this new centralized structure of the party.

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One traditional theory of parties is that they are endogenous institutions (Aldrich, 1995, 2011) created by ambitious office seekers and holders to resolve collective action problems. Naturally, this implies that given changes in the environment, parties ought to respond and evolve to enhance their members' electoral chances better and help them meet their goals, subject to certain constraints. This may include changing stances on key policies (Spoon and Klüver, 2014; Klüver and Spoon, 2016; Benefiel and Williams, 2019), changing procedures in nomination processes (Cohen et al., 2008; Norrander, 2019), building better databases for effective mobilization (Hersh, 2015), and so on. There have also been discussions on how parties respond to changes in the context of comparative politics, especially for European democracies (Lawson and Poguntke, 2004).

In recent years, two key changes in the U.S. electoral environment—the advancement of the Internet and the heightened pressure of fundraising—may generate innovations in party organization. Since 2000, digitization of campaigns has taken place, heralded by Howard Dean and Barack Obama. In addition, the cost of elections has significantly increased in the 21st century, and any efforts to regulate campaign financing—including the Bipartisan Campaign Reform Act of 2002 (BCRA)—have slowly been dismantled. In fact, outside groups and organized interests are filling the fundraising, potentially enabling political newcomers and ideologically extreme candidates (La Raja and Schaffner, 2015; Rauch and La Raja, 2017; Porter and Steelman, 2021). In such periods, are existing structures of parties sufficient? How can parties better provide for their members?

We argue that the creation of WinRed, an online fundraising platform that is de facto leveraged by the Republican Party, is evidence that the Republican Party has evolved to meet their ambitious members' demands for better fundraising in this changed environment. Online campaign fundraising platforms—ActBlue for Democrats, WinRed for Republicans—now dominate the fundraising landscape of U.S. elections. Both are conduits (Alvarez et al., 2020) that strive to boost fundraising efforts and streamline receipts from potential donors. They have firmly established themselves as an integral part of the current campaign finance ecosystem, processing billions of online political donations (Malbin, 2013; Willis, 2014; Schneider, 2020; Goldmacher, 2020; Kim, 2021). But it was not always this way—in fact, WinRed is a recent creation. We show that given historical contexts of coordination failures, higher fundraising pressures, and better performance from the Democratic Party on raising small dollars via ActBlue, the Republican Party implemented this top-down centralization in 2019 to enforce member contributions to a “public good,” i.e., coordinating on a single platform.

Why is coordination of fundraising platforms a public good? We argue that it can bring multiple party-level benefits, including positive externalities, lower transaction costs, and higher party discipline. First, coordination lowers transaction costs and streamlines repeat donations or cross-candidate giving. A good central platform will build familiarity and reputation for donors and provide shortcuts such as pre-filled donor/payment information. This enables efficient mobiliza-

tions of electoral dynamics and economies of scale in donations. Second, using well-established, common platforms centralizes and standardizes donor lists and histories, which are valuable assets for political fundraising (Magleby et al., 2018). The resulting party-coordinated data warehouse can help the party design effective campaign strategies such as micro-targeted advertisements (Karpf, 2016; Albert, 2020). Finally, a well-established central platform will allow the party to control access to such benefits, such as denying platform entry to some candidates, heightening party discipline. All such group-level benefits may increase with platform maturity.

However, there is strategic uncertainty and potentially a collective action/coordination problem from individual candidates' perspectives. First of all, from individual candidates' perspectives, there is no guarantee of successful coordination. In that case, the expected payoff may be lower than the costs of changing platforms, such as disrupting habitual donors' cues and routines. In fact, the Republican Party had fifteen years of failing to solve this collective action problem, resulting in frustration from their members and low expectations on successful coordination (Kim, 2021). Second, because the best prospective donors are previous donors (Francia et al., 2003; Hassell and Monson, 2014), donor lists are heavily guarded resources (Magleby et al., 2018). Even when protected via user agreements, campaigns may be distrustful, unsure whether joining the platform may mean sharing this data, and who will benefit from the new platform (Steakin and Faulders, 2019). So the perceived expected value of net benefits from joining the platform may be lower if successful coordination is not guaranteed—a classic game-theoretic dilemma. We also know that public goods often suffer from underprovision (Ostrom, 1990). Since individual campaigns need not fully internalize the positive externalities at the party level, the rate at which candidates migrate to party-endorsed platforms may be suboptimal for parties seeking to improve overall fundraising outcomes and electoral performances.

Therefore, while coordination of fundraising platforms may seem a modest and indistinct change, this is one piece of evidence that formal parties can endogenously change to optimize given the need from their officeholders and seekers. In particular, this is one case of resolving a collective action problem for—ultimately—better reelection chances.

This paper will proceed as follows. First, we will explain the historical contexts surrounding fundraising. After analyzing the party's theoretical motivations, we investigate the characteristics that explain which congressional candidates in the 2020 general election complied with the party's efforts. Finally, we examine whether joining the platform was beneficial to individual candidates in fundraising outcomes using a matching approach. Although superior fundraisers did self-select into WinRed, joining the centralized platform had short-term benefits, especially for non-incumbents and House candidates, and more small-dollar donations. We discuss the implications of this new centralized structure of the party.

Platforms, Coordination, and Party-level Benefits

The Theories of Political Parties

Aldrich ([Aldrich, 1995, 2011](#)) builds a theory of parties based on the rational choice theory tradition, in which both office-seeking and other goals come together as political ambitions that drive the office seekers and holders, who are the primary players in the game. This theory of parties as (primarily) office seekers states that parties are endogenous institutions, or that “the actions of political actors that created political parties in the first place, and it is the actions of political actors that shape and alter them over time.” Primarily, they have been built because there are several collective action problems that need to be solved, such as effective mobilization of the electorate.

Of course, there have been new advances in the theories of parties ([McCarty and Schickler, 2018](#)) that explain parties as an extended network of policy demanders ([Bawn et al., 2012](#)), especially organized interests, where party norms are maintained through controls of nomination processes. The collective action problem that we posit—the party’s need to coordinate on a single online fundraising platform—is not a refutation of this line of thought. In fact, as we will show, the Republican Party’s solution to this problem has ultimately provided a means for the party to weaken potential challenges to the party elite’s control of nominations. In this paper, however, because we focus explicitly on a collective action problem for electoral concerns, and because officeholders and seekers are the primary entities that party changes will benefit rather than organized interests, we focus on the first line of thought.

The Advent of Online Fundraising Platforms

Online fundraising platforms have become a substantial part of the campaign finance infrastructure, especially in recent elections. While individual candidates used to build and maintain their systems before, as digitization of campaigns took place, conduits/vendors arose that could streamline the management of online receipts ([Alvarez et al., 2020](#); [Kim, 2021](#)). ActBlue, which hosts fundraisers for Democrats and progressives, grew relatively organically, gradually incorporating more campaigns since its establishment in 2004. WinRed, its Republican equivalent, was fast-track implemented in 2019, created and endorsed by the Republican National Committee ([Isenstadt, 2019](#)) and strongly encouraged by the then-President Trump. During the 2020 election cycle, ActBlue and WinRed, respectively, processed 4.3 and 2.1 billion dollars. This rapid formation of WinRed is what we will exploit to examine the effect of platform coordination.

ActBlue had come to dominate the Democratic campaigns because of several benefits it offered. It made giving easy on the donor side with a well-designed interface, even for very small amounts. It also facilitated the management of donations by taking over administrative tasks that campaigns could delegate ([Karpf, 2012](#)). ActBlue also helped coordinate Democratic campaigns into a single platform so that donors do not have to interact with multiple platforms, incurring unne-

essary transaction costs. With more than a decade of experience, ActBlue was a mature, reliable infrastructure for Democrats and progressives.

Republicans recognized these positive externalities that ActBlue brought, lamenting the digital gap (Kreiss, 2016) and not being able to harness the small-donor success of Democrats, but could not replicate its success for more than a decade. Before WinRed, various platforms claimed to be the next “Republican ActBlue” then silently degenerated away, leaving the candidates fractured into using various mid-sized platforms.

In 2019, the Republican party and then-President Trump’s team were able to finally construct a relatively unified online platform with both encouragement, threats, and legal action (Kim, 2021). WinRed now describes itself as “the official secure payments technology designed to help GOP candidates and committees win across the U.S.” While similar to ActBlue in many respects, its strong ties to the party are very different than that of ActBlue’s—it is a creation of and a vital part of the larger Republican Party network (Kim, 2021).

Why was the Republican Party so invested in creating a centralized fundraising platform? We illustrate some party-level benefits of coordination below.

Party-level Benefits of Coordination

Pooling Donor Lists and Histories. From the Republican party’s perspective, a key positive externality that WinRed helps to provide is a centralized repository of donor lists and their giving history. POLITICO reported that every transaction’s data would be appended to the internal voter file (Lee, 2019; Isenstadt, 2019).¹ The party can analyze a large set of data to design more effective campaign strategies such as how to best send out micro-targeting emails that appeal for more dollars (Albert, 2020). Indeed, WinRed’s FAQ states as follows: “[WinRed] combines better technology and a partnership with Data Trust that will massively improve the party’s voter model scores, benefitting all candidates up and down the ballot.”

Although valuable, campaign data is often siloed within specific campaigns, and accessing this data in itself grants an enormous advantage in data mining for better mobilization and persuasion. WinRed can potentially bypass this problem by pooling all donor information within a single repository, matched to voter data, and accessible by party elites for group-level strategy building. Because WinRed is de facto an extended arm of the Republican party, unlike ActBlue’s relationship with the Democratic Party (Kim, 2021), such maneuvers are possible. There is no incentive problem of underprovision once the data is within the warehouse.

¹The internal voter file comes from Data Trust, GOP’s data management firm that jointly owns WinRed. WinRed’s FAQ states as follows:

Data Trust, one of two partners in WinRed Technical Solutions, is a private company whose mission is to continually develop and enhance the voter data available to the Republican and conservative data ecosystem. Data Trust brings to WinRed years of experience within the right-leaning marketplace, and WinRed will help better position Data Trust to continue to grow and improve the quality of its data.

This data pooling does not mean directly sharing donor lists of candidates without the campaign's knowledge, consent, or compensation. WinRed's [FAQ](#) states as follows, mitigating concerns about donor list secrecy:

Can WinRed or Data Trust sell or market my donor data? No, nobody can get any donor data from Data Trust at any time for any reason. This includes the RNC, Donald Trump Campaign, etc. Donor data is solely used to improve voter modeling scores, which benefit everyone.

Does WinRed own any donor data from my campaign? No, each campaign owns its own data.

It seems reasonable to infer that, based on the above disclaimer, contributing data to WinRed does not result in electoral collaboration of donor lists ([Box-Steffensmeier et al., 2020](#)) without the knowledge or consent from the original campaign. Instead, this is jointly used for group-level mobilization efforts, meaning that even those who do not contribute their data to WinRed may benefit—a typical free-rider problem in public goods.

Increased Party Control and Discipline. Another party-level benefit of WinRed is that once the coordination has been sufficiently achieved, the party can potentially gatekeep its candidates by denying their access to the platform. Suppose a challenger emerges to a strategically important but vulnerable incumbent. The party leadership can easily restrict the right to host a fundraiser on WinRed. Or suppose that multiple candidates are running for an open seat, and there is confusion among donors and voters about who they should rally behind. Being hosted on WinRed can serve as a preliminary filter to root out fringe candidates without the party's support.

That is to say, WinRed provides power that the party can exercise over candidate selection ([Cohen et al., 2008](#)) and ultimately for party discipline. Access to WinRed itself can be one of the many necessary resources² that the party network can provide to support candidates ([Herrnson, 1986](#); [Dulio and Thurber, 2003](#); [Dwyre et al., 2006](#); [Baker, 2014](#); [Hassell, 2016, 2017](#)) or to take away as punishment ([Mosk et al., 2019](#)). This also means that being hosted on WinRed is a preliminary cue of support at the party level that donors can look up and respond to ([Hassell, 2017](#)). Note that no such mechanism exists for ActBlue, which works to benefit the Democratic party but is not the party's operation itself.³

There is some evidence for the party flexing this political muscle for party discipline. Liz Cheney (R-WY), a known high-profile critic of former President Trump and one of the ten impeachment Republicans, was kicked off WinRed in mid-2021, despite being an incumbent.⁴

²[Baker \(2015\)](#) summarizes this well: "in-kind contributions, subsidization of certain campaign costs, such as polling and voter lists, and services, such as strategic planning, image consultation, and fundraising advice."

³ActBlue has no strong incentive to deny a Democratic candidate its platform and does not exercise any form of selection. For one example, both Charles Booker and Amy McGrath, who fought bitterly over the Kentucky Senate race's Democratic primary in 2020, had their online fundraising pages hosted on ActBlue.

⁴Her official campaign website used WinRed as the donation referral link during the election year and early 2021.

Trump endorsed her primary challenger soon afterward ([Goldmacher, 2021](#)), who was eventually hosted on WinRed.⁵ This is a glaring example of how the GOP leadership can now use the fundraising platform to shape the internal power structure of the party.⁶

Individual Candidates' Incentives

Insofar as the efficacy of the Republican party's data-driven electoral strategies relies on the comprehensiveness of WinRed's donor data, Republican candidates' migration to the platform may constitute a benefit to the party as a whole, which individual candidates may not fully internalize. This need not be a threat to WinRed's expansion if the private benefits of joining the platform outweigh the costs of doing so. However, if Republican candidates do not perceive WinRed to be an overall superior choice of online fundraising platform over alternative vendors, they may under-utilize WinRed in the absence of intervention from the party leadership, which may lead to a public good underprovision problem ([Olson, 1965](#); [Ostrom, 1990](#)). For an expository game-theoretic model of this dynamic, see Appendix Section .

Do individual Republican candidates find it in their self-interest to adopt WinRed? This may be an appealing choice if WinRed is able to replicate ActBlue's fundraising success, or if the Republican leadership provides sufficient benefits contingent on candidates migrating to the platform.

Potential Fundraising Boost Due to Lower Transaction Costs and Economics of Scale. WinRed may be able to improve fundraising outcomes for candidates on the platform by lowering transaction costs for potential donors who want to give. First, if the platform is well-established, previously stored personal and credit-card information makes it easier to give, enhancing repeat and cross-candidate donations. This allows a rapid mobilization of electoral dynamics, as donors, with just a single click of a button, can give again, allowing for more impulsive donations ([Magleby et al., 2018](#)). ActBlue has already sharply demonstrated such potential economies of scale for Democrats and progressives.⁷ Second, the universal adaptation brings familiarity and builds trust and reputation for potential donors. This also breaks down potential barriers to donations.

Selective Benefits from Party Leadership to Overcome Collective Action Problem To realize the full potential of WinRed's ability to enhance the Republican party's data-driven elec-

The link was replaced with Victory Passport sometime in early August, and her fundraiser hosted on the WinRed directory also began to display only a thank-you page. In September, it was completely removed.

⁵Note that Harriet Hageman, who was endorsed by Trump, is not the only Wyoming at-large congressional candidate hosted on WinRed. Other candidates such as Anthony Bouchard, Darin Smith, Denton Knapp, and Chuck Gray are currently hosted as valid candidates. This indicates that although coordinated behind sanctioning Cheney, the party network has not decided on who to give the final support.

⁶Not all ten Republicans who voted for the impeachment of Trump were taken off WinRed. In fact, Cheney was the only one taken off without having announced retirement. We also want to re-emphasize the partisan asymmetry; the Democratic party has no explicit power to remove anti-establishment candidates from ActBlue.

⁷Note that [Magleby et al. \(2018\)](#) has shown that small donors give online at similar rates to large donors, indicating that online platforms may not necessarily be increasing small donors disproportionately.

toral strategies, and to overcome possible collective action problems in an attempt to scale up WinRed, the party leadership may push individual campaigns to switch to the platform through its leverage over candidates.⁸ In the past, showcasing loyalty such as member contributions to the party were the necessary conditions to advance candidates' internal positions within the party (Heberlig and Larson, 2005, 2012). If joining WinRed is now an additional condition to show party compliance for collective electoral gains and to maintain influence, Republican candidates may find doing so worthwhile even if WinRed will not tangibly improve their fundraising performance.

However, the decision to join WinRed is not without potential downsides. Republican candidates may mistrust the party leadership's promise to protect campaign data, or question whether the platform will successfully launch.

Lack of Trust. While WinRed has promised to protect donor lists from being shared or poached, campaigns may be distrustful of the claim. Allowing access to one's donor lists takes a significant degree of trust since donor lists are the single most precious campaign resource. This is also why campaigns focus on small donors, as they have not yet maxed out and still can become repeat donors. Donor lists are therefore rented or sold for high sums of money (Pagliery, 2016; Levine, 2016; Vogel and Haberman, 2018), and used to leverage the political power of candidates even when they have lost elections (Magleby et al., 2018).

In addition, there was much concern about the organizational structure of WinRed and who benefits financially from its launch (Mosk et al., 2019). This eventually led to RNC officials explicitly pledging not to benefit from WinRed (Steakin and Faulders, 2019), signaling that there was a significant lack of trust about the costs and benefits associated with WinRed.

Uncertainty of Coordination Success. If there is no guarantee of successful coordination, the expected payoff may be lower than the costs of changing platforms, such as disrupting habitual donors' cues and routines. The Republican Party has already had—although not party-initiated—a series of unsuccessful attempts at replicating the structure of ActBlue (Vogel, 2007). Given this, the candidates might have doubted the probability of WinRed's success.

But what are the direct costs associated with platform switching? Candidates may rely on ha-

⁸The following report from POLITICO (Bland, 2020) strengthens this point:

But Lansing and Chambers noted that WinRed is a fundraising tool, not an automatic cash haul. Republican candidates and groups still need to put in the work to build large email lists and other resources that drive online fundraising. "We now have all the right tech and platforms that everyone in the party needs. But that's only half the battle," Lansing said.

"What this does is remove any excuse," Chambers said. "You can no longer just sit there and just complain and say, 'ActBlue is kicking our ass.' Now we have the tool to fix it — but it still requires the committees and caucuses and campaigns and parties to work for it. We've got to fight that misconception that you just sign up, and then money flows in." ... Lansing said WinRed has benefited from top Republican campaigns and organizations embracing it from the beginning.

bitual donors who are familiar with the old, established platforms but who may find new approaches difficult. The switching may disrupt the cues and environments that facilitate giving from such repeat donors. What's more, setups require some degree of attention and administrative work from campaigns.⁹ If the candidates believe that the probability of WinRed succeeding is successfully low, they may find that the expected net payoff is lower by coordinating.

These concerns point to potential reasons why candidates may not immediately jump aboard WinRed. Indeed, when it was launched, much of the language around it not-so-subtly hinted at the suboptimal provision problem. The RNC chief of staff said, "the RNC has spent millions of dollars building a top-notch data apparatus for state parties and candidates to utilize for free" and that they will only support candidates that switch to WinRed to support the Republican Party as a whole. [Slodysko \(2019\)](#) reported that aside from intangible persuasion, NRCC explicitly offered to discount members of Congress of their expected membership dues (cash transfers to party committees) if they joined WinRed.¹⁰

Implications of WinRed's Impact on Candidate Fundraising

Was WinRed's rapid expansion largely an organic phenomenon, owing to its ability to deliver superior fundraising outcomes? Or did it offer little benefit to Republican candidates absent party intervention? Answering these questions is important for several reasons. If WinRed can substantially increase candidates' campaign receipts, any heterogeneous effects by salient candidate attributes may have far-reaching implications. For example, if the marginal benefits in fundraising to candidates joining WinRed are higher for those who already raise more money, the platform may further consolidate legislative power within the hands of star fundraisers, who disproportionately control party and legislative agenda through formal appointments to leadership positions as well as informal influence-buying within legislatures ([Heberlig and Larson, 2005, 2012](#); [Kistner, 2021](#)). Also, if candidates from privileged socioeconomic backgrounds or those that are otherwise over-represented in Congress experience greater fundraising boosts from joining WinRed, WinRed's consolidation of online fundraising by members of the GOP may threaten to undo recent progress in descriptive representation in elections ([Lawless and Fox, 2005](#); [Fox and Lawless, 2005](#); [Carnes, 2013](#); [Grose, 2011](#)) and undermine the increasing diversity in donor pools ([Alvarez et al., 2020](#); [Grumbach et al., 2020](#); [Grumbach and Sahn, 2020](#)).

Insofar as WinRed tangibly improves fundraising for Republican candidates on the platform, it would also help to understand whether this is primarily achieved through mobilizing specific sub-groups of donors. As digital opportunity structures ([Kreiss, 2019](#)), online fundraising platforms enable analytic activism ([Karpf, 2016](#)) by capabilities such as A/B testing. Such capacities may be especially valuable for aiding campaigns and other fundraising entities to perfect their

⁹In terms of processing fees, WinRed is actually cheaper than the alternatives that Republican candidates had. See Appendix for a comparison of platforms' pricing schemes.

¹⁰It is unclear if this ever took place.

online solicitation tactics for previously "hidden" small donors that are now disclosed due to online fundraising platforms' conduit status (Alvarez et al., 2020). If WinRed benefits Republican candidates on the platform primarily through its ability to rally individual, particularly small-dollar, donors (as opposed to interest groups or party committees), it has the potential to fundamentally shift the U.S. campaign finance landscape by changing the relative salience of various campaign funding sources (Malbin et al., 2012; Malbin, 2013; Alvarez et al., 2020).

Alternatively, if WinRed turns out to confer little fundraising benefit to candidates on the platform, it would suggest that party intervention—not WinRed's superior ability to mobilize donors—was central to the platform's rapid ascent. In that case, the GOP would likely prioritize subsidizing Republican candidates who excel at fundraising to adopt WinRed to attract large numbers of donors onto the platform. Such subsidies may range from transfers of campaign funds from party committees or leadership PACs (Kistner, 2021), electoral endorsements (Cohen et al., 2008), privileged access to party-controlled electoral databases (Pearlman, 2012), and preferential treatment in the allotment of committee seats and party leadership positions (Heberlig et al., 2006). This may also entrench the influence of star fundraisers with broad-ranging implications. For example, candidates who out-raised co-partisans tend to be more ideologically extreme, and their rise within the GOP, if aided in part by the party leadership's desire to invest in WinRed, may exacerbate elite polarization and factional conflicts (Heberlig et al., 2006).

Model: A Simplified Public Good Game

In this section, we propose a stylized model of two co-partisan candidates' decisions to join a party-coordinated online fundraising platform, with or without possible subsidies for platform adoption from the party leadership. While the rest of the section describes the model in detail, here are the key takeaways in words:

- We model an party-coordinated online fundraising platform as a public good (for supporting a centralized data warehouse that informs party-wide campaign strategies) that benefits from economies of scale.
- Absent party intervention, the candidate with the larger existing donor base is more likely to unilaterally join the platform, and is also more pivotal in the decision to adopt the platform by the other candidate with a relatively smaller donor base.
- A cooperative equilibrium, i.e., party-wide adoption of the platform, is more likely as the private net returns to joining the platform (such as the fundraising boost that candidates on the platform enjoy) increases.
- So long as the private net returns to joining the platform is not too low, the party leadership has an incentive to subsidize candidate(s) to join the platform when it would otherwise be underutilized in equilibrium. In particular, the party leadership will prioritize subsidizing

the candidate with the larger donor base in order to efficiently facilitate cooperation in equilibrium.

Model Setup

Candidate Characteristics

For simplicity, suppose there are two candidates $i \in \{1, 2\}$ within a political party. Let X_i denote the set of existing donors for candidate i , and let $x_i = \|X_i\|$ denote the size of candidate i 's donor base. Without loss of generality, assume that candidate 2 has a larger donor base, i.e., $x_2 > x_1$. Also, for simplicity, suppose that the two candidates' donor bases are non-overlapping, i.e., $X_i \cap X_j = \emptyset$, such that all donors brought to the online fundraising platform by candidate i 's are new to the platform even if the other candidate has already adopted it.

Online Fundraising Platform as a Public Good Within Party

Each candidate i makes the decision $d_i \in \{0, 1\}$ of whether to join a party-endorsed online fundraising platform, which powers the party's centralized campaign data warehouse. Platform adoption by candidates helps the party accumulate data on partisan donors in a centralized depository, which enhances the quality of data analytics for party-wide campaign strategies and ultimately benefits all members of the party. Moreover, this campaign data warehouse powered by the online fundraising platform becomes increasingly useful as the platform becomes more widely adopted (i.e., attracting more donors).

Let $\phi(d_1x_1 + d_2x_2)$ represent the value of this online fundraising platform as a function of candidates' decisions to adopt it, where $d_1x_1 + d_2x_2$ represents the total number of donors who migrate to the platform as a result of whether their preferred candidate joins it. We assume the function $\phi(\cdot)$ satisfies the following properties:

1. $\phi(0) = 0$: the platform itself has no value if neither candidate adopts it. In other words, an online fundraising platform that fails to attract any donor will be of no use for a party-coordinated data warehouse.
2. $\phi(\cdot)$ is monotonically increasing: the more candidates join the platform, thereby bringing more donors to it, the greater the value it provides in terms of data analytics.
3. $\phi(\cdot)$ is convex: the marginal value from each candidate's adoption of the platform (i.e., introducing new donors to the platform) is greater when the other candidate is already on it. While this need not be true globally (i.e., there may be diminishing marginal returns if the platform is already large), this assumption approximates the idea that there can be economies of scale from collecting more donor data via the platform.

For tractability, we hereafter assume that

$$\phi(d_1x_1 + d_2x_2) = (d_1x_1 + d_2x_2)^2 \quad (0.1)$$

which satisfies all three properties above.

Candidate Utility

Each candidate i 's utility as a function of their decision $d_i \in \{0, 1\}$ of whether to join the platform is as follows:

$$(d_ix_i + d_jx_j)^2 + \nu d_ix_i \quad (0.2)$$

The first component, $(d_ix_i + d_jx_j)^2$, is simply the value of the platform. Notice that candidate i derives benefit from it regardless of whether they personally adopt it (d_i), thereby capturing the public-good nature of the platform.¹¹

The second component, νd_ix_i , describes the *net* value to joining the platform. Specifically, ν denotes the net marginal cost or benefit to candidate i per donor. ν could be positive insofar as the private benefits provided by the platform (e.g., reducing transaction costs in campaign giving and increasing candidates' total fundraising) are large. Alternatively, ν could be negative if, say, the platform charges high payment processing fees compared to alternative vendors, the change significantly disrupts donation patterns from habitual donors, and so on. An immediate observation is that both candidates should voluntarily adopt the platform if it confers a net positive private benefit, i.e., $\nu > 0$. Therefore, for the rest of this section, we focus on the more strategically interesting case of $\nu < 0$.

Table 1 summarizes the strategic decisions facing candidates 1 and 2.

Player 1 / Player 2	Join ($d_2 = 1$)	Not Join ($d_2 = 0$)
Join ($d_1 = 1$)	$((x_1 + x_2)^2 + \nu x_1, (x_1 + x_2)^2 + \nu x_2)$	$(x_1^2 + \nu x_1, x_1^2)$
Not Join ($d_1 = 0$)	$(x_2^2, x_2^2 + \nu x_2)$	$(0, 0)$

Table 1: Candidate Payoff Matrix

Pure-Strategy Equilibria Without Party Intervention

The game represented in Table 1 is an example of coordination games where there generally exist three equilibria:

1. A cooperative equilibrium: both candidates join the platform ($d_1 = d_2 = 1$);

¹¹If the party-coordinated data warehouse, which is built upon the platform, is instead better characterized as a club good rather than a public good, one could easily capture that by moving d_i out of the parentheses.

2. A non-cooperative equilibrium: neither candidate joins the platform ($d_1 = d_2 = 0$); and
3. A mixed-strategy equilibrium

We focus on solving for pure-strategy equilibria. Note that this game is symmetric in form between candidates 1 and 2 except for the difference in the sizes of their donor base ($x_1 < x_2$). We first present the following corollaries:

Lemma 1 *Conditional on candidate j being on the platform, candidate i wants to adopt the platform iff*

$$\begin{aligned} (x_1 + x_2)^2 + vx_i &\geq x_j^2 \\ (2x_j + v)x_i &\geq -x_i^2 \\ x_i &\geq -x_i - 2x_j \end{aligned}$$

Lemma 2 *Conditional on candidate j not being on the platform, candidate i wants to adopt the platform iff*

$$\begin{aligned} x_i^2 + vx_i &\geq 0 \\ v &\geq -x_i \end{aligned}$$

Any (pure) equilibrium strategy employed by candidate i , d_i^* , must be one of three forms: 1) candidate i always joins the platform ($d_i^* = 1$); 2) candidate i matches the other candidate's action ($d_i^* = d_j^*$); or candidate i never joins the platform ($d_i^* = 0$). Lemmas 1 and 2, together with the assumption that $x_1 < x_2$, thus lead to the following equilibrium profiles:

Case	Cand. 1	Cand. 2	Coop. eq.	Non-coop. eq.
(1) $v \geq -x_1$	Always join	Always join	✓	
(2) $-x_2 \leq v < -x_1$	Match	Always join	✓	
(3) $-2x_1 - x_2 \leq v < -x_2$	Match	Match	✓	✓
(4) $-x_1 - 2x_2 \leq v < -2x_1 - x_2$	Match	Never join		✓
(5) $v < -x_1 - 2x_2$	Never join	Never join		✓

Table 2: Pure-Strategy Equilibria Without Party Intervention

Theorem 3 *As the private rate of returns to joining the online fundraising platform, v , decreases, the cooperative equilibrium becomes harder to sustain absent party intervention, and the non-cooperative equilibrium gets more inevitable. Specifically, cooperation is possible if $-2x_1 - x_2 \leq v$, and non-cooperation is possible if $v < -x_2$.*

Pure-Strategy Equilibria With Party Intervention

Purpose of Party Intervention

When candidates under-utilize the platform, the party leadership may want to encourage its adoption. We focus on party intervention aimed at encouraging one or both candidates to join the platform when only the non-cooperative equilibrium exists.

One could also consider the party leadership's incentive to eliminate non-cooperative equilibrium where it co-exists with the cooperative one, as in case (3) of Table 2, but we omit this discussion for the sake of brevity, and note that in that case cooperation yields strictly higher utilities for both candidates than non-cooperation.¹²

Party Leadership Payoff

Let's introduce the party leadership as a third player of this game. Assume that before candidates decide whether to join the online fundraising platform, the party first decides whether to provide subsidy $s_i \geq 0$ to select candidate i contingent on i 's adoption of the platform.

Assuming that the party seeks to maximize platform adoption net of the cost of these subsidies, we can represent the party leadership's utility as follows:

$$(d_i^*(s_i)x_i + d_j^*(s_j)x_j)^2 - s_i - s_j \quad (0.3)$$

where $(d_i^*(s_i)x_i + d_j^*(s_j)x_j)^2$ represents the common value derived from the size of the platform, taking into account that each candidate i ' platform adoption decision $d_i^*(s_i)$ is now a function of the subsidy they receive.

When the cooperative equilibrium is the only supportable pure-strategy equilibrium, i.e., in cases (1) and (2) in Table 2, there is no need for party intervention. We, therefore, focus on equilibrium subsidies from the party leadership in other cases.

Party Intervention in Case (4) of Table 2

In this case, cooperation breaks down because even though candidate 1 would join the platform when candidate 2 is on there, candidate 2 never wants to do so, absent a party intervention.

To be able to sustain a cooperative equilibrium, the party leadership would need to at least partially subsidize candidate 2 such that candidate 2 would want to adopt the platform conditional on candidate 1 being there. The minimum necessary amount of such a subsidy to candidate 2 is $-x_2^2 - (2x_1 + \nu)x_2$.

¹²Under cooperation each candidate i receives utility $(x_1 + x_2)^2 + \nu x_i$, which is at least weakly greater than zero (in the non-cooperative case) whenever $\nu \geq -x_i - 2x_j - \frac{x_i^2}{x_j}$. This is always true under the parameter space of case (3) of Table 2.

This subsidy to candidate 2 is worthwhile to the party leadership if the value of full platform adoption net of the cost of the subsidy is better than zero (the party leadership's outside option in the case of a non-cooperative pure-strategy equilibrium), i.e.

$$\begin{aligned}
(x_1 + x_2)^2 - (-x_2^2 - (2x_1 + \nu)x_2) &\geq 0 \\
x_1^2 + (4x_1 + \nu)x_2 + 2x_2^2 &\geq 0 \\
(4x_1 + \nu)x_2 &\geq -x_1^2 - 2x_2^2 \\
\nu &\geq -2x_1 - 4x_2 - \frac{x_2^2}{x_1}
\end{aligned} \tag{0.4}$$

which is always satisfied in case (4) of Table 2.¹³

Party Intervention in Case (5) of Table 2

Here cooperation breaks down because the marginal private rate of returns to the platform ν is so low that neither candidate ever wants to join the platform, absent subsidies. Party intervention may therefore take one of two forms: encouraging one candidate to join the platform versus encouraging both to do so.

Suppose the party leadership chooses to fully subsidize only candidate i to join the platform irrespective of whether the other candidate is on there. This would require a minimum subsidy of amount $-x_i^2 - \nu x_i$, and would produce a partially adopted platform of value x_i^2 . This intervention scheme is therefore preferred to no intervention when

$$\begin{aligned}
x_i^2 - (-x_i^2 - \nu x_i) &\geq 0 \\
\nu &\geq -2x_i
\end{aligned} \tag{0.5}$$

which never holds under the parameter space of case (5) of Table 2, and is therefore a strictly dominated strategy.

Alternatively, the party leadership can partially both candidates such that cooperation can be sustained as an equilibrium. The minimum effective amount of a full subsidy to each candidate i would be $-x_i^2 - (2x_j + \nu)x_i$.

These partial subsidies sum up to This joint partial subsidy scheme is worthwhile to the party

¹³In fact, under the same parameter space, the party leadership would be willing to even fully subsidize candidate 2 the amount of $-x_2^2 - \nu x_2$ —such that candidate 2 wants to join the platform regardless of candidate 1's choice—to ensure that non-cooperation is never an equilibrium.

leadership iff

$$\begin{aligned}
(x_1 + x_2)^2 - (-x_1^2 - (2x_2 + \nu) x_1) - (-x_2^2 - (2x_1 + \nu) x_2) &\geq 0 \\
(x_1 + x_2)\nu + 2(x_1^2 + 3x_1x_2 + x_2^2) &\geq 0 \\
\nu &\geq -\frac{2(x_1^2 + 3x_1x_2 + x_2^2)}{x_1 + x_2}
\end{aligned} \tag{0.6}$$

which can hold under case (5) of Table 2.¹⁴

Equilibrium Characterization With Party Intervention

Theorem 4 *When the party leadership is allowed subsidize candidates for platform adoption,*

1. *A cooperative pure-strategy equilibrium (with or without party subsidies) can be supported so long as $\nu \geq -\frac{2(x_1^2 + 3x_1x_2 + x_2^2)}{x_1 + x_2}$, i.e., the private net returns to platform adoption are not too low (or, equivalently, the minimum subsidy required by candidate 2 is not too high).*
2. *In any cooperative pure-strategy equilibrium, the party leadership will provide subsidy of size $-x_2^2 - (2x_1 + \nu) x_2$ to candidate 2 when $-x_1 - 2x_2 \leq \nu < -2x_1 - x_2$, and subsidies of size $-x_i^2 - (2x_j + \nu) x_i$ to both candidates $i, j \in \{1, 2\}$ when $-\frac{2(x_1^2 + 3x_1x_2 + x_2^2)}{x_1 + x_2} \leq \nu < -x_1 - 2x_2$. In words, candidate 2 (the candidate assumed to have the larger donor base) is prioritized in the party leadership's subsidy strategies.*

Data

Given the above theorizing, we will now investigate (1) who joined the party's efforts and when, and (2) ultimately, whether the successful collective action yielded the promised benefits.

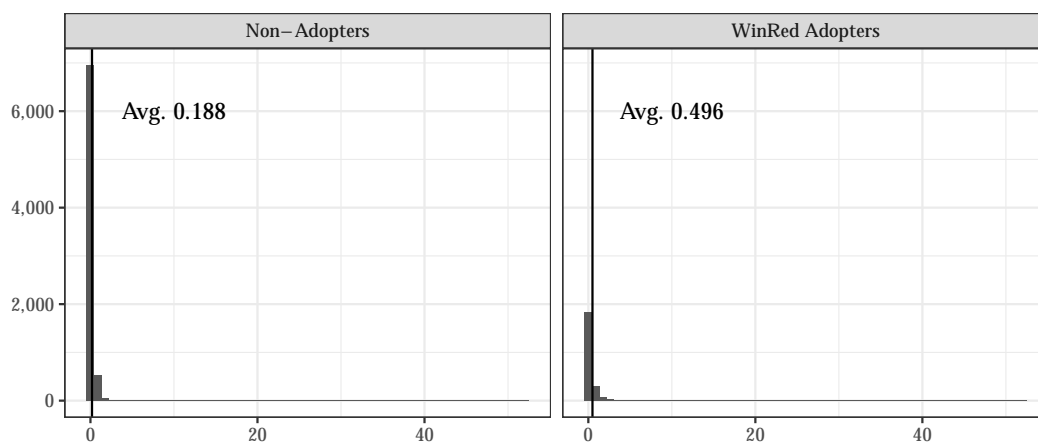
Several datasets are joined together to form the data used for this empirical analysis. The quarterly filings of congressional candidates are from the FEC website. Congressional committees typically choose to file quarterly, so there are four filings per calendar year: April Quarterly, July Quarterly, October Quarterly, and Year-End reports. For an explanation of quarterly reports, see <https://www.fec.gov/help-candidates-and-committees/filing-reports/quarterly-reports/>. In election years, a pre-general and a post-general report are added. Candidates can also choose to file monthly, but monthly filers are aggregated into quarterly results for an apples-to-apples comparison.

We will use logged variables for fundraising outcomes in terms of dollar amounts, as the distribution is highly skewed. See Figure 1 for histogram comparisons of raw and logged fundraising

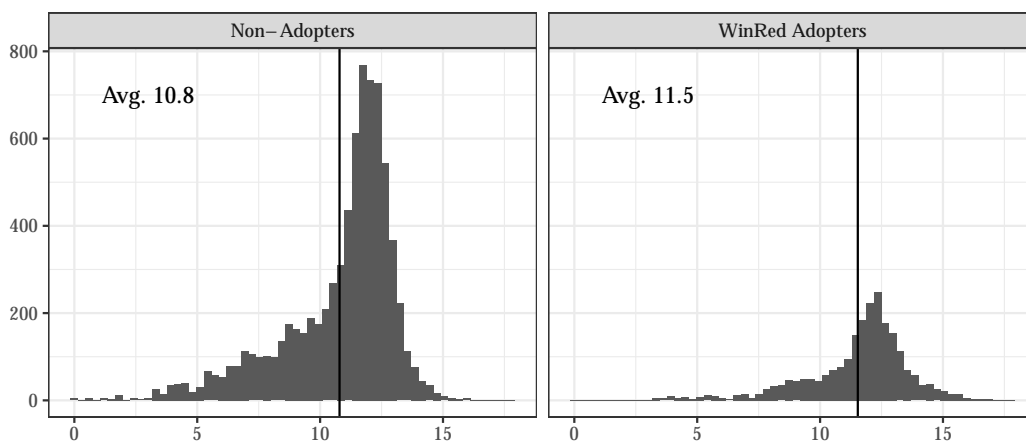
¹⁴In fact, under the same parameter space, the party leadership would be willing to even fully subsidize one of two candidates the amount of $-x_i^2 - \nu x_i$ while partially subsidizing the other (who receives full subsidy ends up not mattering for the party leadership's total payments) to ensure that non-cooperation is never an equilibrium so long as $\nu \geq -2x_1 - 2x_2$.

amounts split between candidates who adopted WinRed and those who did not.

The FEC data is appended by other datasets including the Cook Partisan Voting Index (PVI) ([The Cook Political Report, 2017](#)) and election results and candidate characteristics of U.S. Congressional candidates ([MIT Election Data and Science Lab, 2017a,b](#)), DW-NOMINATE scores ([Lewis et al., 2021](#)), CFscores from the DIME dataset ([Bonica, 2014](#)), and average personal income by state ([U.S. Bureau of Economic Analysis, 2021](#)).



(a) Total Quarterly Fundraising (1 million USD)



(b) Total Quarterly Fundraising (Logged)

Figure 1: Comparison of Raw and Logged Fundraising Amounts, Republican Congressional Candidates, All Reported Quarters, 2015–2020

Who Joins WinRed and When?

We first present descriptive analysis on observable candidate characteristics that predict the choice to join WinRed, and if they joined, the timing of such decisions. Specifically, we examine the following groups of candidate attributes:

Baseline Attributes. We examine whether the decision or timing to join WinRed differs by the chamber (i.e., House versus Senate candidates), incumbency status (i.e., incumbents, challengers, or open-seat candidates), and gender.

Incentives to Join WinRed for Better Fundraising. Insofar as WinRed can deliver superior fundraising outcomes relative to alternative payment processors, those who had greater needs of campaign cash might find the platform more appealing. To capture such electoral incentives for joining WinRed, we consider whether a given candidate was up for election in the 2020 cycle, the district's Cook PVI measure (to proxy for district competitiveness), and the average amount of quarterly fundraising by opposing (mostly Democratic) candidates in general elections (to proxy for opponent fundraising success). In addition, when looking at the timing of candidates joining WinRed (all of which occurred in 2020), we also examine trends in candidates' own fundraising as well as those of opposing candidates in 2019.

Incentives to join WinRed due to party coordination. If WinRed's ability to boost campaign fundraising turns out to be limited for most Republican candidates, the platform will be underutilized absent additional incentives. One way in which the Republican party may be able to mitigate this collective-action problem is to provide other incentives for candidates to adopt WinRed. The more Republican candidates that use WinRed as their primary if not an exclusive payment processor, the more their campaign donors may migrate to the platform as well, thereby potentially prompting other candidates to also adopt the platform in a bid to not lose donors who prefer WinRed's user experience ([Armstrong, 2006](#)).

A coordinated migration to WinRed could occur via several means. First, party leaders themselves may be early adopters. Second, Republican candidates who are star fundraisers may face greater pressure from the party to adopt WinRed. Third, state parties may have been delegated the task of coaxing candidates onto WinRed, generating state effects. To test these conjectures, we look at whether seniority (for legislators) and average quarterly fundraising amounts predict the status and/or timing of joining WinRed. Additionally, insofar as these strategies to overcome the collective-action problem in building WinRed are effective, candidates may be more likely to adopt WinRed when other candidates who share similar donor networks (e.g., due to ideological proximity ([Barber et al., 2017](#)) or geographic ties) do. We therefore also examine whether candidates' decisions to join WinRed are functions of their ideological distances to those who are already on the platform as well as the number of same-state candidates there.

Who Joins WinRed?

Since candidate traits that individually predict decisions to join WinRed are often correlated with one another (for example, incumbents tend to be better fundraisers), we estimate a multivariate logistic regression in order to see which observable candidate attributes provide precise

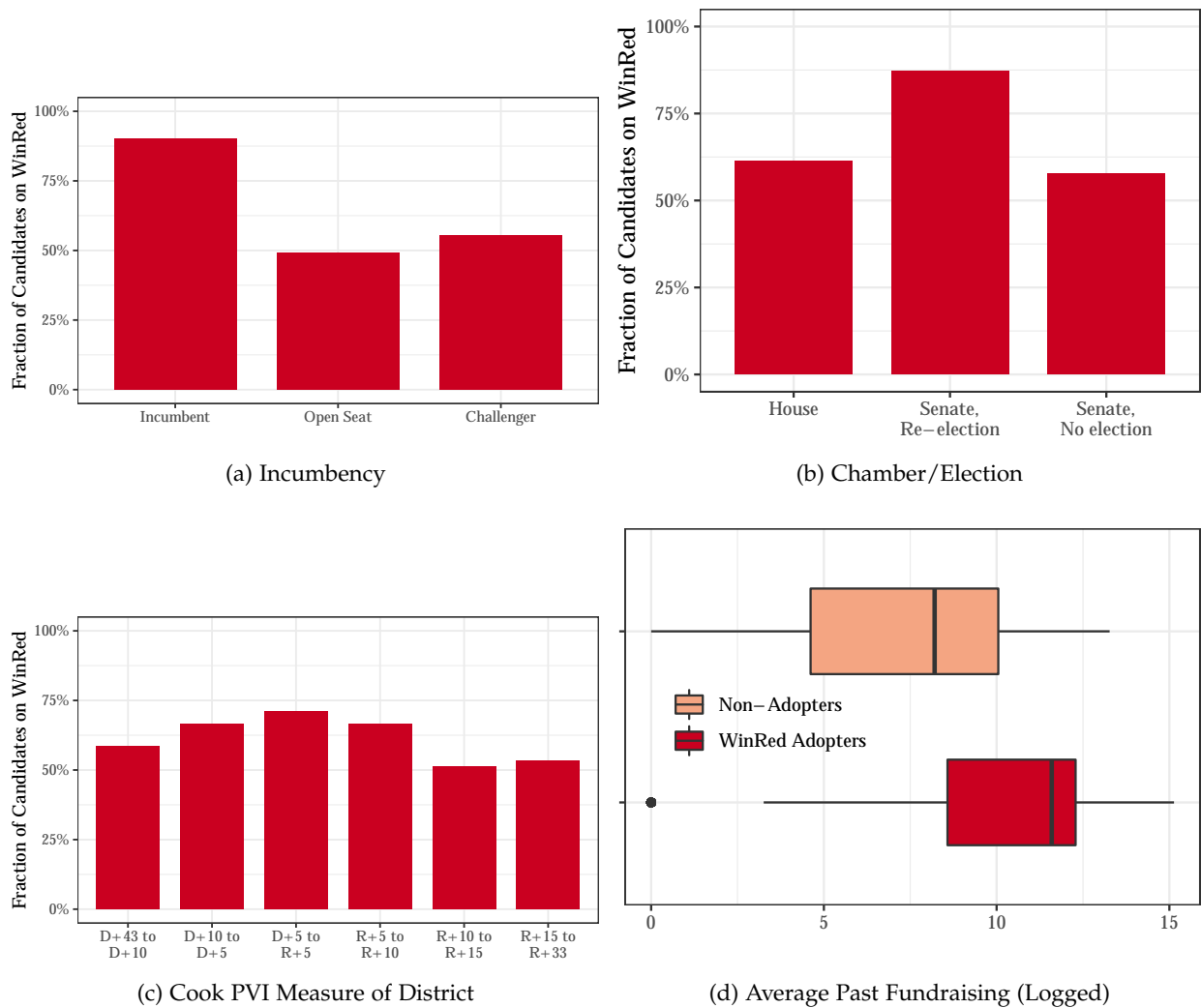


Figure 2: Decision to Join WinRed by Candidate/Electoral Characteristics

marginal information on whether a given Republican candidate would adopt WinRed. This table omits ideal point-based candidate characteristics (specifically, proximity to WinRed adopters in Recipient CFscores) due to the large amount of missing data in these variables, and adds region fixed effects to account for geographic variation. Table 3 shows logistic regression results with heteroscedasticity-robust standard errors to check which covariates best predict joining of WinRed. Three samples are used to check for distinct trends within each chamber: all candidates, House candidates, and Senate candidates. Figure 2 shows visualizations using bar-plots and box-plots for some key variables.

Among baseline candidate characteristics, incumbency status significantly predicts the decision to join WinRed. Figure 2a shows that among Republican candidates, incumbents joined WinRed at almost twice the rate of non-incumbents. When estimated separately by chamber, however, it was only significant within House. Being a Senate candidate also strongly predicts joining

	<i>Dependent variable:</i>		
	All	House	Senate
Senate	1.485** (0.480)		
Incumbent	1.618*** (0.307)	1.535*** (0.343)	1.771 (0.952)
Open Seat	0.086 (0.202)	-0.042 (0.214)	0.660 (1.140)
Seniority	0.035 (0.032)	0.037 (0.034)	5.091*** (0.620)
No Election	-1.892*** (0.536)		-2.650** (1.008)
Gender	-0.392* (0.168)	-0.392* (0.175)	-0.725 (0.779)
Cook PVI	0.014* (0.007)	0.011 (0.007)	0.043 (0.041)
Avg. Past Fundraising (Logged)	0.104*** (0.026)	0.073** (0.027)	0.416*** (0.104)
Avg. Opponent Past Fundraising (Logged)	-0.022 (0.018)	-0.002 (0.019)	-0.167 (0.099)
Proportion of Same-State Adopters	3.755*** (0.887)	3.368*** (0.964)	7.147 (4.198)
Region: Northeast	0.339 (0.262)	0.309 (0.270)	0.275 (1.461)
Region: South	-0.146 (0.207)	-0.151 (0.221)	0.132 (0.806)
Region: West	-0.090 (0.232)	-0.156 (0.245)	1.078 (0.920)
Observations	950	828	122
Log Likelihood	-546.012	-495.812	-39.395
Akaike Inf. Crit.	1,120.024	1,015.623	104.789

Note: *p<0.05; **p<0.01; ***p<0.001

Table 3: Decision to Join WinRed, Logistic Regressions

WinRed, but the difference is mostly driven by those up for election, as Figure 2b shows. Gender, although not significant in a simple correlation test, shows that when other factors are accounted for, women choose to join WinRed more than men, driven by House candidates.

Because Cook PVI measures were coded so that negative values indicated Republican favorability and positive values indicated pro-Democrat voting trends, there is some evidence that shows that electoral threat prompts candidates to join (Figure 2c).¹⁵ However, they are not particularly significant in subgroup analyses. Moreover, while it is plausible that opponent's fundraising will put candidates in greater need of campaign cash and therefore drive them to join WinRed, when other variables are controlled for, this does not seem to be the case.¹⁶

There is also some evidence consistent with the notion that party coordination shapes decisions to join WinRed. Candidates' past fundraising success strongly predict such decisions, which can also be seen in the box-plot comparison of the distribution of logged average quarterly fundraising amounts of Republican candidates who are on versus not on WinRed (Figure 2d). Likewise, seniority predicts the adoption of WinRed within Senate candidates. Geographic ties appear to matter, too, as candidates are more likely to appear on the platform when a greater share of same-state candidates chooses to do so. This could be evidence of coordination at the state party level.

When To Join WinRed?

In addition to exploring candidate traits that predict adoption of WinRed, we examine, among the subset of candidates on the online fundraising platform, observable factors that predict the timing of their decisions. The exact dates of candidates appearing as having used WinRed are used, which is defined as the earliest transaction recorded with WinRed or the day that the candidate was first observed on the public WinRed directory.¹⁷

Table 4 again shows the prediction exercise for all candidates, House candidates, and Senate candidates, where the dependent variable is how long in terms of days it took the candidates to join WinRed since the first available date. Figure 3 shows visualizations for key variables, using the month of the dates.

Visually, incumbents who joined WinRed were much more likely to do so earlier (Figure 3a). Almost all incumbents who joined WinRed did so during 2019, again when WinRed was first unveiled. However, the distinction is not statistically significant in the multivariate regressions. Similarly, while Figure 3c seems to show that candidates in safer districts disproportionately were late adopters, again, it is not significant in the regression exercise.

¹⁵Senate DW-NOMINATE scores were taken as an average over House districts' measures.

¹⁶Note that opponent fundraising is somewhat correlated with one's own fundraising outcomes.

¹⁷Although formally launched in 2019, the formal directory was only officially unveiled on Feb 15, 2021. Note that 82.8% of candidates who ultimately joined WinRed were already on the directory when WinRed was first unveiled.

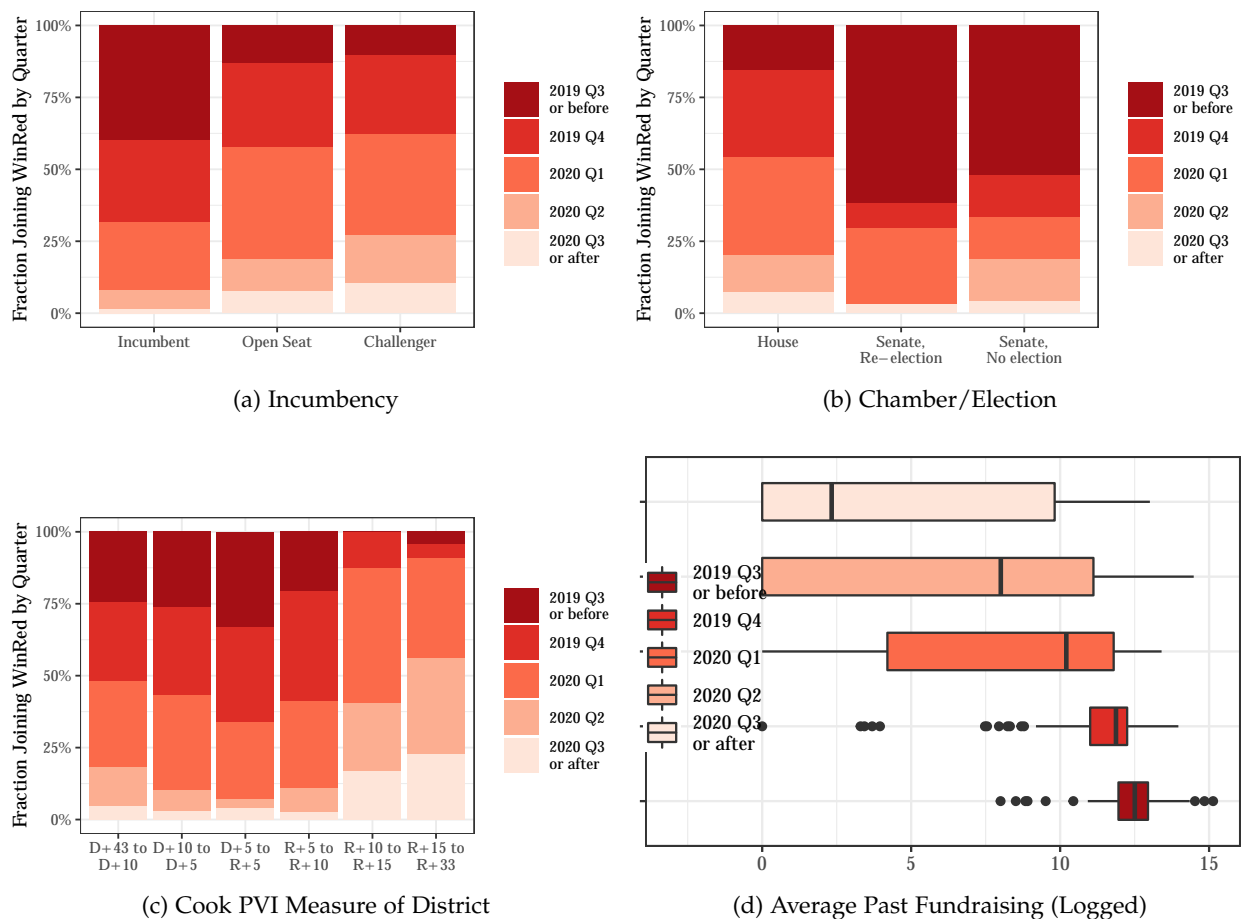


Figure 3: Timing of Joining WinRed by Candidate/Electoral Characteristics

The only strongly significant factor was average past fundraising; good fundraisers joined WinRed very early, almost immediately after it was launched (see also Figure 3d). Again, this may hint at the party influences in the timing of Republican candidates' adoption of WinRed. Not only are top fundraisers more likely to be on the platform, but they also entered earlier than average.

Did Joining WinRed Benefit Candidates?

Research Design

The preceding section demonstrates that the decision and timing to join WinRed appear highly strategic for many Republican candidates, and may depend on a host of electoral and legislative attributes. As a result, simply comparing changes in fundraising outcomes for WinRed adopters versus non-adopters need not uncover the true causal effects of the platform on candidates' fundraising performances. In fact, Section B of the Online Appendix demonstrates that quarterly fundraising levels for candidates who eventually appeared on WinRed were already rising faster

	<i>Dependent variable:</i>		
	All	House	Senate
Senate	-3.077 (5.764)		
Incumbent	-1.235 (5.175)	-7.482 (6.023)	15.323 (11.137)
Open Seat	-4.211 (6.742)	-3.883 (7.348)	1.514 (12.141)
Seniority	-0.211 (0.334)	0.106 (0.389)	-1.232* (0.569)
No Election	9.923 (9.583)		2.376 (9.588)
Gender	3.674 (4.736)	6.509 (5.382)	2.205 (10.122)
Cook PVI	0.246 (0.217)	0.257 (0.224)	-0.924 (0.693)
Avg. Past Fundraising (Logged)	-4.333*** (0.808)	-4.326*** (0.869)	-3.392 (1.910)
Avg. Opponent Past Fundraising (Logged)	-0.555 (0.524)	-0.712 (0.589)	-0.087 (1.104)
Proportion of Same-State Adopters	-11.630 (22.634)	-36.119 (24.165)	50.155 (46.591)
Region: Northeast	5.835 (5.941)	4.773 (6.458)	37.557 (19.680)
Region: South	3.227 (4.491)	0.011 (4.659)	13.153 (12.084)
Region: West	9.671 (5.414)	7.979 (5.842)	13.283 (12.607)
Observations	514	441	73
R ²	0.236	0.260	0.207
Adjusted R ²	0.216	0.241	0.049

Note: *p<0.05; **p<0.01; ***p<0.001

Table 4: Timing of Joining WinRed, Linear Regressions

than those of non-adopters one to two quarters prior to joining the online fundraising platform, which can lead two-way fixed effects estimates to overstate the WinRed's ability to rally campaign donors for candidates.

To overcome challenges to causal inference posed by violations of parallel trends, and also to

follow other best practices in time-series cross-section analyses, we adopt [Imai et al. \(2020\)](#)'s PanelMatch estimator. To construct counterfactual outcomes for treated units in time-series cross-sectional data, PanelMatch finds a corresponding matched set of control observations that share the same treatment history up to a researcher-specified number of lags, and can be further refined via matching or weighting methods to achieve balance on researcher-selected covariates.

In our application, we match a given candidate that eventually joined WinRed (i.e., a treated unit) to a set of comparison candidates that either was not on WinRed by the end of 2020 or did not adopt the platform at the same time as the treated candidate of interest (i.e., either never treated or did not receive treatment at the same time) such that this comparison set satisfies three criteria.

First, both the treated candidate of interest and the matched set of comparison candidates were not on WinRed (i.e., received no treatment) in at least three quarters prior to the quarter that the former joined the platform (i.e., the quarter of treatment assignment).

Second, in those three quarters of pre-treatment history, we refine the matched set of candidates so as to select the top ten that are "closest" to the treated candidate of interest, in Mahalanobis distance, in terms of the following variables: changes in quarterly fundraising (either overall or sum of a specific type of contributions, depending on the dependent variable of interest in the estimation stage), chamber, incumbency status, indicator for open-seat election, indicator for not being up for election, and the Cook Partisan Voting Index (PVI). Refining the matched set to minimize differences in pre-treatment fundraising trends may help us ameliorate concerns about differential pre-trends in our outcome variables of interest, and the other candidate attributes included in this refinement step, informed by our descriptive analysis of cross-sectional and temporal variation in joining WinRed, may help to account for additional sources of confounding effects.

Third, both the treated candidate of interest and the refined matched set of comparison candidates must have at least two periods of observable outcome after the former joined WinRed (i.e., received treatment).

In essence, the first two criteria matches each treated candidate to a comparison set that may have similar counterfactual fundraising outcomes due to similarity in prior treatment history and relative pre-treatment balance on key covariates (including trends in fundraising). Assuming that parallel trends hold between treated candidates and their matched comparison candidates after conditioning on treatment history, lagged fundraising, and covariate history, PanelMatch provides a weighted two-way fixed-effect estimator for the causal effect of joining WinRed on candidates' subsequent campaign receipts ([Imai et al., 2020](#)). Additionally, the third criterion allows for the estimation of dynamic treatment effects. For a visual illustration of this matching process, [Figure 4](#) displays 150 randomly selected candidates by treatment history, where quarters marked in red represent a candidate's presence WinRed while those marked in blue represents

Treatment Distribution Across Units and Time (Sample)

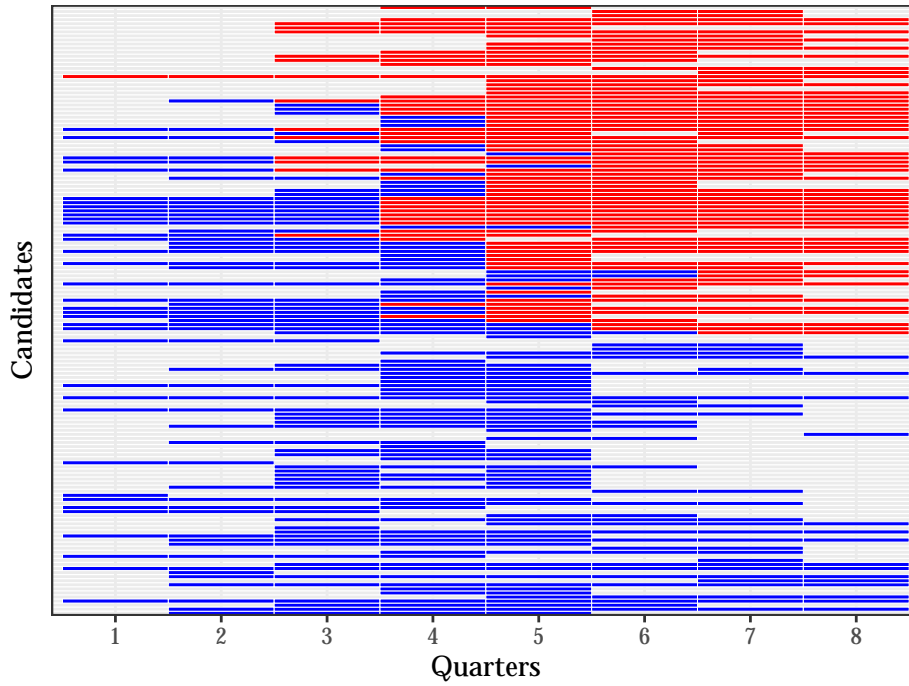


Figure 4: Example of Treatment Distribution for Random 150 Candidates, Data Truncated From 2019 Q1

Treatment Distribution
Across Units and Time
highlighted matched set for unit id: 1 at time $t = 4$ and lag = 3

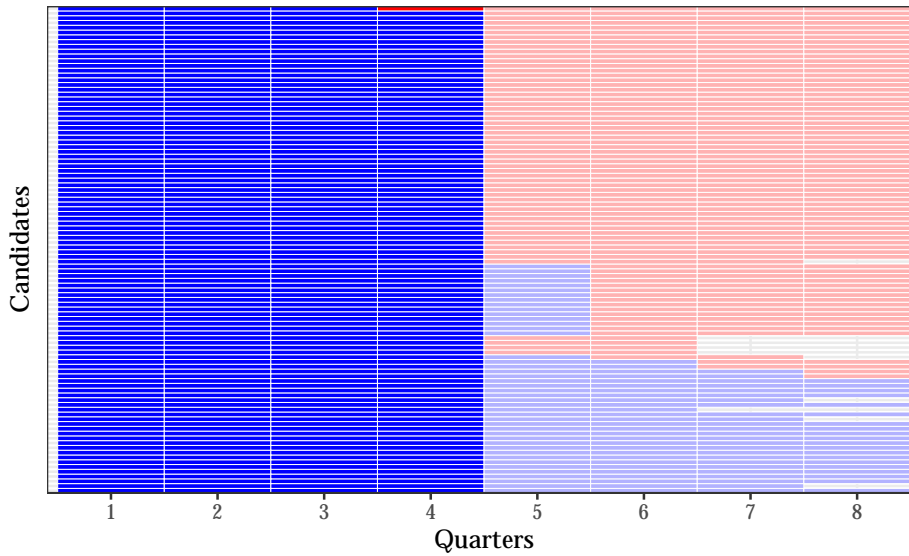


Figure 5: Example of a Constructed Control Group for a Treated Candidate, Data Truncated From 2019 Q1

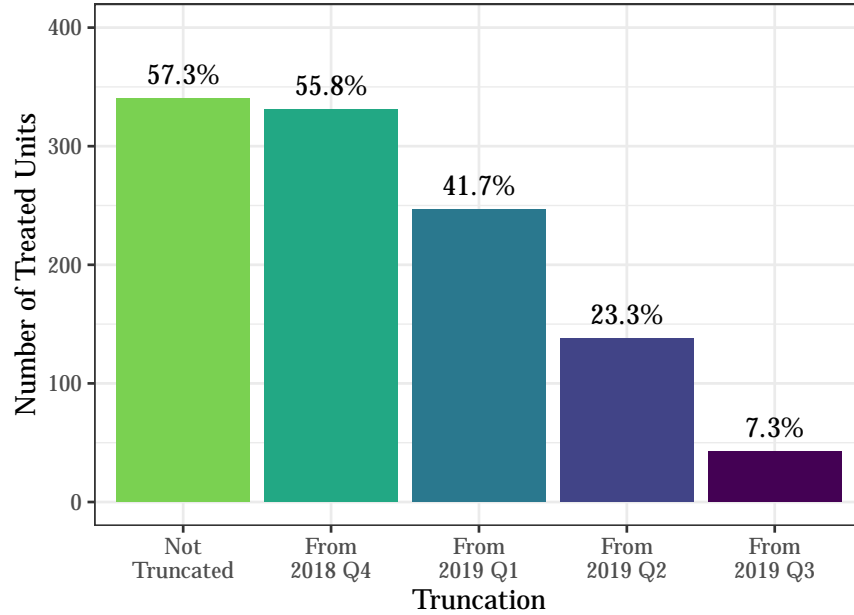


Figure 6: Number of Treated Units by Truncation

a candidate’s absence from the platform. In comparison, Figure 5 shows an example of a treated candidate (the top row of this plot) that joined WinRed in the fourth quarter of 2019 and the corresponding matched set of comparison candidates (before refinement).

Because the aforementioned matching procedure requires both treated units and their matched comparison units to have non-missing pre-treatment covariate and outcome observations up to a pre-specified number (three quarters in our case) of pre-treatment periods, not all observations are included in the estimation step. As shown in Figure 6, we retain about 57.3% of all observations in our data after the matching step is completed. We lose additional observations if we discard earlier data. This occurs because if we, say, only use data starting in the fourth quarter of 2018 (corresponding to the second bar in Figure 6), our requirement of matching on three quarters of pre-treatment history results in the exclusion of any candidate that joined WinRed before the fourth quarter of 2019 as well as any corresponding comparison candidates they would otherwise be matched to. Similarly, Figure 7 shows the distribution of the sizes (prior to refinement) of matched comparison sets to treated units, which shrinks as data truncation requirement becomes increasingly stringent.

Given the resultant loss of observations, why would we want to truncate our data at some quarter prior to the adoption of WinRed? This can help us reduce imbalance between treated candidates and their matched comparison units on salient covariates. In results not shown here, we find that keeping only data starting in the first quarter of 2019 leads to the biggest reduction in covariate imbalance in the full sample and in different candidate sub-samples. Figure 8 visualizes standardized distance in covariates between treated units and their matched control sets in three

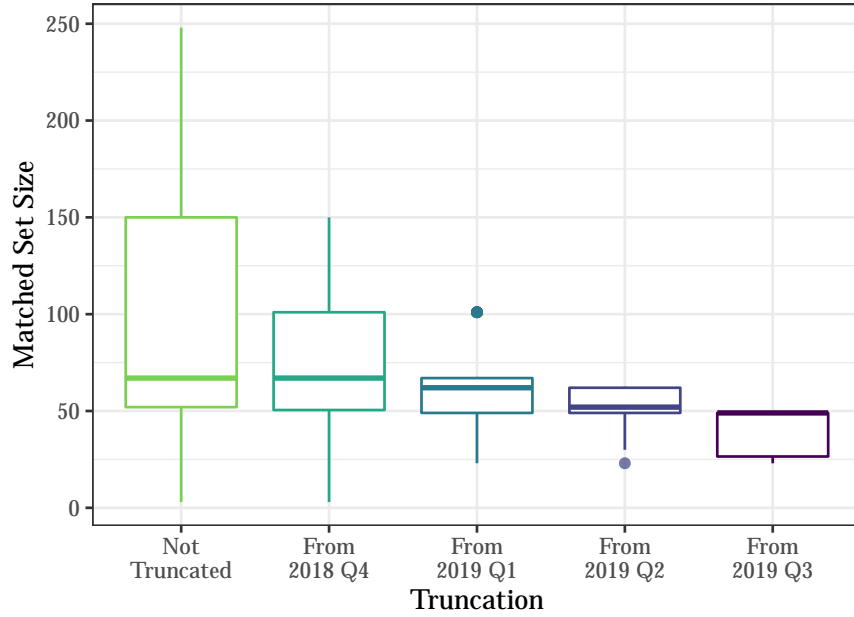


Figure 7: Distribution of Matched Set Size by Truncation

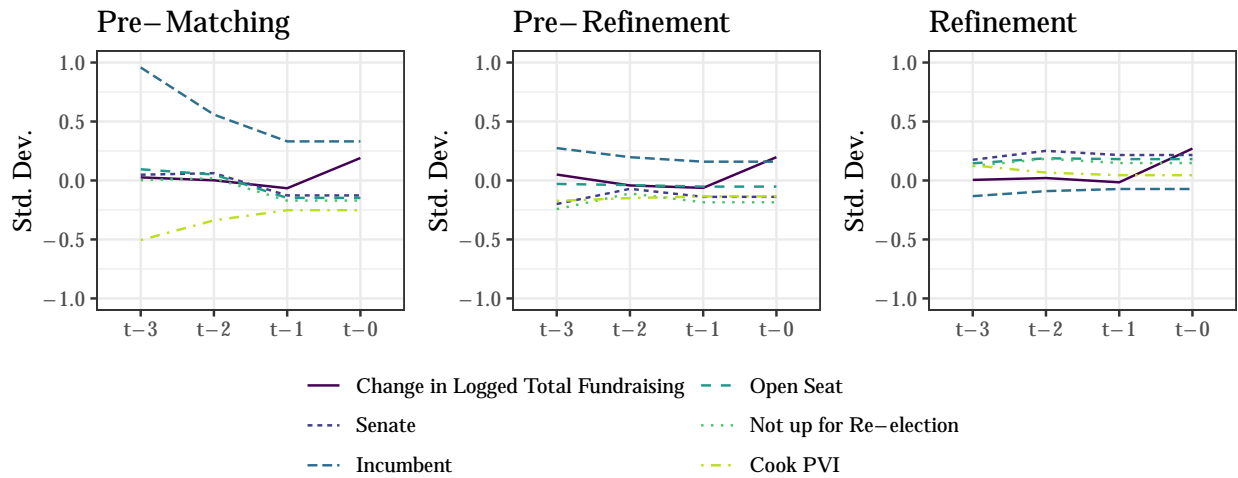


Figure 8: Improvement in Covariate Balance After Refinement for Logged Total Contributions

pre-treatment quarters, where the left panel displays results without matching, the middle panel shows covariate balance after matching but without refinement, while the right panel displays covariate balance for matched data that is further refined based on Mahalanobis distance. Under our matching procedure and preferred data truncation scheme, the standardized distance in any given covariate never exceeds 0.25 units, and is overall smaller post-refinement.

Results

Figure 9 shows PanelMatch’s estimated average treatment effects on the treated (ATT) for logged fundraising outcomes with the 95% confidence intervals for up to 2 quarters post-treatment. The top panel presents three distinct outcomes: (logged) total contributions, (logged) individual contributions, and (logged) other contributions from non-individual sources such as PACs and parties. Additionally, the bottom panel compares estimation results for (logged) itemized versus (logged) unitemized contributions. Throughout these plots, we also compare estimates obtained under the same matching procedure but different data truncation scheme. Online Appendix Section C present the same results in table format.

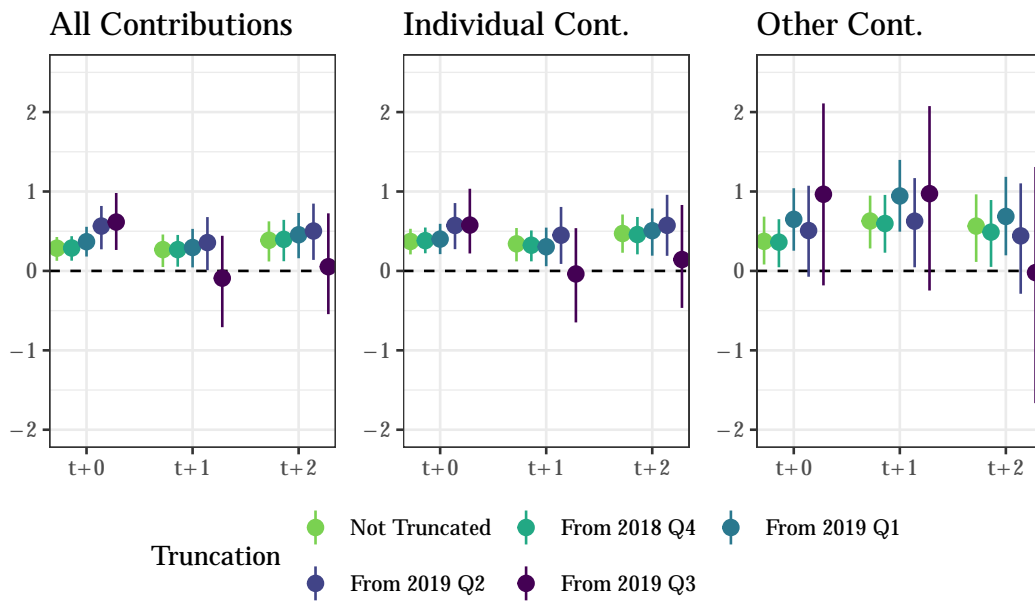
In most cases, we detect positive and statistically significant effects of joining WinRed on candidate fundraising (particularly total receipts, individual contributions, and both itemized and unitemized contributions) both during the quarter of WinRed adoption and one quarter afterward. In our preferred sampling scheme, which truncates data prior to the first quarter of 2019, we find that joining WinRed may have led Republican candidates to experience an average 44.5% increase in total fundraising during the immediate quarter, 32.5% one quarter after, and 57.7% two quarters later.

We also estimate sub-group effects based on chamber and incumbency status to check whether, given their disproportionate treatment status, candidates with different incumbency status or chamber would have different dynamics. Online Appendix Section D provides the corresponding covariate balance diagnostic plots as well as causal estimates in table form; note in particular that we achieve better covariate balance between treated candidates and their matched comparison sets for incumbents and House candidates than for senators.

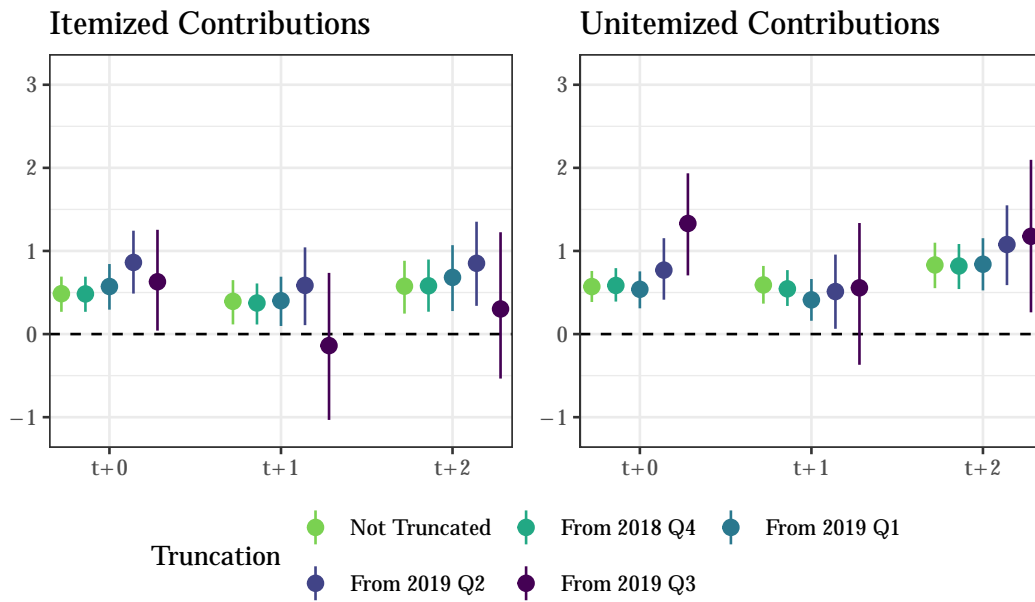
Figure 12 visualizes estimation results from these subgroup analyses. Overall, we detect statistically significant treatment effects, primarily in individual contributions received, for incumbents and House candidates. Moreover, estimate magnitudes from the House sub-sample are comparable to the full-sample results, whereas those for incumbents are smaller in comparison. Estimated effects for senators are noisier, which may be due to this sub-sample’s poorer matching quality.

Last but not least, we also test for heterogeneous treatment effects based on candidates’ prior reliance on unitemized donors (before WinRed’s introduction to the GOP) as well as candidate gender. As shown in Figures 10 and 11, there is suggestive evidence that WinRed disproportionately benefits candidates who historically raised a greater share of their campaign funds from unitemized donors, as well as female candidates.

These results suggest that WinRed may have helped to accelerate fundraising growth for candidates on the platform, particularly for individual contributions raised by House candidates and incumbents, leading up to the 2020 election. As we previously discussed, this could be true if WinRed is better able to reduce transaction costs in donors’ experiences in making contributions. Additionally, candidates who adopted WinRed may have benefited from other types of services



(a) By overall funding sources



(b) By itemization status

Figure 9: PanelMatch ATT Estimates for Logged Fundraising Outcomes: Total Contributions, Individual Contributions, Other Contributions, Itemized Contributions, and Unitemized Contributions

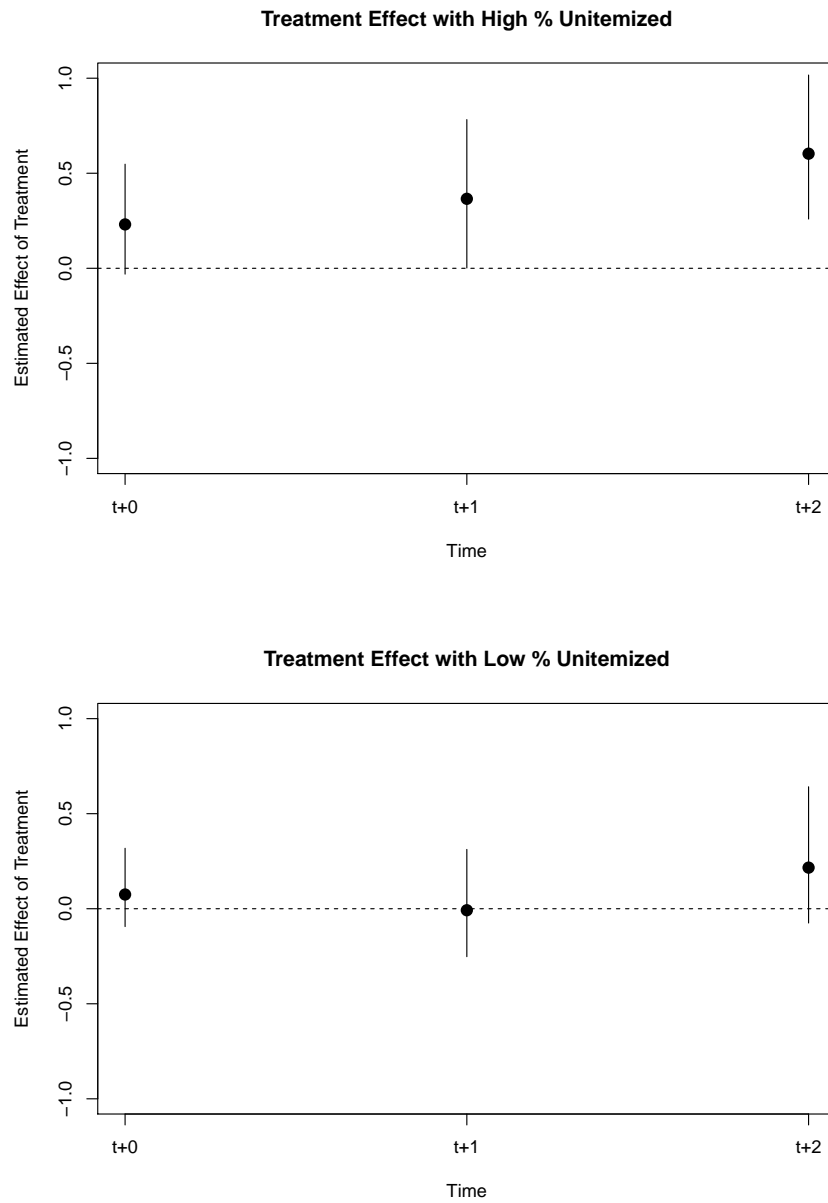


Figure 10: PanelMatch ATT Estimates for Logged Fundraising Outcomes: Heterogeneity by Prior Reliance on Unitemized Donations

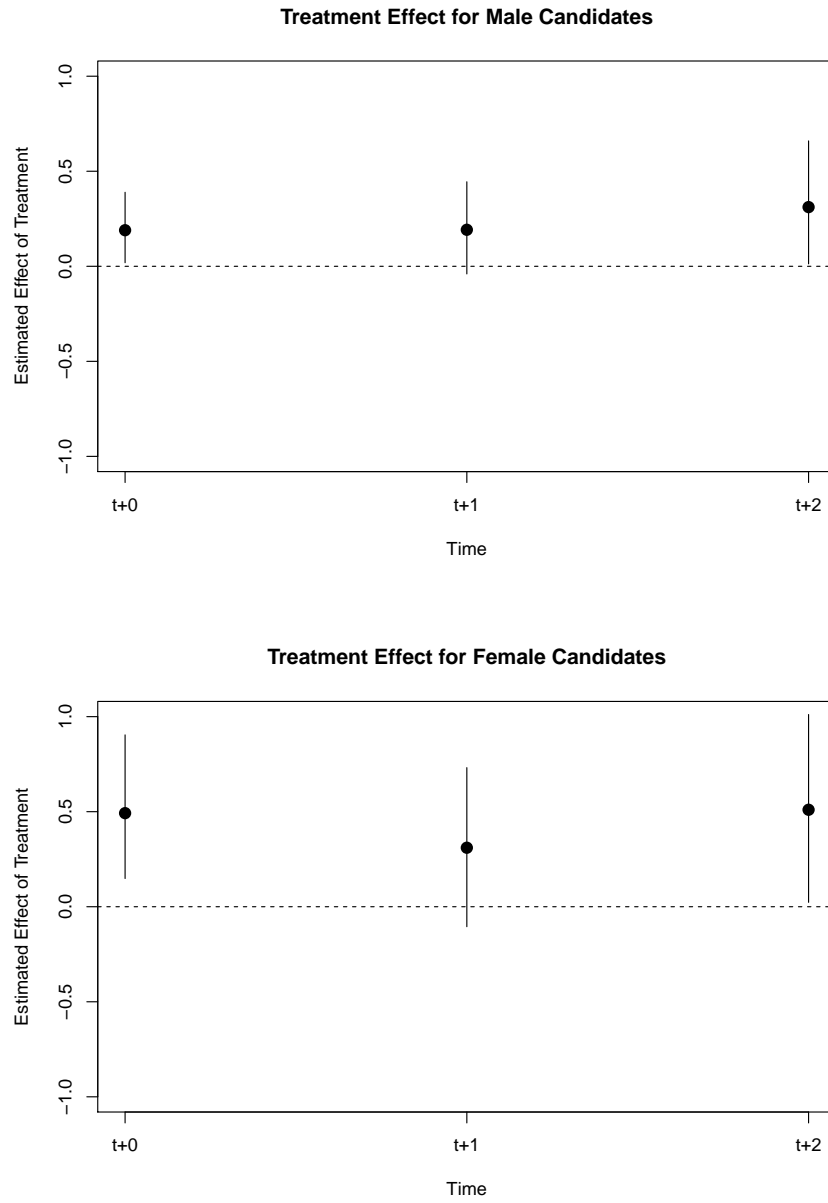
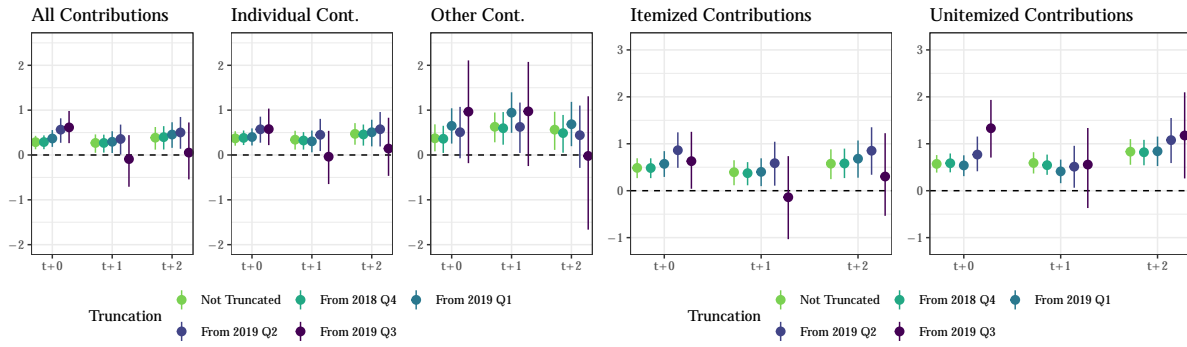


Figure 11: PanelMatch ATT Estimates for Logged Fundraising Outcomes: Heterogeneity by Gender

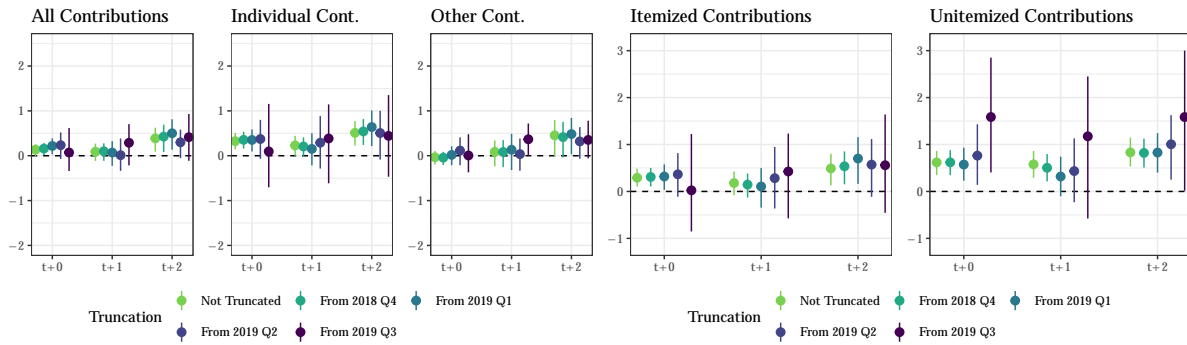
offered by the platform, such as the ability to A/B test solicitation strategies (Karpf, 2016) and the potentially platform-coordinated move to immediately adjust suggested contribution amounts following increases in FEC's individual contribution limits Kim (2021).

Given WinRed's ability to deliver superior fundraising outcomes, the Republican party may not need to offer selective rewards to candidates conditional on joining WinRed to incentivize platform adoption, and that WinRed's rapid ascendance as the leading online fundraising platform for the party may have been largely organic. Nonetheless, these conclusions are tentative as residual covariate imbalance in our matching process may still permit confounding effects from candidate self-selection into adopting WinRed to affect our causal estimates.



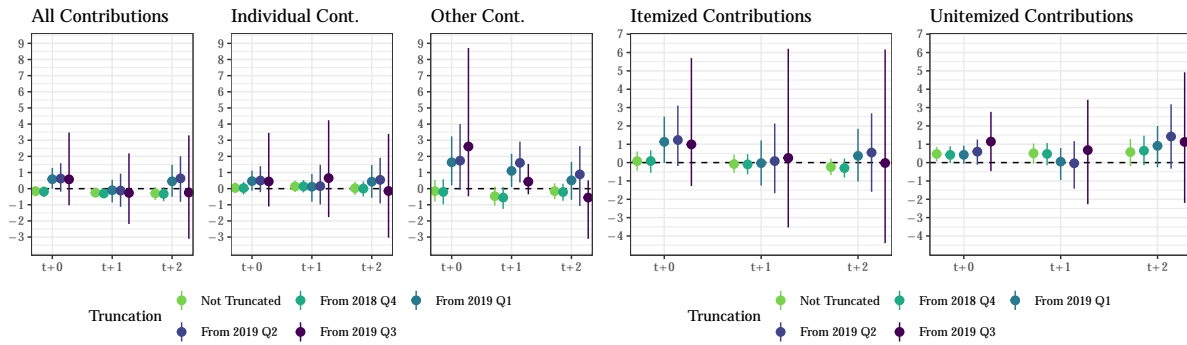
(a) Full (by funding source)

(b) Full (by itemization status)



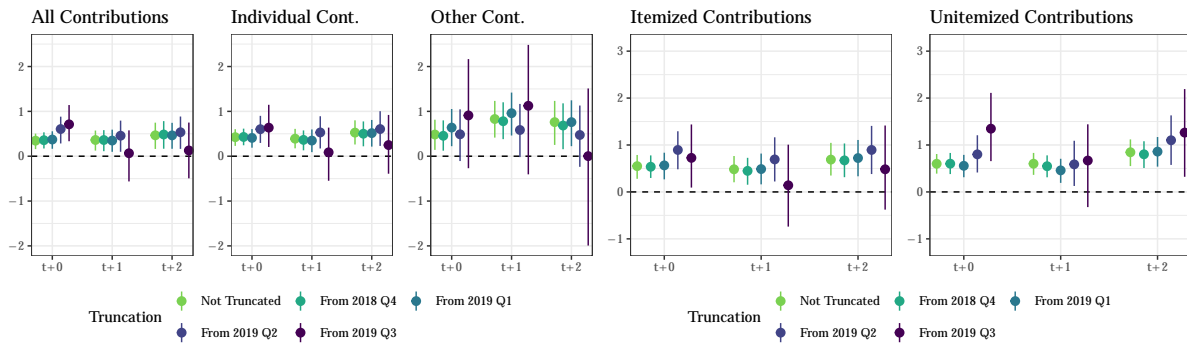
(c) Incumbents (by funding source)

(d) Incumbents (by itemization status)



(e) Senate (by funding source)

(f) Senate (by itemization status)



(g) House (by funding source)

(h) House (by itemization status)

Figure 12: PanelMatch ATT Estimates for Logged Fundraising by Subgroups

Conclusion

In this paper, we have investigated whether WinRed, a newly emerged dominant online fundraising platform of the Republican party, positively impacted fundraising outcomes of individual Republican candidates. Even after accounting for the patterns of candidate self-selection into the platform (for example, incumbents, Senate candidates running for election, and star fundraisers disproportionately adopted WinRed and/or were early adopters), we still find that candidates on the platform stood to gain on average roughly 30 – 50% increase in total fundraising, particularly in terms of individual donations received. Given WinRed's ability to rally campaign donors for candidates, the decision to join this platform may have been individually rational for many Republican candidates (particularly House candidates and incumbents for whom treatment effects seem more precisely positive), therefore removing the need for the GOP leadership to expedite platform expansion via coercion or offering selective benefits to candidates conditional on joining WinRed.

Understanding whether WinRed improves fundraising outcomes of Republican candidates can generate important insights on the platform's ability to transform the balance of power among Republican elites. If WinRed's ability to boost fundraising varies by candidates' demographic, electoral, or legislative characteristics, the subset of Republican candidates whom the platform disproportionately benefits may seize control of party and legislative agenda through influence-buying among co-partisan candidates (Heberlig and Larson, 2005, 2012; Kistner, 2021), in addition to facing weaker electoral competition due to expanded campaign war chests.

Moreover, WinRed's potentially heterogeneous ability to rally different types of campaign donors may also shed light on the electoral and legislative implications of the platform's meteoric rise. For example, as a conduit, WinRed's mandatory disclosure of small-donor contributions may enhance candidates' ability to customize their solicitation strategies to these previously "hidden" donors (Alvarez et al., 2020), which may consequently increase reliance on small donors among Republican candidates on the platform. Given divergent donation motivations and candidate preferences among small individual donors, large individual donors, interest groups, and party organizations (Barber et al., 2017; La Raja and Schaffner, 2015), and given candidates' responsiveness to the national donorate (Canes-Wrone and Miller, 2021), WinRed may be able to shape strategic legislative behavior and candidate entry in the Republican party insofar as it changes the relative importance of different funding sources.

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Appendices

A Pricing Structure of Different Platforms

Table 5 shows the comparison of pricing structures between platforms for some representative ones, including ActBlue and WinRed. While WinRed has changed its pricing scheme to a flat 3.94% per transaction (Greenwood, 2021), Table 5 applied for the 2020 election.¹⁸

	ActBlue	WinRed	Anedot	Donorbox	PayPal	NationBuilder	NGP VAN
Transaction Fee	3.95%	3.8% + \$0.30	4.0% + \$0.30	4.4% + \$0.30	2.9% + \$0.30	4.9% + \$0.30	N/A
High Dollar Page Fee	N/A	3.4%	N/A	N/A	N/A	N/A	N/A
ACH Bank Payments	N/A	0.8%, \$5 cap	N/A	0.8%, \$5 cap	N/A	N/A	N/A
Setup Fee	\$0	\$0	\$0	\$0	N/A	N/A	N/A
Monthly Fee	\$0	\$0	\$0	\$0	N/A	N/A	\$45+
Chargebacks Per Incident	N/A	\$15	\$15	N/A	N/A	N/A	N/A
ACH Returns Per Incident	N/A	N/A	\$2	N/A	N/A	N/A	N/A

Table 5: Comparison of Pricing Structures Between Platforms

¹⁸A larger share of transaction fees comes from credit card fees from companies such as Stripe.

B Two-Way Fixed Effect Results

The strategic nature of the decision to join WinRed, as well as the timing of such decisions, can produce spurious correlations between WinRed adoption and candidates’ fundraising outcomes. To illustrate this point, we show in this section results from a baseline two-way fixed effects models:

$$\text{Fundraising}_{it} = \alpha_i + \tau_t + \beta \text{WinRedAdoption}_{it} + \epsilon_{it} \quad (\text{B.1})$$

In the above specification, i denotes an individual Republican candidate, and t denotes a given time period—either a quarter or a week. The outcome variable Fundraising_{it} denotes the total amount of money raised by candidate i ’s campaign during year-quarter t (including unitemized receipts as candidates report total receipts on a quarterly basis).¹⁹ The treatment variable $\text{WinRedAdoption}_{it}$ is an indicator for whether candidate i adopted WinRed as a fundraising vendor during year-quarter t .²⁰ We include a fixed effect α_i for each candidate to account for time-invariant differences across candidates in fundraising capabilities, and a fixed effect τ_t for each time period to absorb common shocks to all Republican candidates’ fundraising outcomes.

Table 6: Two-Way Fixed-Effect Estimates of Quarterly Fundraising Effects From WinRed Adoption

	Total Fundraising (\$) (1)	Total Fundraising (Logged) (2)
WinRed Adoption	125,003.3*** (47,764.2)	0.841*** (0.115)
Candidate FEs	✓	✓
Year-Quarter FEs	✓	✓
Observations	9,872	9,872
R ²	0.29	0.71

Table 6 displays these baseline two-way fixed-effect estimated effects of WinRed adoption on candidate fundraising, where column (1) displays results in dollar amounts, and column (2) focuses on logged amounts. Standard errors are clustered at the candidate level. In either case, Republican candidates appear to enjoy a substantial fundraising boost (particularly in terms of logged dollars) upon adopting WinRed, controlling for candidate and year-quarter fixed effects.

However, to interpret our coefficient of interest, β , as the causal effect of joining WinRed on Republican candidates’ campaign receipts, there need to be parallel trends in fundraising outcomes across treated and control candidates. This assumption may be violated if the decision to join this fundraising platform is endogenous with respect to candidates’ counterfactual fundraising outcomes. In fact, Figures 13 and 14 visualize pre-trends in campaign receipts via Granger causality

¹⁹See <https://www.fec.gov/resources/cms-content/documents/fecfrm3i.pdf>; last accessed on May 10, 2021.

²⁰To the extent that WinRed can boost campaign fundraising for candidates on the platform, it is possible to expect contemporaneous treatment effects when fundraising outcomes are measured on a quarterly basis.

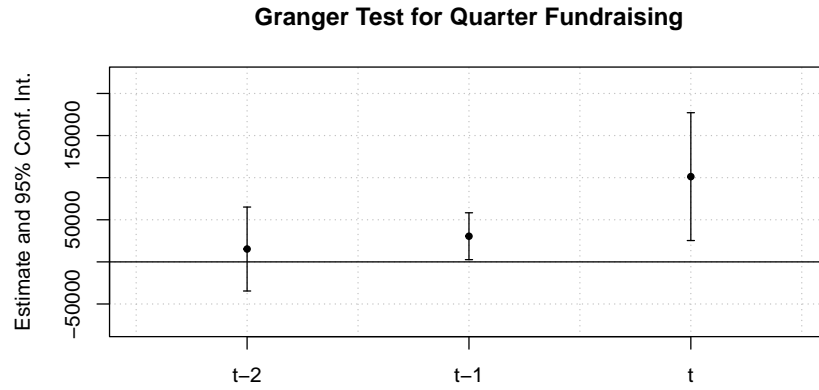


Figure 13: Granger Test for Quarterly Fundraising with respect to WinRed Adoption

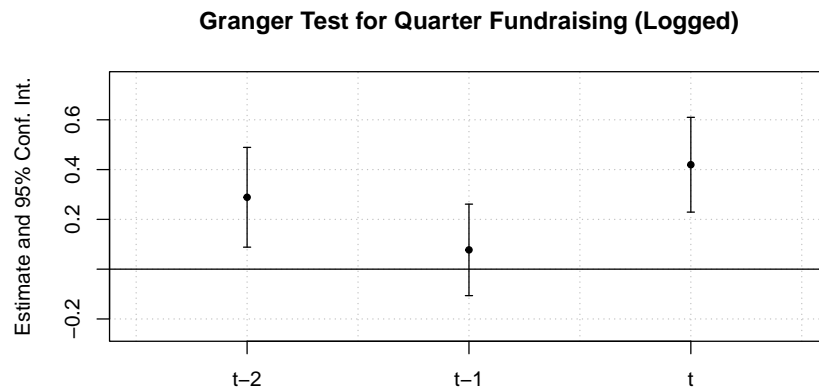


Figure 14: Granger Test for (Logged) Quarterly Fundraising with respect to WinRed Adoption

tests and show that WinRed adopters' quarterly fundraising levels tend to be rising even one to two quarters prior to their appearances on the online fundraising platforms. The endogenous nature of candidates' decision to join WinRed can therefore lead one to over-estimate the effectiveness of WinRed for improving candidates' fundraising outcomes. This result is one of the reasons that we turn to PanelMatch (Imai et al., 2020)—to reduce pre-treatment differences in fundraising outcomes and candidate attributes.

C Estimated Average Effects of Joining WinRed

This section provides the estimated average effects in numbers. Table 7 corresponds to Figure 9, and Table 8 corresponds to Figure 15a.

	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%
t+0	0.286	0.080	0.127	0.427	t+0	0.371	0.082	0.208	0.530	t+0	0.372	0.152	0.081	0.683
t+1	0.268	0.110	0.049	0.459	t+1	0.341	0.105	0.120	0.540	t+1	0.628	0.177	0.283	0.948
t+2	0.386	0.136	0.119	0.624	t+2	0.471	0.127	0.229	0.711	t+2	0.565	0.229	0.113	0.964
(a) Total Contributions, No Truncation					(b) Individual Contributions, No Truncation					(c) Other Contributions, No Truncation				
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%
t+0	0.288	0.082	0.129	0.437	t+0	0.381	0.085	0.222	0.546	t+0	0.362	0.154	0.046	0.651
t+1	0.269	0.109	0.053	0.453	t+1	0.323	0.100	0.120	0.509	t+1	0.597	0.186	0.229	0.957
t+2	0.398	0.140	0.122	0.643	t+2	0.458	0.121	0.209	0.679	t+2	0.488	0.231	0.051	0.893
(d) Total Contributions, Truncated from 2018 Q4					(e) Individual Contributions, Truncated from 2018 Q4					(f) Other Contributions, Truncated from 2018 Q4				
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%
t+0	0.368	0.097	0.181	0.556	t+0	0.401	0.102	0.211	0.593	t+0	0.650	0.200	0.255	1.041
t+1	0.295	0.127	0.044	0.529	t+1	0.304	0.124	0.059	0.545	t+1	0.944	0.237	0.494	1.398
t+2	0.455	0.148	0.159	0.730	t+2	0.506	0.151	0.192	0.786	t+2	0.686	0.258	0.196	1.185
(g) Total Contributions, Truncated from 2019 Q1					(h) Individual Contributions, Truncated from 2019 Q1					(i) Other Contributions, Truncated from 2019 Q1				
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%
t+0	0.565	0.144	0.272	0.818	t+0	0.572	0.146	0.274	0.854	t+0	0.508	0.287	-0.073	1.073
t+1	0.357	0.170	0.009	0.678	t+1	0.450	0.181	0.088	0.806	t+1	0.626	0.292	0.046	1.169
t+2	0.503	0.181	0.139	0.847	t+2	0.574	0.198	0.190	0.958	t+2	0.441	0.351	-0.288	1.102
(j) Total Contributions, Truncated from 2019 Q2					(k) Individual Contributions, Truncated from 2019 Q2					(l) Other Contributions, Truncated from 2019 Q2				
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%
t+0	0.615	0.184	0.264	0.981	t+0	0.577	0.213	0.220	1.035	t+0	0.965	0.560	-0.182	2.109
t+1	-0.091	0.292	-0.709	0.442	t+1	-0.038	0.302	-0.649	0.538	t+1	0.973	0.600	-0.247	2.075
t+2	0.053	0.311	-0.544	0.725	t+2	0.143	0.326	-0.466	0.830	t+2	-0.021	0.752	-1.665	1.309
(m) Total Contributions, Truncated from 2019 Q3					(n) Individual Contributions, Truncated from 2019 Q3					(o) Other Contributions, Truncated from 2019 Q3				

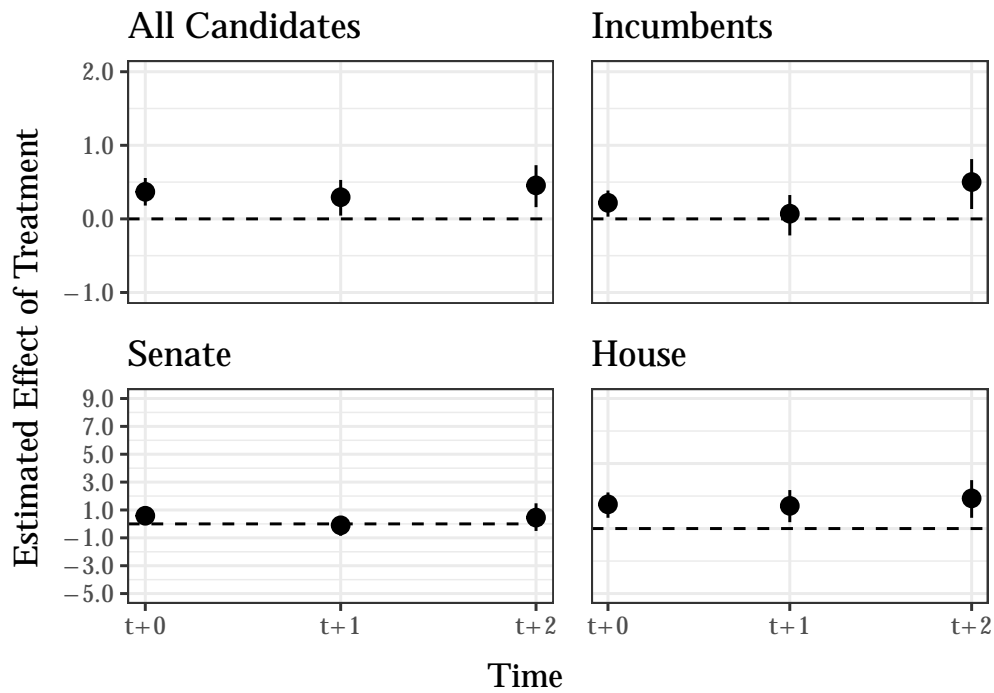
Table 7: PanelMatch ATT Estimates for Logged Fundraising Outcomes: Total Contributions, Individual Contributions, and Other Contributions

	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%	
	t+0	0.286	0.080	0.127	0.427	t+0	0.136	0.070	-0.010	0.252	t+0	-0.153	0.146	-0.425	0.127	t+0	0.346	0.093	0.158	0.504
	t+1	0.268	0.110	0.049	0.459	t+1	0.090	0.115	-0.116	0.269	t+1	-0.251	0.140	-0.523	0.029	t+1	0.362	0.124	0.125	0.572
	t+2	0.386	0.136	0.119	0.624	t+2	0.387	0.159	0.091	0.624	t+2	-0.291	0.209	-0.699	0.099	t+2	0.466	0.151	0.162	0.748
(a) All Candidates, No Truncation					(b) Incumbents, No Truncation					(c) Senate, No Truncation					(d) House, No Truncation					
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%	
	t+0	0.288	0.082	0.129	0.437	t+0	0.158	0.075	0.016	0.282	t+0	-0.185	0.170	-0.521	0.132	t+0	0.357	0.097	0.172	0.533
	t+1	0.269	0.109	0.053	0.453	t+1	0.100	0.116	-0.113	0.276	t+1	-0.299	0.152	-0.578	0.004	t+1	0.361	0.128	0.112	0.581
	t+2	0.398	0.140	0.122	0.643	t+2	0.425	0.179	0.082	0.691	t+2	-0.325	0.222	-0.769	0.095	t+2	0.484	0.163	0.167	0.782
(e) All Candidates, Truncated from 2018 Q4					(f) Incumbents, Truncated from 2018 Q4					(g) Senate, Truncated from 2018 Q4					(h) House, Truncated from 2018 Q4					
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%	
	t+0	0.368	0.097	0.181	0.556	t+0	0.218	0.097	0.031	0.386	t+0	0.585	0.330	-0.011	1.285	t+0	0.372	0.103	0.166	0.555
	t+1	0.295	0.127	0.044	0.529	t+1	0.071	0.154	-0.225	0.324	t+1	-0.100	0.364	-0.853	0.549	t+1	0.349	0.129	0.098	0.592
	t+2	0.455	0.148	0.159	0.730	t+2	0.501	0.176	0.134	0.813	t+2	0.454	0.534	-0.505	1.477	t+2	0.464	0.148	0.166	0.745
(i) All Candidates, Truncated from 2019 Q1					(j) Incumbents, Truncated from 2019 Q1					(k) Senate, Truncated from 2019 Q1					(l) House, Truncated from 2019 Q1					
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%	
	t+0	0.565	0.144	0.272	0.818	t+0	0.235	0.155	-0.073	0.521	t+0	0.624	0.438	-0.187	1.576	t+0	0.606	0.157	0.284	0.882
	t+1	0.357	0.170	0.009	0.678	t+1	0.012	0.186	-0.337	0.385	t+1	-0.120	0.531	-1.128	0.926	t+1	0.457	0.178	0.099	0.794
	t+2	0.503	0.181	0.139	0.847	t+2	0.299	0.163	-0.056	0.583	t+2	0.636	0.767	-0.817	2.011	t+2	0.534	0.185	0.164	0.885
(m) All Candidates, Truncated from 2019 Q2					(n) Incumbents, Truncated from 2019 Q2					(o) Senate, Truncated from 2019 Q2					(p) House, Truncated from 2019 Q2					
	Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%		Estimate	Std. Error	2.5%	97.5%	
	t+0	0.615	0.184	0.264	0.981	t+0	0.073	0.247	-0.340	0.618	t+0	0.576	1.135	-1.027	3.481	t+0	0.711	0.208	0.334	1.141
	t+1	-0.091	0.292	-0.709	0.442	t+1	0.289	0.251	-0.215	0.705	t+1	-0.263	1.121	-2.189	2.186	t+1	0.066	0.299	-0.562	0.576
	t+2	0.053	0.311	-0.544	0.725	t+2	0.414	0.265	-0.113	0.931	t+2	-0.240	1.676	-3.106	3.300	t+2	0.128	0.319	-0.493	0.750
(q) All Candidates, Truncated from 2019 Q3					(r) Incumbents, Truncated from 2019 Q3					(s) Senate, Truncated from 2019 Q3					(t) House, Truncated from 2019 Q3					

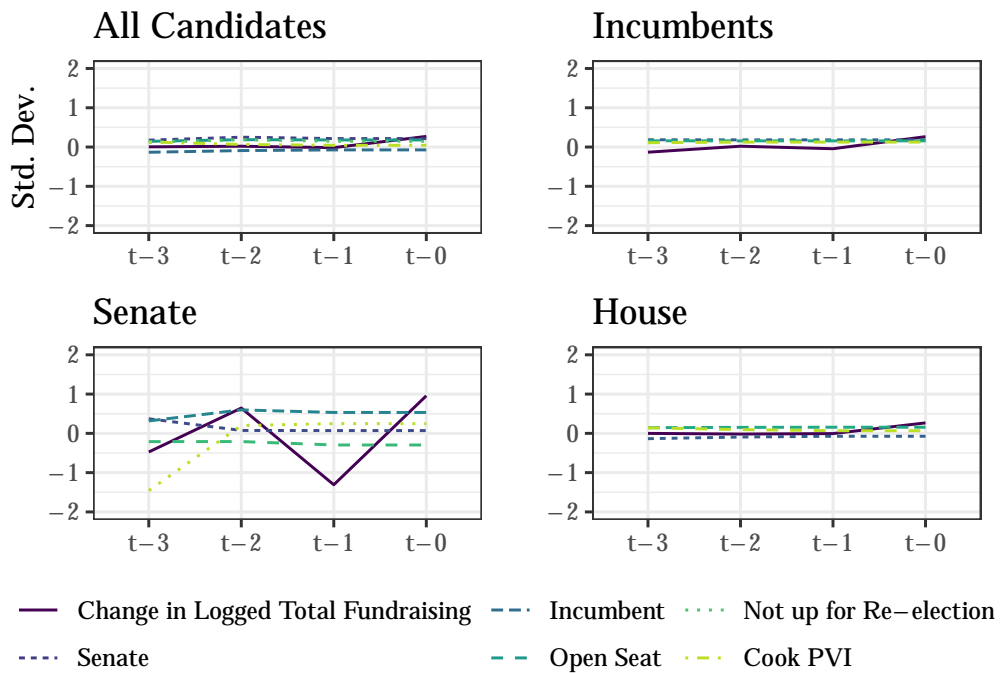
Table 8: PanelMatch ATT Estimates for Logged Total Fundraising by Subgroups and Corresponding Covariate Balance Visualizations

D Subgroup Analyses For Individual and Other Contributions

Figure 15 is a simplified version of Figure 12, displaying the estimates only for total contributions with data truncated starting from 2019 Q1. Figures 16 through 19 are Figure 15's equivalent for individual contributions, other contributions, itemized contributions, and unitemized contributions. Note that due to the extremely wide confidence interval of estimates for Senate candidates, while the axes scales are the same for all other panels, the Senate subsample's scales are different.

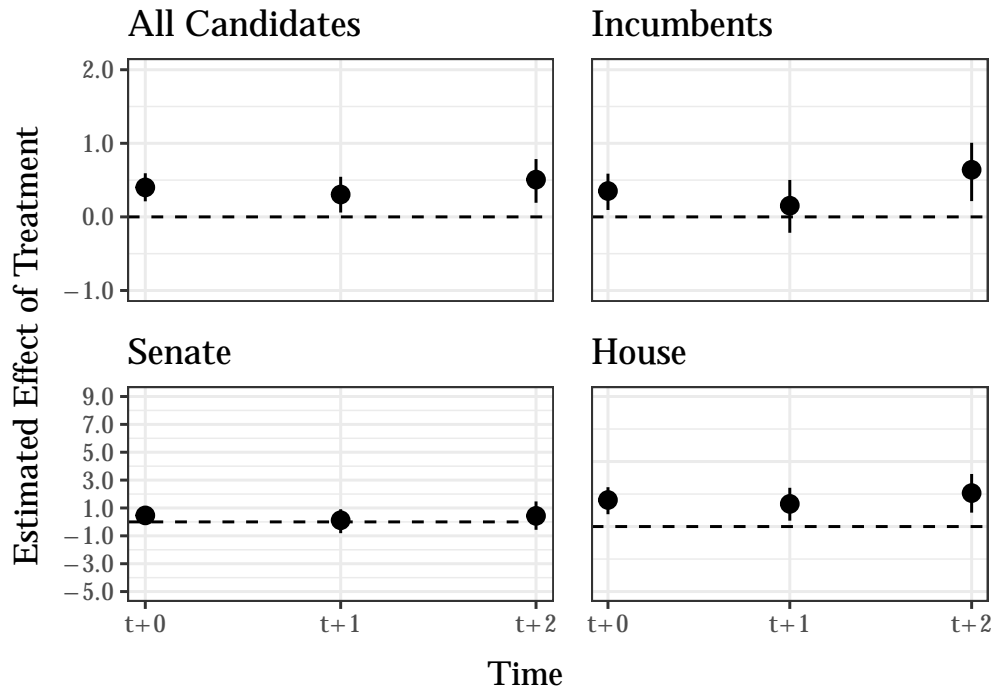


(a) ATT Estimates

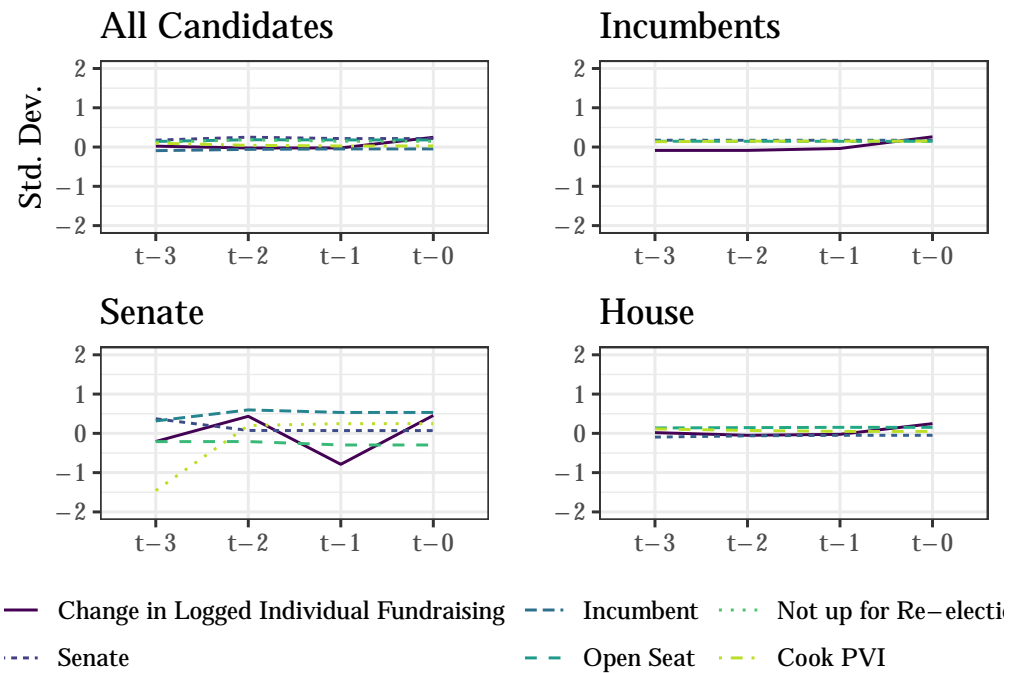


(b) Covariate Balance

Figure 15: PanelMatch ATT Estimates for Logged Total Fundraising by Subgroups and Corresponding Covariate Balance Visualizations

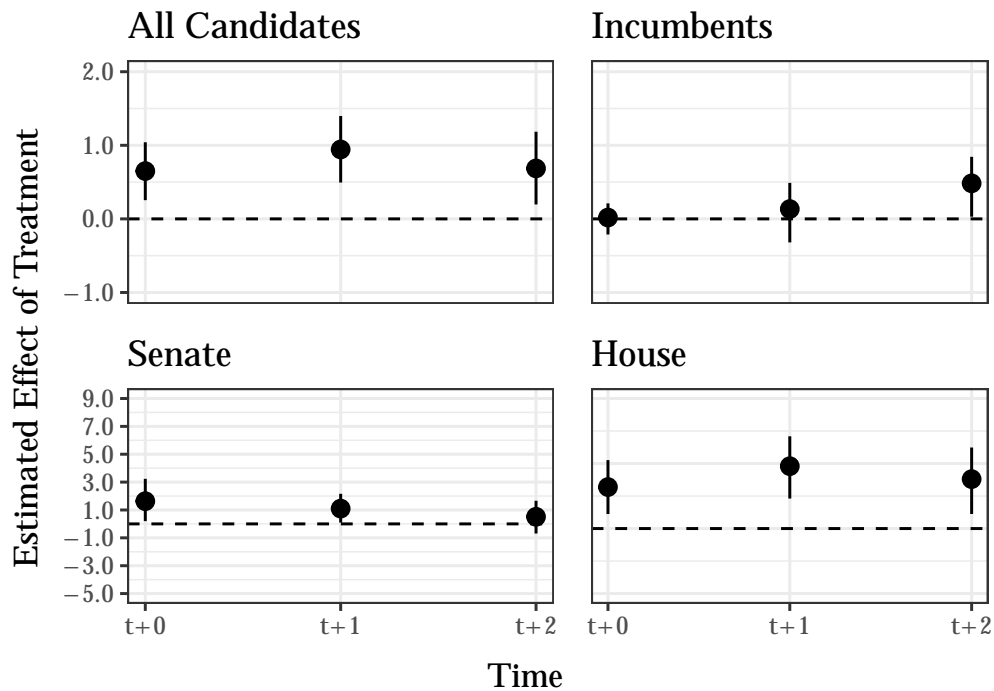


(a) ATT Estimates

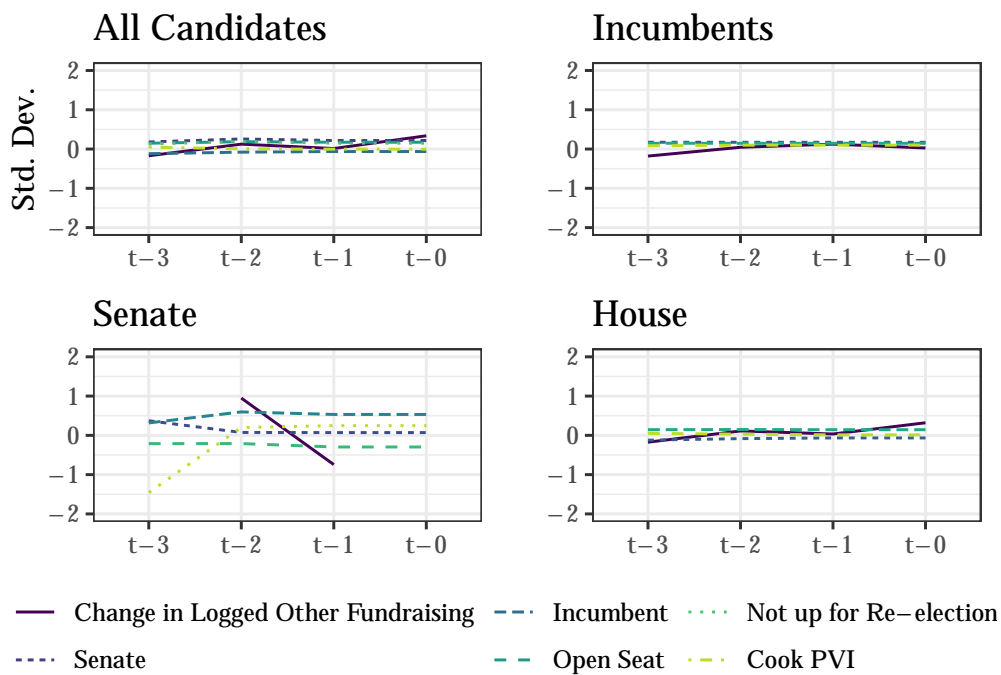


(b) Covariate Balance

Figure 16: PanelMatch ATT Estimates for Logged Individual Fundraising by Chamber and Corresponding Covariate Balance

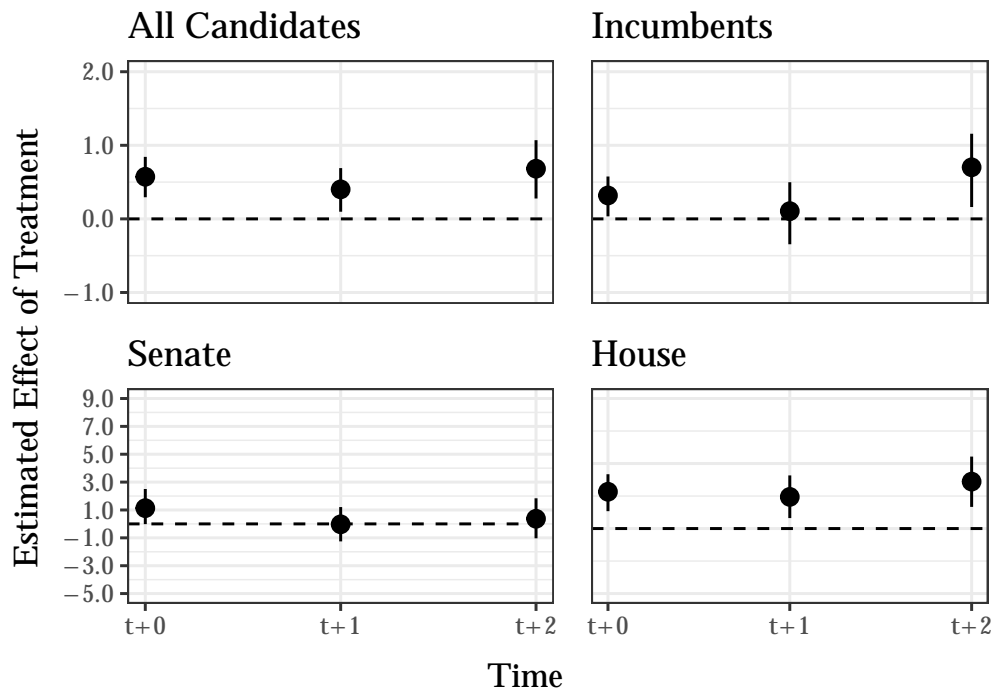


(a) ATT Estimates

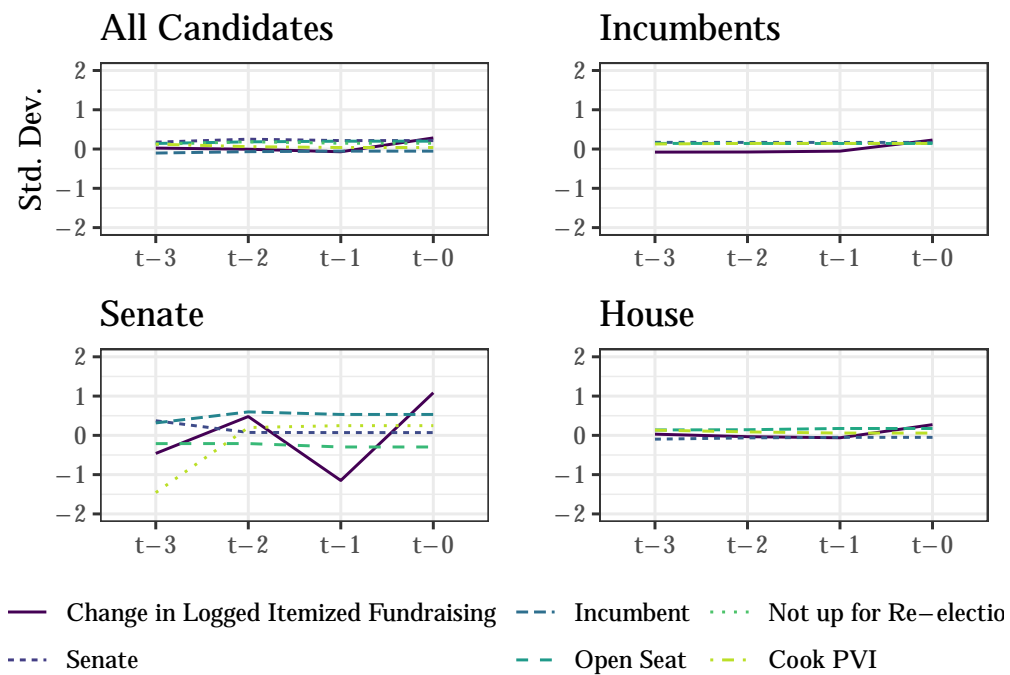


(b) Covariate Balance

Figure 17: PanelMatch ATT Estimates for Logged Other Fundraising by Chamber and Corresponding Covariate Balance

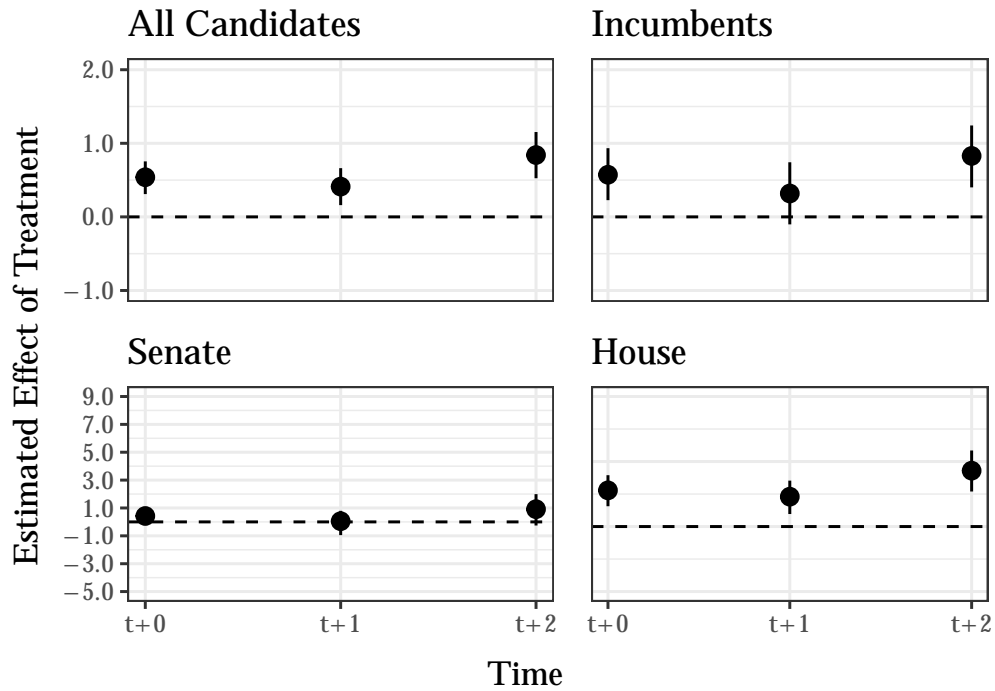


(a) ATT Estimates

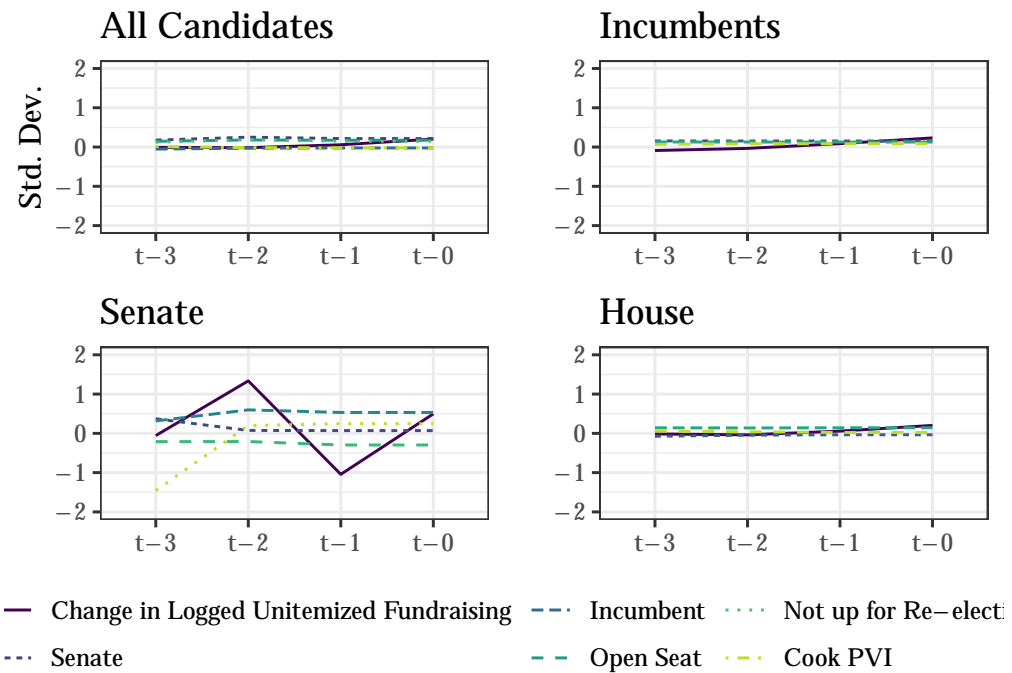


(b) Covariate Balance

Figure 18: PanelMatch ATT Estimates for Logged Itemized Fundraising by Chamber and Corresponding Covariate Balance



(a) ATT Estimates



(b) Covariate Balance

Figure 19: PanelMatch ATT Estimates for Logged Unitemized Fundraising by Chamber and Corresponding Covariate Balance