

Going Down the Rabbit Hole: Measurement Bias in Estimates for Early Campaign Contributions

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Abstract

Political professionals and scholars maintain that raising money early in the election season is critical to a successful campaign, having downstream consequences on a candidate's future fundraising potential, the stiffness of competition she will face, and her likelihood of electoral victory. In spite of early money's purported explanatory power, there is no common operationalization for money as "early." In this paper, we lay out a conceptual framework for early campaign fundraising and evaluate the relative success of existing modes for measurement in capturing definitional attributes of early receipts. We empirically demonstrate significant measurement bias in certain early money measures, and tie this bias to complexities in the campaign contribution data generating process. Finally, we demonstrate that differences across approaches for measuring early money lead to (1) variability in estimates for candidates' early fundraising potential, and (2) inferential inconsistencies in the relationship between early fundraising and electoral success.

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Scholarship has increasingly looked to early campaign fundraising as a promising means for investigating the dynamics of U.S. elections. Challenging the notion that money only impacts election outcomes at the margins, work examining early campaign receipts demonstrates that these contributions are highly predictive of future fundraising potential and electoral success (e.g., Biersack et al. 1993; Krasno et al. 1994a; Box-Steffensmeier 1996; Francia 2001; Leal 2003; Smidt and Christenson 2011, 2012; Bonica 2017, 2020; Porter and Steelman 2022). Early money has also been cited as having a “scare-off” effect, deterring quality challengers from running against well-financed incumbents (Box-Steffensmeier, 1996; Epstein and Zemsky, 1995). In contemporary congressional elections, poor performance in raising early money has been identified as a principal motivator for candidates’ drop-out decisions (Bonica, 2017; Thomsen, 2022b). Some have gone as far as to blame declining electoral competition on the proliferation of early money in politics (Albert et al., 2015; Thomsen, 2022a). Most recently, early fundraising has been employed as an indicator for a candidate’s support among political elites and party insiders within the “invisible primary” (Cohen et al., 2008; Bell et al., 2009; Rauch and Raja, 2017a; Hassell, 2016; Porter and Steelman, 2022).

Given the richness of this body of literature, it is surprising that there is no common operationalization for “early” money. There is consensus that, for contributions to be considered “early,” they should be among a candidate’s first receipts. Additionally, early money should include only those receipts that a candidate fundraises well before her election. These conditions provide clarity on key definitional aspects of early money; what remains unclear is how these abstract principles should be applied for practical measurement. For example, when must a candidate start fundraising for their funds to be considered early? Moreover, at what point does “early” fundraising cease and regular fundraising begin? Neither of these questions have been well-adjudicated. Variability in election calendars across states also imposes a hurdle for early money measurement. Candidates running for Congress must first win their party’s nomination in a primary election before advancing to the general election in November. To win these increasingly competitive nominating contests, many candidates begin fundraising well in advance of their primary. Primaries, however, are held across an

eight month interval; differences in election timing must be accounted for to make accurate fundraising comparisons across candidates. Another obstacle for quantifying early money rest in the “big” nature of these data. The digitization of itemized campaign receipts by the Federal Elections Commission (FEC) has made many millions of data points available for analysis, allowing for a more fine-grained picture of a candidate’s earliest contributions. However, working with these raw data requires proficiency in data wrangling paired with a thorough understanding of the FEC’s reporting and coding practices.

In light of these quantitative challenges and measurement ambiguities, scholars have taken a variety of approaches to operationalize early money. A careful survey of the extant literature reveals that there are no fewer than ten unique measures for “early” campaign contributions. We begin this paper by outlining an empirical framework for the measurement of early money by drawing out commonalities across existing strategies for measurement. We first identify a group of early money measures that share a calendar-centered approach, deeming money to be early if it is received during the first few months of a given election cycle (e.g., Sorauf 1988; Burrell 1994; Hinckley and Green 1996; Adkins and Dowdle 2005). Another collection of measures base early fundraising on electoral timing, deeming money to be early if it is received a certain number of months before a candidate’s primary election (e.g., Leal 2003; Hannagan et al. 2010). A smaller body of work centers upon the fundraising behavior of candidates themselves, judging early money to be dollars raised in the days immediately following the launch of a candidate’s campaign (Biersack et al. 1993; Bonica 2020; Porter and Steelman 2022). Ostensibly, these measures seem to capture definitional aspects of early money, however the extent to which they actually do has not been validated. That is to say, it is unclear how well calendar-, election-, and candidate-centered measures well-capture those *first receipts* a candidate generates *well before* her election. For this reason, we extensively evaluate each of these classes for early money measurement by (1) outlining their conceptual advantages, (2) laying out the underlying data generating process for these data, and (3) empirically assessing potential sources for measurement bias.

In the latter half of the paper, we evaluate the extent to which candidates’ early fundrais-

ing totals vary across modes for measurement, and whether these aforementioned differences lead to inferential inconsistencies. Indeed, if calendar-, election-, and candidate-centered measures for early money produce similar estimates for candidates' early fundraising efforts, then variability in scholars' estimation strategies is not cause for concern. What we instead demonstrate is that definitional variation in the operationalization of early money produces wide variability across estimates for congressional candidates' early fundraising. We go on to show that these differences have important implications on quantitative inference. Modeling candidate success in U.S. congressional primary elections as a function of candidate characteristics and electoral factors, we show that existing measures of early money lead to different characterizations of the relationship between money and electoral success. Based on these findings, we argue that there is no "silver bullet" measure for early money in elections; different research questions warrant different measurement strategies. We conclude by offering some empirical suggestions for scholars engaging in research on early money in politics, prescribing that some measures for early money in elections are better apt to capture key quantities of interest than are others.

The Utility of Early Money

To explain why some candidates' campaigns fail and others succeed, scholars have sought to identify the kinds of election-level conditions and individual-level characteristics that are most predictive of success in winning office. Members of Congress, for example, are touted for their ability to win reelection with remarkable consistency (e.g., Erikson 1971; Cover 1977). It is for this reason that many strategic candidates wait for an incumbent's retirement or resignation before emerging to run (Jacobson, 1989). Individuals with a background serving in state government (e.g., Jacobson and Kernell 1983; Hirano and Snyder Jr. 2019) and members of the legal profession (Bonica, 2017) have also been identified as having greater success at winning seats in Congress. A sizable portion of these candidates' comparative advantage, however, can be explained by their ability to out-fundraise their competition in the race of raise "early" money (Herrnson, 1992; Gerber, 1998; Maestas et al., 2006; Bonica,

2020). Indeed, a bevy of research demonstrates that raising “seed” money early in the campaign season is integral to a successful run for office, having both direct and indirect impacts on candidates’ electoral potential (e.g., Biersack et al. 1993; Krasno et al. 1994a; Leal 2003; Smidt and Christenson 2012; Bonica 2017; Porter and Steelman 2022).

The most tangible result of a candidate’s early fundraising is early spending: the quicker that candidates can garner funds to hire consultants and bring on a dedicated campaign staff, the sooner they can establish the kind of campaign infrastructure that is necessary to mount a successful run for office (Jacobson, 1992; Herrnson, 2015). Professional campaign resources allow candidates to more efficiently make themselves known to potential voters—and potential donors. Getting large donations often requires hosting events (Herrnson, 2015) and amassing small donations is most effective through direct solicitations (Godwin, 1988; Hassell and Monson, 2014), but such fundraising efforts do not come cheap. It is for this reason that political insiders and consultants regularly preach that it takes money to raise money. The political action committee EMILY’s List embodies in its name the principle that early contributions have an outsized impact on future fundraising, affirming that “**Early Money Is Like Yeast**” because it “makes the dough rise.”

Raising money early is also vital because it acts as an indirect signal for campaign viability. Campaign committees are required by law to report their receipts and expenditures on a quarterly basis to the Federal Election Commission, which in turn makes these data publicly available (Garrett, 2015). These disclosure requirements allow for the acute tracking of candidates’ fundraising efforts. Indeed, national party officials pay close attention to who excels in the race to raise early money as a way to identify candidates that are mounting a serious campaign (Eismeier and Pollock III, 1986; Herrnson, 2015). Quarterly fundraising reports are similarly employed by journalists and pollsters as a barometer for the health of candidates’ campaigns (Raja, 2007). Candidates are mindful of the important role early money plays in shaping elite perceptions, tailoring their campaign behavior accordingly. Communications from candidates regularly include fundraising appeals, asking voters to contribute early and often (Adkins and Dowdle, 2005; Kim, 2021). Reporting deadlines to the FEC are

often used as motivation for donors to give (Goff, 2004); Nancy Pelosi exemplified this tactic in a 2017 e-newsletter message to subscribers, stating that:

Tonight's fundraising deadline is at midnight and we're falling behind at the worst possible moment when Republicans want to destroy the key protections for 130 million people with pre-existing conditions. If that happens, we won't be on track to hit our critical FEC end-of-quarter goal. If each of you chipped in \$3 or more, we can meet our goal before tonight's midnight deadline.

Bolstering this claim further, Smidt and Christenson (2012) show that presidential candidates' fundraising tends to surge right before FEC reporting deadlines. If candidates feel like they are falling too far behind their competitors in raising early money, they may perceive this lack of monetary support as a lack of elite support (Hassell, 2018). Indeed, Bonica (2017) and Thomsen (2022b) find that candidates who perform worse in the early money chase relative to their primary competition are more likely to dropout before their primary.

Per Biersack et al. (1993) and Porter and Steelman (2022), the sources of a candidate's early support can matter as much as—if not more than—total dollars raised. For example, early donations from political action committees (PACs) are particularly influential on a candidate's perceived viability because these organizations are incredibly judicious in their early giving (Box-Steffensmeier et al., 2005). Consequently, an early PAC donation acts as a kind of informal endorsement and increases the likelihood that a candidate will earn support from other organized interests (Francia et al., 2003). Self-financing, on the other hand, provides no indication of a candidate's support from organized interests or their access to a broader political network (Biersack et al., 1993; Bonica, 2017), thus providing a much weaker signal of campaign viability to press and political elites.

These accounts of early money's electoral benefits place some implicit constraints on the types of campaign contributions that can be considered "early." Many congressional candidates begin fundraising in the year prior to their election—long before their ground campaign has even begun. These candidates' first receipts are raised from their inner-circle

and more likely stem from the kinds of political influencers who are active in the “invisible primary” process (Cohen et al., 2008; Rauch and Raja, 2017b; Porter and Steelman, 2022). As noted above, such contributors serve as a strong indicator for the strength of a candidate’s fundraising network (Bonica, 2017) and her levels of support from organized interests (Box-Steffensmeier et al., 2005). Therefore, to tap into this signal for campaign viability, “early” money should encapsulate funds raised well in advanced of the election. Early money is often referred to as “seed” money because it starts small but germinates significant dividends later in the campaign (Biersack et al., 1993). Moreover, if organized interests and political elites want to influence election outcomes by signaling for their preferred candidate, being among the first-movers is essential. Therefore, to capture this nascent stage of fundraising, “early” money should also be among a candidate’s first receipts.

These timing and scope conditions provide some key parameters for defining early money, but open questions remain: for money to be early, a candidate should start fundraising well before her election—but what length of time is sufficient? Moreover, early money should be among a candidate’s earliest receipts—but how broad or narrow should this fundraising window be? Without clear answers to these questions, scholars have taken a variety of approaches to operationalize money as early. In the section to follow, we lay out a framework for the measurement of early money and outline commonalities across existing approaches to early money measurement. We identify three classes of measures, assessing their respective advantages and disadvantages. Our descriptive and empirical evaluations of each measure’s relative success (or failure) in capturing various attributes of early money constitutes a key contribution of this paper.

The Measurement of Early Money

A semi-exhaustive survey of research on money in elections reveals no fewer than ten distinct measures for early fundraising. We present an overview of existing measures for early money in Table 1, as well as a sampling of literature that employs each definition. There are undoubtedly differences among these approaches to early money measurement, but some

Table 1: Measures for Early Money in Extant Literature

Measures for Early Campaign Contributions		
Type	Early Fundraising Definition	Citing Literature
Calendar-Centered	First 3 months of election cycle (January-March of year prior)	Box-Steffensmeier and Lin (1996); Smidt and Christenson (2012)
	First 6 months of election cycle	Burrell (1994); Box-Steffensmeier (1996); Bell et al. (2009)
	First 12 months of election cycle	Squire (1991); Krasno et al. (1994b); Damore (1997); Sebold et al. (2012)
	First 18 months of election cycle	Sorauf (1988); Goldenberg et al. (1988); Magleby and Nelson (1990); Hinckley and Green (1996); Adkins and Dowdle (2005)
Election-Centered	All Funds Raised 8/9 Months Prior to Primary Election	Leal (2003)
	All Funds Raised Prior to Primary	Morehouse (1990); Hannagan et al. (2010)
Candidate-Centered	Receipts Reported in Candidate's first filed FEC Quarterly Report(s) (90 or 180 Days)	Biersack et al. (1993); Francia (2001); Thomsen (2022b)
	30, 60, 90 or 180 days from filing of statement of candidacy	Bonica (2017, 2020)
	60 or 90 days from first itemized contribution on record with FEC	Porter and Steelman (2022)

commonalities exist in the kinds of electoral and behavioral circumstances that anchor particular strategies. We define three general categories of measures: calendar-centered, election-centered, and candidate-centered. To outline the advantages and disadvantages of each measurement approach, we generate early fundraising totals using all definitions outlined in Table 1 for candidates running between 2004 and 2020 for the U.S. House of Representatives. Following existing literature, we constrain our analyses to only active candidates—defined as individuals who raised more than \$5,000 in a given election cycle.¹ We also exclude candidates running in top-two and jungle primaries.² In total, we examine the early fundraising behavior of nearly 10,000 congressional incumbents and challengers.

To calculate candidates' early fundraising totals based on definitions provided in Table 1,

¹The FEC requires candidates to oblige by registration and reporting obligations once a campaign exceeds \$5,000 in either contributions received or expenditures made. This \$5,000 contribution threshold originates from 11 CFR § 100.3, as issued to implement the Federal Election Campaign Act of 1971.

²This restriction is common given partisan and non-partisan primaries' contrasting electoral dynamics.

we pair data on itemized contributions with aggregate totals for unitemized receipts provided by the Federal Election Commission. As a point of clarity: a contribution from a donor to a candidate is itemized when it exceeds \$200 or aggregates over \$200 when added to other contributions received from that same donor during the election cycle. Itemized contributions data includes exact transaction dates; these data allow us to calculate candidates' early contribution totals flexibly for fundraising windows that span any period of time. We use itemized contributions data to generate candidates' fundraising totals across all measures for early money; using a constant data source ensures that any differences identified across early money measures are attributable to definitional variation and are not artifacts of reporting error.³ When generating candidates' early fundraising totals, we also incorporate data on smaller, *unitemized* campaign contributions. For many candidates, data on unitemized contributions are only available as aggregated totals reported in FEC Quarterly Reports. To employ these data across fundraising periods that do not perfectly align with the timing of quarterly reports, we follow Bonica's (2020) interpolation approach.⁴ Although some candidates elect to provide the FEC with *all* campaign contributions in the form of itemized receipts, employing aggregate unitemized totals for some candidates and disaggregated receipts for others is fraught with issues (for more discussion, see Alvarez et al. 2020).

Calendar-Centered Measures of Early Money

We define a first group of early money measures as “calendar-centered.” These approaches operationalize early money based on a fixed date in time and refer to all fundraising before that date as “early.” The date chosen to define this early money period usually falls on

³Minor discrepancies may exist when comparing contribution totals reported in FEC Quarterly Reports and totals calculated using bulk data on itemized receipts. In conversations with data and reporting specialists from the Federal Election Commission, we were told that these discrepancies are often attributable to small errors made by campaign committee treasurers when preparing quarterly reports.

⁴We first calculate daily totals in unitemized fundraising by dividing aggregate totals from quarterly reports by the number of days in that quarter. It is important to note that the denominator in this calculation is not always 90 days (i.e. three months): a candidate's first fundraising quarter may be significantly longer or shorter than this number of days. This idiosyncrasy in quarterly reporting will be discussed in greater depth in the following section. Daily unitemized fundraising totals are then multiplied by the number of days in a candidate's fundraising window. If a candidate has a fundraising window that falls over two different quarters, then unitemized receipt totals are multiplied by the number of days shared by the fundraising window and that particular quarter; these totals are then summed together.

the last date in the months of March, June, September, or December. These cut-off dates are employed because they align with reporting deadlines for quarterly campaign receipts and expenditure totals to the Federal Election Commission (FEC).⁵ In literature employing calendar-centered measures (see top row of Table 1), FEC Quarterly Reports have served as the sole source for early fundraising data. To calculate a candidate's early fundraising using quarterly statements, total reported receipts are summed across the period of interest.⁶

Using quarterly FEC reporting deadlines to define a candidate's early fundraising period has some notable advantages. The size and scale of itemized data on campaign receipts makes calculating custom fundraising totals for each candidate in each election computationally arduous;⁷ downloading and extracting fundraising totals from FEC Quarterly Reports is a much more manageable data task.⁸ Calendar-centered measures also capture the fundraising behavior for all candidates in a race at a cross-section in time. Given that candidates are keenly aware of their fundraising relative to their competitors' (Goff, 2004), calendar-centered measures may provide leverage in understanding how the dynamics of fundraising competition within a race influence candidate behavior (Thomsen, 2022a,b).⁹

To illustrate how effective calendar-centered measures are at capturing those *first receipts* a candidate raises *well before* her election, we define early money as funds raised in the first 12 months of an election cycle (i.e., January 1st through December 31st of the year prior to the election).¹⁰ We find that the variable timing of congressional primaries presents a significant limitation for calendar-centered measures of early money. Unlike general elections,

⁵Candidates must also file a pre-election report directly before their primary and general election. Candidates can choose not to file a quarterly report if a pre-election report is due between the fifth and 15th day after the close of a calendar quarter. In the event waives a report, the FEC will produce its own report and publicize it for popular consumption.

⁶For example, to calculate early fundraising across the first six months of an election cycle, total receipts from the April Quarterly Report (Q1) and June Quarterly Report (Q2) for the year prior to the election are summed. To calculate early fundraising across the first eighteen months of an election cycle, total receipts for all quarters through June of the election year (Q1-Q6) are summed.

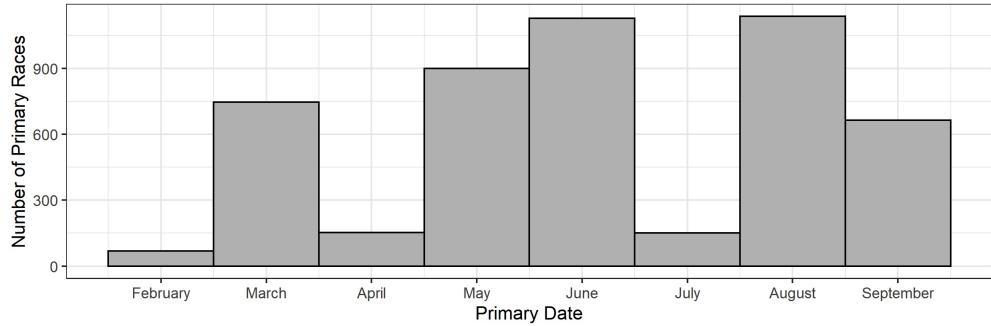
⁷For the authors to download bulk data from the FEC on itemized campaign receipts, query the FEC API for unitemized contribution totals, and loop over these data to calculate customized early fundraising totals for each candidate in our data set took approximately 48 hours, absent the writing of code.

⁸The use of quarterly reports limits users to analyze fundraising totals in three-month increments.

⁹This is especially true for research concentrated on presidential primaries where all candidates in a given election cycle who share a common fundraising timeline.

¹⁰When employing a 3-month or 6-month early fundraising window, calendar-centered measures are susceptible to the same limitations discussed in this section.

Figure 1: House of Representatives Primary Timing by Congressional Race, 2004 to 2020

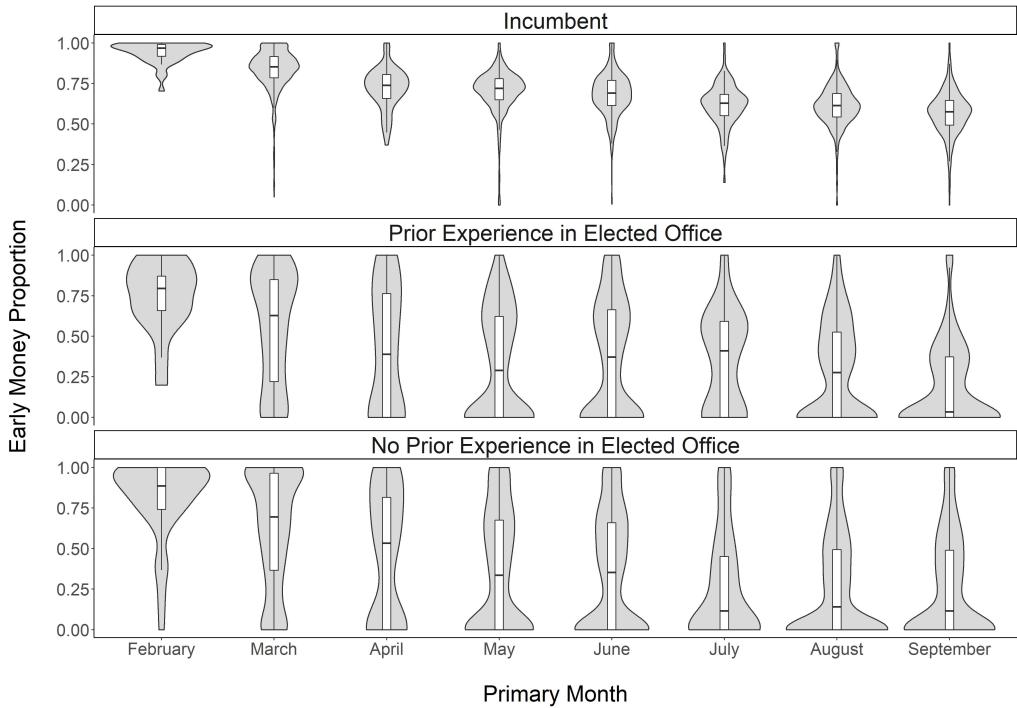


Note: Units of analysis are congressional district primary elections from 2004-2020. Variability in the distribution for primary election timing by month is consistent across time. For a breakdown of primary election timing on a yearly basis, see Figure 1 in Online Appendix. For a breakdown of primary election timing at the state-level, see Figure 2 in Online Appendix.

where a single election date exists across the country, primary election dates differ from state to state. Figure 1 plots the month of primary elections by congressional district from 2004 to 2020. As is evident, significant variation exists in primary timing, with a large proportion of races falling before and after the month of July. For calendar-centered measures, this variability generates inconsistencies in the span of time between the end of a candidate's early fundraising window and the date of her primary. For instance, congressional candidates running in Hawaii's primary in 2006 had 266 days from the end of their 12-month early fundraising window until the date of their primary; conversely, candidates running in Alabama that same year had only 62 days until their election.

By measuring early fundraising for all candidates at a fixed point in time, calendar-centered approaches fail to account for variance in primary election timing; resulting measures of early money are thus systematically biased, as is clear in Figure 2. These violin plots express candidate total early fundraising through December 31st of the year prior to the election (i.e., 12-month calendar measure) as a proportion of all pre-primary receipts. Values close to 0 indicate that a candidate's early fundraising constitutes only a small proportion of her overall pre-primary fundraising; values close to 1 indicate that a candidate's early fundraising constitutes a large proportion of overall fundraising. Early fundraising proportions for incumbent members of Congress (top facet), candidates who with a history holding elected office (middle facet), and amateur candidates (bottom facet) are plotted separately.

Figure 2: 12 Month Early Fundraising as a Proportion of Total Pre-Primary Fundraising



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. For illustrative purposes, early money is defined as all receipts from the first 12 months of an election cycle (i.e., January 1st through December 31st of the year prior to the election). The x-axis indicates the month of each candidate's primary election; the y-axis indicates the proportion of a candidate's early fundraising as a function of total pre-primary fundraising. This same plot is produced for a 6-month measure of early fundraising in Figure 3 of the Online Appendix.

This provides leverage in untangling the impacts of primary election timing from candidate characteristics that are especially predictive of early fundraising success (see Erikson 1971; Maestas et al. 2006; Hirano and Snyder Jr. 2019). Per Figure 2, the 12-month calendar measure for early money captures, on average, just one third of total funds raised for candidates running in primaries that fell *after* July 1st. Conversely, this measure captures, on average, over two thirds of total funds raised for candidates running in primaries that fell *before* July 1st.¹¹ Fundraising totals generated for *early primary* candidates are conceptually distinct from fundraising totals among *late primary* candidates because calendar-centered measures capture fundamentally different stages of these different candidates' fundraising timelines.

¹¹This same disparity between candidates who ran in early and late primaries is apparent for incumbents using a 6-month calendar-centered measure, per Figure 3 of the Online Appendix. The 6-month calendar measure for early money captures, on average, under 30% of total funds raised for incumbents running in primaries that fell *after* July 1st. Conversely, this measure captures, on average, nearly 40% of total funds raised for incumbents running in primaries that fell *before* July 1st.

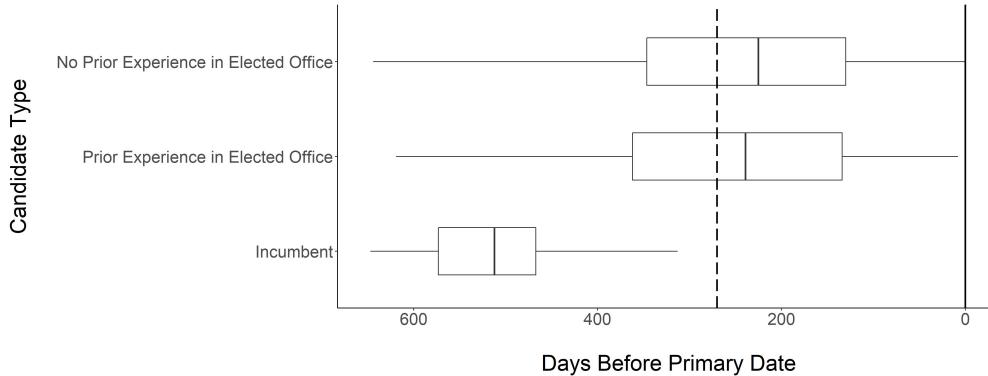
Recall, scholarship regards early fundraising as campaign contributions received by a candidate well in advance of her election. Moreover, early money should constitute only the beginning “seeds” of fundraising success. The preceding discussion demonstrates that calendar-centered measures fail to adhere to these key tenants of early fundraising for those many candidates whose primary falls in the first few months of an election year. The failure of calendar-centered measures to account for variation in primary timing is especially tenuous given the increasingly competitive nature of these elections. The vast majority of congressional districts today are safely-partisan; in these contests, earning the party’s nomination may be more difficult than winning the general election. This places added pressure on candidates to establish a fundraising advantage well in advance of their nominating contest. If candidates are, with renewed vigor, preparing for competitive primaries, then measures of early fundraising must well-account for the dynamics of these elections.

Election-Centered Measures of Early Money

Like calendar-centered measures for early fundraising, election-centered approaches consider all receipts garnered before a certain date to be “early.” Election-centered measures, though, differ from calendar-centered approaches by allowing the cut-off for a candidate’s early fundraising window to vary across candidates. In existing literature (see middle row of Table 1), election-centered measures define early money as all receipts garnered some number of months before a candidate’s primary. For instance, Leal (2003) considers all money raised by congressional candidates eight to nine months before the primary to be “early.”

By tying a candidate’s fundraising window to her primary date, election-centered measures meet early money’s conceptual definition as funds raised well in advance of elections. To demonstrate this, Figure 3 plots the distribution of dates for candidates’ first contributions relative to their primary date (in days). In this example, we follow Leal (2003) and consider money to be “early” if it is raised at least nine months prior to a candidate’s own primary election. The black solid line in Figure 3 line indicates the end of the primary election fundraising period for all candidates (i.e., date of primary election); the black

Figure 3: First Date Contribution Relative to Primary Date
with 9 Month Early Fundraising Cut-Off



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. We follow Leal (2003) and defined early money as all contributions received by a candidate nine months before her primary election. The x-axis measures the date of a candidate's first campaign receipt relative to the date of their primary. The black solid line indicates the end of the primary election fundraising period for all candidates (i.e., zero days until election); the black dotted line indicates the end of a candidate's early fundraising period (i.e., nine months until election).

dotted line indicates the end of a candidate's early fundraising period (i.e., nine months until election). As Figure 3 demonstrates, a substantial density of non-incumbent candidates falling right of the dotted line had zero early fundraising dollars, given that their first contribution was received less than nine months before their primary. Conversely, *every* incumbent running for reelection began fundraising at least nine months before their primary. This difference between incumbents and non-incumbents is to be expected: incumbents are likely to fundraise aggressively early in the election cycle to “scare-off” potential challengers (Box-Steffensmeier, 1996). Moreover, early fundraising should be most prevalent among candidates who are mounting a serious, strategic run for office—this kind of behavior should be ubiquitous among incumbents and less common among non-incumbents. Election-centered measures are also moderately successful at capturing a candidate's first “seeds” of fundraising. A 9-month measure of early fundraising, on average, captures less than a quarter of non-incumbent candidates' total pre-primary receipts; for incumbents, the 9-month measure captures about half of overall receipts.

Putting their comparative advantages aside, election-centered measures also possess significant limitations worthy of discussion. To generate candidate fundraising totals across

flexible dates in time requires the use of data on itemized campaign contributions rather than pre-processed fundraising aggregates present in FEC Quarterly Reports. The relational nature of raw contributions data makes cleaning these data exceedingly difficult. For instance, users must be careful not to “double-count” contributions that are made by individuals to candidates if those donation are funneled through PACs; in this case, such earmarked contributions will be present in the FEC’s individual-level and PAC-level data tables. Users must also take care not to count transfers between different candidate-affiliated PACs or committees as contributions, doing so would overestimate a candidate’s total fundraising. Raw data on campaign contributions constitutes many millions of observations, thus wrangling these data takes a substantial commitment of time and resources.

Additionally, election-centered measures inadequately account for the unequal length of early fundraising windows across candidates. As is evident from Figure 3, there is significant variation in when candidates start to fundraise, ranging from 600 days in advance of their primary to just days before that election. A critical assumption of election-centered measures is that *late primary* candidates (i.e., candidates whose primary election falls after July 1st) begin fundraising further along in the election cycle than *early primary* candidates (i.e., candidates whose primary election falls before July 1st). If both kinds of candidates start fundraising around the same time, then fundraising totals for late primary candidates should be systematically larger than their early primary counterparts. This is because later primary candidates will have a longer amount of time from the beginning of the election cycle until the close of their early money window than will candidates with early primary dates.

We find evidence for this disparity in Table 2. Here we employ a multi-level linear model, regressing a candidate’s total early receipts—according to the same 9-month election-centered measure employed above—as a function of electoral covariates and candidate characteristics.¹² We run two separate models: our first regression includes candidates running in all kinds of primaries, our second regression includes only those candidates running in

¹²In the Online Appendix, we estimate this same regression with total early contributions logged (Table 2). We also estimate this same regression using a Tobit specification (Table 3). These models produce the same substantive takeaways as in Table 2.

Table 2: Total Early Fundraising (9-Month) as a Function of Primary Election Timing

	DV: Early Money Raised by Candidates	
	All Primaries	Open Seat Primaries
Prior Experience in Elected Office	24,611.430* (6,937.914)	20,383.42* (6,396.441)
Incumbent	416,668.600* (10,389.090)	
Late Primary	112,977.300* (6,851.623)	57,371.040* (9,512.673)
Controls?	Yes	Yes
Observations	8,081	1,772

Note: Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts received 9 months in advanced of a candidate's own partisan primary are "early." The left column model includes candidates running in all kinds of primaries, the right column model includes only those candidates running in primaries where an incumbent did not seek reelection (i.e., open seat). The full regression output is available in Table 1 of the Online Appendix. p<.05*

primaries for districts where an incumbent did not seek reelection (i.e., open seat).¹³ Across both models, we control for a candidate's previous experience holding elected office, candidate partisanship, the presence of an incumbent in the race, and district competitiveness. We also include a random intercept by partisan primary election to account for potential dependencies in fundraising totals across candidates running in the same election. Our key independent variable is a dichotomous measure for the timing of a candidate's primary election, where a value of 1 indicates a *later primary* date of post-July 1st in an election year.

Truncated results are presented in Table 2; full model results are available in Table 1 of the Online Appendix. As is evident, candidates for the U.S. House of Representatives running in *late primaries* raise more early fundraising dollars than their counterparts running in *early primaries*, all else equal. The effect size here is both statistically significant and substantively

¹³Primary elections lacking an incumbent may indicate (1) that the incumbent was running in the other party's primary, or (2) that there was no incumbent in the race and that seat was "open." As previously noted, we exclude candidates running in top-two and jungle primaries, as well as those candidates who did not raise sufficient funds to be considered an "active" candidate.

large. In the “All Primaries” model (left column, Table 2), moving from an early to late primary election constitutes a 74% percentage point increase in number of early fundraising dollars raised, on average. In the “Open Seat Primaries” model (right column, Table 2), moving from an early to late primary election constitutes a 186% percentage point increase in number of early fundraising dollars raised, on average. For reference, coefficients for prior experience in elected office and incumbency status are also included in Table 2. It is clear from the above analysis that election-centered measures for early fundraising are biased by extraneous factors not associated with a candidate’s fundraising capabilities.

Candidate-Centered Measures of Early Money

Unlike calendar- or election-centered measures—which base early fundraising upon the timing of elections—candidate-centered measures use a candidate’s own fundraising behavior to determine her early fundraising period. Moreover, rather than considering all money raised *before* a certain date as early, candidate-centered measures define a candidate’s early fundraising window as lasting some span of time *after* a particular date. These “start dates” for early fundraising windows are specific to each candidate and vary considerably across different candidate-centered measures. For example, Bonica (2017, 2020) uses the date that a candidate officially registers her campaign with the FEC to determine the start of her early fundraising window, deeming all money raised from this registration date through some span of time to be “early.” Alternatively, Porter and Steelman (2022) define the start of a candidate’s early fundraising window as the date that a candidate receives her first campaign contribution. Biersack et al. (1993) and Thomsen (2022a) similarly rely on the timing of initial campaign contributions to define a candidate’s early fundraising window, considering all receipts reported in a candidate’s first filed FEC Quarterly Report to be “early.”

These aforementioned measures for early money in elections share a common thread in that they are all theoretically grounded in candidates’ initial fundraising efforts; nonetheless, each candidate-centered measure exhibits clear definitional variation. Indeed, when holding the span of these measures’ fundraising window constant at 90 days (to the extent that this

is possible),¹⁴ the average overlap is only 50 days. For this reason, we evaluate each kind of candidate-centered measure separately in the sections below.

FEC Campaign Registration

A candidate must register her campaign with the FEC by filing a statement of candidacy once she (1) begins actively campaigning for office, and (2) garners \$5,000 in contributions. Once these two conditions are met, a candidate is considered “active” by the FEC. Per Bonica (2017), registration with the FEC should mark the “launch” of a candidate’s campaign and, therefore, should capture a majority of early receipts. However, this relationship only holds if candidates are diligent in submitting their candidacy paperwork at the appropriate time (i.e., once they become “active”). Some candidates are proactive in registering their campaign; we find that 3,007 candidates filed their statement of candidacy before having raised a single dollar in contributions. Other candidates are less timely in submitting their candidacy paperwork. A Public Affairs Specialist from the Federal Election Commission indicated to the authors during an interview that some candidates *never file* a statement of candidacy; more often, candidates are delinquent in filing their paperwork.¹⁵ Turning to our data, we identified 245 or 3% of active candidates as having failed to file a candidacy statement with the FEC for a given election cycle. We identified an additional 1,418 or 18% of all candidates as “delinquent” statement filers—these individuals had met federal requirements that compelled them to register their candidacy with the FEC but failed to do so in a timely manner.¹⁶ In our data, incumbents were twice as likely to file their

¹⁴Holding the length of fundraising window constant at 90 days was possible for measures based upon a candidate’s campaign registration date and first contribution date. For the measure employing a candidate’s first filed Quarterly Report, fundraising window length cannot be flexibly changed because the measurement strategy is rooted in data that is only available in aggregate totals. We, therefore, calculate average overlap using the fundraising window provided.

¹⁵When registering their campaign with the FEC, individual candidates must submit a Form 1 (Statement of Organization) and Form 2 (Statement of Candidacy). According to our source at the Federal Election Commission, candidates often forget to file one of these two forms, leaving their official declaration of candidacy incomplete. Specialists with the FEC follow up with candidates who fail to complete both required documents; the result is a delayed submission date.

¹⁶To identify candidates who were delinquent in filing statements of candidacy, we employ reporting data from FEC Quarterly Reports. Recall, once a candidate becomes “active” they are required to submit a statement of candidacy *and* are henceforth subject to FEC reporting requirements. We consider a candidate to be delinquent if she had not submitted her candidacy paperwork by the time she began filing Quarterly Reports (i.e., regarded herself as “active”).

campaign paperwork delinquently as compared to non-incumbents. Candidates who filed their statement of candidacy late were, on average, significantly delinquent—more than a full reporting quarter behind schedule.¹⁷ If delinquent filers raise considerable funds before registering their campaign with the FEC, then registration-based measures will not well-capture these candidates’ earliest receipts.

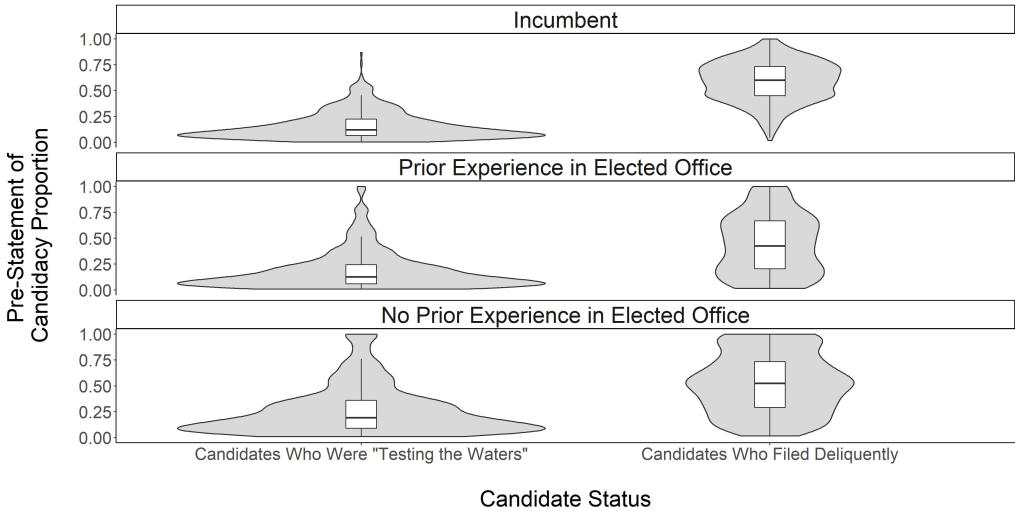
In addition to delinquent filers, another subset of candidates may present problems for measures of early fundraising based on campaign registration dates. In every election cycle, a minority of candidates begin fundraising before they actively run for office, raising and spending money to assess campaign viability. During this so-called “testing the waters” period, candidates are not required to report fundraising to the FEC—even if their receipts total over \$5,000. Once a candidate who has raised at least \$5,000 *does* begin actively campaigning for office,¹⁸ however, they must report all receipts garnered before this point to the FEC and are henceforth subject to FEC reporting requirements. It is important to note that transaction dates on pre-registration receipts reflect *actual* contribution dates, not the date that a candidate officially registered her campaign. From 2004-2020, we identify 1,885 or 23% of all candidates who ran for Congress as having “tested the waters” before launching their campaign.¹⁹ Testing the waters fundraising is not included in registration-based measures for early money because these contributions occur prior to campaign registration. This presents a problem if “testing the waters” contributions represent an outsized amount of early receipts. Per the FEC, funds raised when testing the waters should not be more than is reasonably needed to assess campaign viability; in our interviews, though, FEC officials

¹⁷This delay constitutes the span of time between the end of a delinquent filer’s first quarterly report period and their filing date for a statement of candidacy. The average span between the end of the first report quarter and statement filing date was 120 days; the median span was 81 days.

¹⁸The Federal Election Commission considers certain activities as communicative that a candidate is actively campaigning for office, these activities include: referring to oneself as a candidate, engaging in political advertising, and taking action to qualify for the ballot.

¹⁹We consider a candidate to have “tested the waters” if she raised over \$5,000 before the start date of her first FEC Quarterly Report *and* submitted a statement of candidacy by the end date of that same quarterly period. It is difficult to untangle what candidates did and did not engage in “testing the waters,” given that no formal declaration of this behavior is required. What we present here is a conservative test; those candidates included surely were testing the waters because they raised more than \$5,000 (i.e., they had passed the threshold for required reporting to the FEC) but did not begin filing quarterly reports. Once they *did* begin filing quarterly reports, these candidates submitted their candidacy statement before the end of their first quarterly reporting period. In other words, these candidates were not “delinquent filers.”

Figure 4: Fundraising Before Campaign Registration as a Proportion of Total Early Fundraising (90-Day Fundraising Window Post-Campaign Registration)

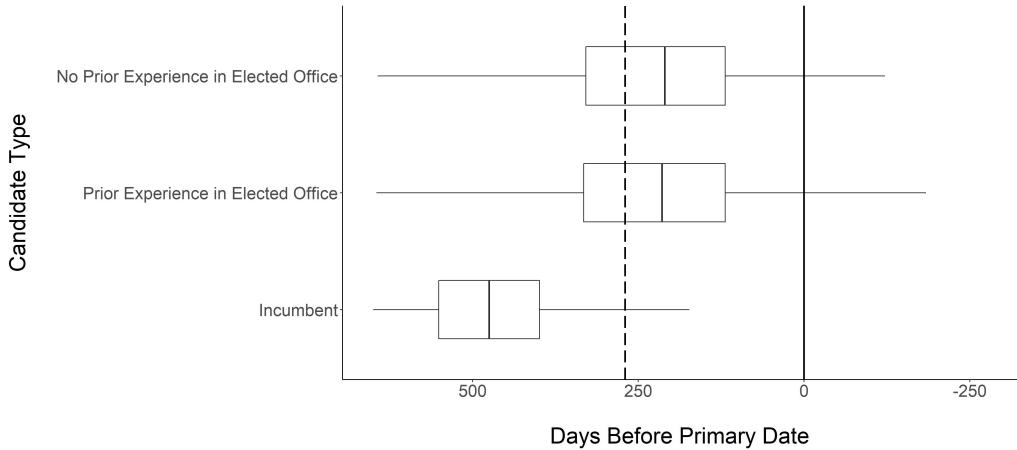


Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. The y axis indicates the proportion of a candidate's pre-registration receipts as a function of total early fundraising 90-days post-campaign registration; the x axis indicates candidate type. In Figure 4 of the Online Appendix, this same plot is generated with a breakdown by month, as visualized in Figure 2.

acknowledged that there is no working definition for a “reasonable” fundraising amount.

Figure 4 assess the magnitude of fundraising that occurred before campaign registration among those candidates who “tested the waters” and those candidates who filed their statement of candidacy delinquently. In violin plots, we express the amount of money a candidate raised before registering her campaign as a proportion of total money raised in the 90 days after campaign registration. Values close to 0 indicate that a candidate fundraised *less* before registering her campaign than she did during her 90-day early fundraising window; values close to 1 indicate that a candidate fundraised similar amounts before and after campaign registration. Units of analysis in the left set of plots in Figure 4 are candidates who “tested the waters” before campaigning; units of analysis in the right set of plots are candidates who filed their statement of candidacy delinquently. We find that the average candidate’s “testing the waters” fundraising is relatively minimal compared to her early fundraising in the post-registration period. This stands in contrast to delinquent filers, whose pre-registration fundraising is, on average, half the size of their early fundraising post-campaign registration. Setting aside delinquent filers, Figure 4 demonstrates that registration-based measures still well-capture a candidate’s first receipts even if they “test the waters.”

Figure 5: Date of Filing for Statement of Candidacy Relative to Primary Election Date



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. The x-axis measures the filing date for a candidate's statement of candidacy relative to the date of her primary. The solid line indicates the date of the primary election; the dotted line indicates nine months until a candidate's election.

Early money measures based upon campaign registration dates are *less* successful at filtering out candidates who begin fundraising close to their primary election. Figure 5 plots the distribution of filing dates for statements of candidacy relative to candidates' primary election date (in days). The solid line indicates the date of a candidate's primary; the dotted line indicates the nine-month-mark until a candidate's primary. Recall, this nine-month cut-off is employed in election-centered measures for early fundraising and aligns well with the conceptual definition of early money as funds raised well before the primary. Per Figure 5, we identify 3,100 or 62% of all non-incumbents as having a statement of candidacy filing date past the nine-months-until-election mark (i.e., red dotted line in Figure 5).²⁰ Indeed, without imposing a cut-off on the timing of candidacy statement filing (e.g., candidates must file some number of days before their primary election), filing-based measures cannot filter out those candidates who begin fundraising well into the election cycle.

First FEC Quarterly Report

A measure that employs a candidate's first filed FEC Quarterly Report to discern early fundraising will capture *all* of a candidate's early receipts, regardless of their status as having

²⁰We identify 2,110 or 42% of non-incumbent candidates as having a statement of candidacy filing date past the *six*-months-until-election mark.

occurred before or after campaign registration. Recall, candidates are not required to report their fundraising to the FEC until their campaign is registered as “active” (i.e., they have garnered \$5,000 in contributions *and* are actively campaigning). Once a candidate reaches active status and goes to file her first FEC Quarterly Report, though, she is obligated to report all fundraising up to this point. These previous contributions reported by the candidate are back-dated in FEC records to their original transaction date. Consequently, the span of days covered in a first FEC Quarterly Report for candidates who “tested the waters” will be *longer* than is typical. For other kinds of candidates, the span of days covered in a first FEC Quarterly Report may also be *shorter* than is typical. For example, candidates who begin fundraising in the middle of a FEC quarter will report a fundraising window of *less than* three months in their first Quarterly Report. In our data, a minor proportion of candidates reported a protracted fundraising window on their initial Quarterly Report.²¹ Conversely, a sizable proportion of candidates reported a first fundraising quarter of less than three months; truncated fundraising windows were especially prevalent among non-incumbents, 42% of whom had an initial Quarterly Report spanning 45 days or less.

Unsurprisingly, differing lengths in candidates’ quarterly reporting windows result in systematic differences across candidates’ early fundraising totals. In Table 3, we employ a multi-level linear model, regressing a candidate’s total early receipts reported in her first FEC Quarterly Report as a function of electoral covariates and candidate characteristics. These models include the same control variables that we specified in Table 2 for our analysis of calendar-centered measures.²² Here, though, our key independent variable is a continuous measure for the span of days covered in a candidate’s first FEC Quarterly Report. Full model results are presented in Table X of the Online Appendix. Units of analysis in the left column of Table 2 includes candidates running in all kinds of primaries; units of analysis in the right column include only those candidates running in primaries for open seats.

²¹14% of incumbents had an initial quarterly report period of more than 91 days; less than a percent of non-incumbents had a protracted first quarter.

²²In the Online Appendix, we estimate this same regression with total early contributions logged (Table 5). We also estimate this same regression using a Tobit specification (Table 6). These models produce the same substantive takeaways as in Table 2.

Table 3: Total Early Fundraising (First FEC Reporting Quarter)
as a Function of Fundraising Window Length (in Days)

	DV: Early Money Raised by Candidates	
	All Primaries	Open Seat Primaries
Prior Experience in Elected Office	42,116.620* (3,761.644)	25,681.16* (6,415.22)
Incumbent	102,028.800* (5,891.878)	
FEC Window Length (Days)	627.101* (50.661)	436.88* (104.921)
Controls?	Yes	Yes
Observations	8,078	1,772

Note: Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts reported in a candidate's initial FEC Quarterly Report are considered "early." The full regression output is available in Table 4 of the Online Appendix. p<.05*

Per Table 3, moving from a 45 day FEC fundraising window to a 90 day window increases a candidate's early fundraising total by 18% in the "All Primaries" model (left column, Table 2) and 21% in the "Open Seat Primaries" model (right column, Table 2). These results indicate that measures of early fundraising rooted in FEC Quarterly Reports will bias against candidates with shorter fundraising windows. This is especially concerning given that certain kinds of candidates (e.g., non-incumbents) are more likely to have a FEC reporting window of less than three months. When employing data on fundraising totals found in FEC Quarterly Reports, inconsistent lengths across candidate reporting windows cannot be corrected for given the aggregated nature of these receipts data.

As employed in existing literature, early money measures based upon a candidate's initial FEC Quarterly Report fail to account for candidates whose first report was filed right before the primary election. In our data, 31% of non-incumbent candidates filed their first report with the FEC in the quarter directly preceding their primary. This timing issue was not a problem for incumbents, who near-universally submitted their first quarterly report in the

year prior to their election. Recall from the previous section, early money measures based on campaign registration dates were also inconsistent in capturing those receipts a candidate raised well before her election.

First Itemized Receipt

The final measure we discuss defines the start of a candidate’s early fundraising window using the receipt date of her first campaign contribution (Porter and Steelman, 2022). Receipt-based measures employ transaction dates from itemized contributions data to determine the timing of a candidate’s first receipt. By looking to receipts data rather than campaign registration dates to determine the start of a candidate’s early fundraising window, first-receipt measures capture *all* early itemized contributions.²³ Moreover, receipt-based measures are not limited by pre-aggregated fundraising totals as are strategies that employ FEC Quarterly Reports. Itemized contributions data allow for early receipt totals to be calculated for a consistent fundraising window across candidates; this consistency is vital for making cross-candidate fundraising comparisons. A necessary limitation of receipt-based measures, though, is that a candidate’s initial contribution date is based solely on data for *itemized* campaign receipts, given that *unitemized* contributions lack systematic transaction dates.

Another potential limitation of receipt-based measures is that they are not explicitly tied to the “launch” of a candidate’s campaign. Recall, Bonica (2017) employs the filing date for a candidacy statement to define the start of a candidate’s early fundraising window because this date, in theory, captures the pivotal point where a candidate has begun actively campaigning *and* has raised a critical threshold of contributions. Measures that employ a candidate’s first filed FEC Quarterly Report are similarly tied to the period where a candidate achieves “active” status. Receipt-based measures may fail to capture this critical juncture if candidates fail to consistently fundraise after garnering their first contribution. That is to say, if candidates fundraise a small amount and then do not garner more contributions until

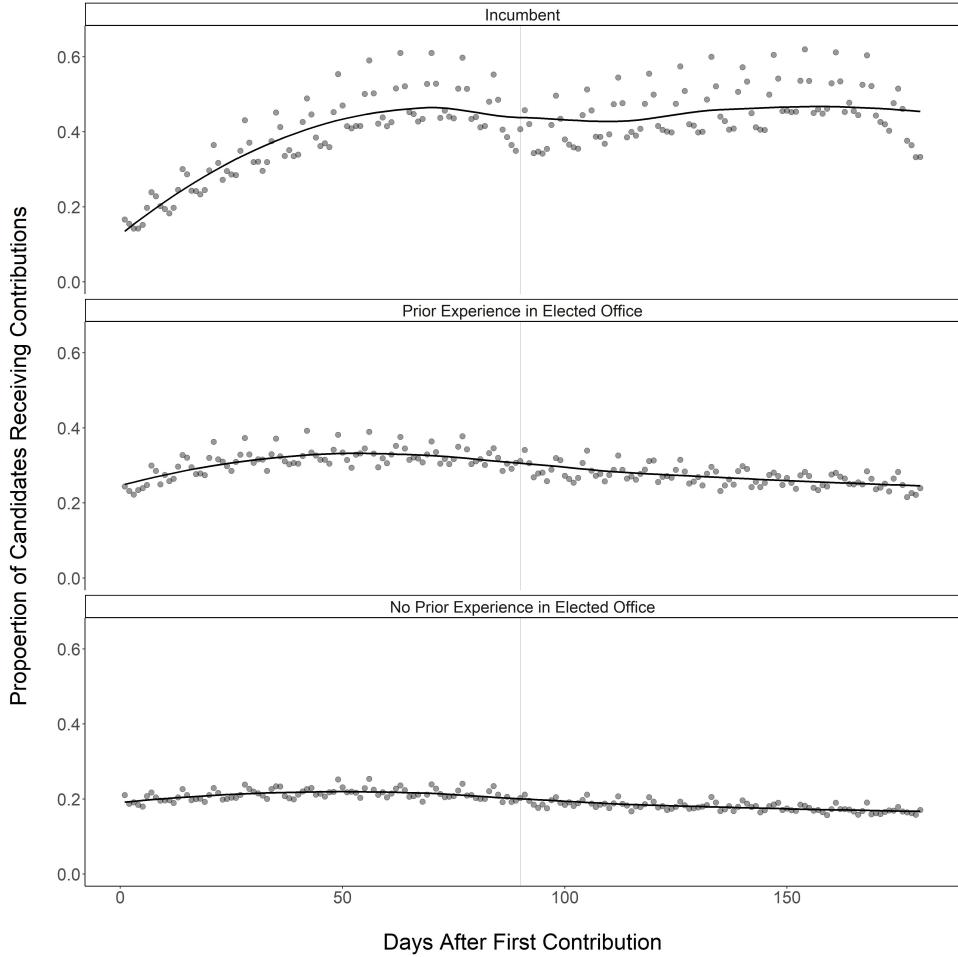
²³Recall, a candidate may begin fundraising before she registers her campaign, though she must report these contributions once she becomes an “active” candidate. Because these receipts occurred before campaign registration, they are omitted from early fundraising totals calculated using campaign registration dates. Receipt-based measures are agnostic to whether a candidate was “testing the waters” or engaged in active campaigning when her first receipt was recorded.

some days or weeks later, then receipt-based measures will draw on a fundraising “blip” rather than the true launch of candidates’ fundraising efforts. Such a relationship would cause these measures to underestimate the true extent of candidates’ early fundraising.

To investigate this potential source for measurement bias, we plot in Figure 6 the proportion of candidates who received at least one itemized donation for each day across a 90-day early fundraising window. When calculating these proportions, the numerator is the number of candidates who garnered any itemized campaign dollars on a given day and the denominator is the total number of candidates in our data by candidate type (i.e., incumbent, prior elected experience, or amateur). The x-axis in Figure 6 indicates (from left to right) the number of days since the start date of each candidate’s early fundraising window. To assess whether fundraising dynamics change after the initial early fundraising period, we extend the x-axis to include 180 days. We include a gray vertical indicator line to demarcate the 90th day of the early fundraising period. In Figure 6, we define the start of candidates’ early fundraising windows using the receipt date of their first itemized campaign contribution.

In plots for non-incumbents’ early fundraising (bottom and middle facets, Figure 6), the trend line produced by the data is monotonic. This indicates that the proportion of non-incumbent candidates raising money on any given day across the early fundraising window is consistent. We see a different fundraising pattern amongst incumbents (top facet, Figure 6): the trend line’s positive slope indicates that incumbents are inconsistently fundraising across their receipt-based 90-day early fundraising window, with more incumbents engaging in fundraising as time progresses. In the week directly after a first campaign contribution is received, the average daily proportion of incumbents raising money is less than twenty percent. This is significantly lower than the daily average across the *entire* fundraising window. On any given day of their early fundraising window, about half of incumbents—on average—are garnering some amount of campaign contributions. This same drop-off is far less pronounced among candidates with prior political experience (i.e., “quality” candidates). Among amateurs, there is no difference in the proportion of candidates raising money on any given day across the 90-day fundraising window, and the proportion of candidates raising

Figure 6: Daily Proportion of Candidates Who Garnered Itemized Campaign Contributions During 90-Day Early Fundraising Window



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. The x-axis indicates (from left to right) the number of days since the start date of each candidate's early fundraising window. The y-axis indicates the proportion of candidates who received at least one itemized donation for each day. In left-side plots, the start date for candidates' early fundraising window is defined using the receipt date of her first campaign contribution. In right-side plots, the start date for candidates' early fundraising window is defined using campaign registration dates.

money in the first seven days after a candidate's initial campaign receipt. These findings indicate that the date of an incumbent's first campaign receipt serves as a poor indicator for the beginnings of her early fundraising efforts.

Like other candidate-centered measures, fundraising windows defined by a candidate's earliest campaign contribution are limited by their inability to filter out candidates who begin fundraising proximate to their primary election. To try and account for this, Porter and Steelman (2022) impose a “cut-off” on candidates' receipt-based early fundraising. The authors state that if a candidate does not begin fundraising until March of the election year,

then their first donations are not considered “early” because they occur too close to the primary. This fixed cut-off date, however, falls victim to the same limitations outlined in our discussion of calendar-centered measures for early fundraising.

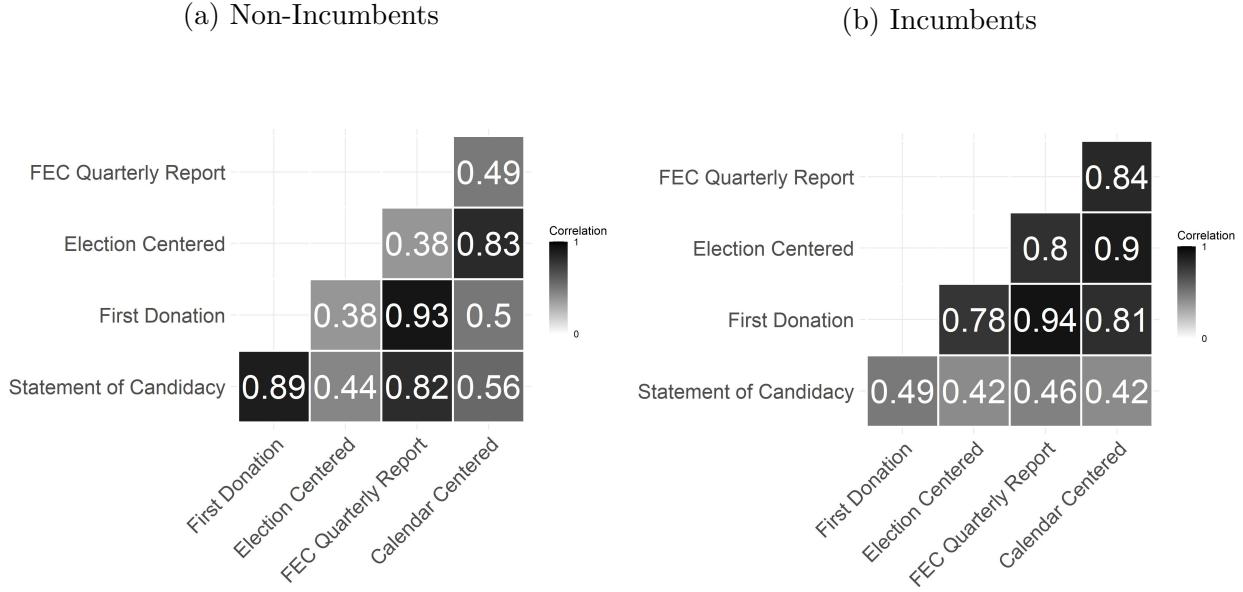
Inference & Early Money Measurement

In existing work assessing the impacts of early fundraising on political outcomes, modes for early money measurement have been employed interchangeably and without rigorous validation. In our extensive discussions of calendar-, election-, and candidate-centered measures for early money, we demonstrate that this ambivalence is fraught given that there is significant variation in how each of these measurement classes operationalize early money. We go on to identify how definitional differences across measures may result in the biased estimates for candidates’ early fundraising. In this final set of analyses, we demonstrate that calendar-, election-, and candidate-centered measurement strategies produce significantly different estimations for candidates’ early fundraising potential and, further, show that these differences have downstream consequences on quantitative inference.

Cross-Measure Correlation

In Figures 7a and 7b we present cross-measure correlations among estimates for candidates’ early fundraising totals. For presentational purposes, we focus here on only those measures discussed in-depth throughout the paper. We specifically assess average pair-wise correlations across the 12-month calendar-centered measure, 9-month election-centered measure, and all candidate-centered measures (fundraising window held constant at 90 days or first quarterly report). In our preceding analyses, we demonstrate that different measures better-capture the early fundraising potential of incumbents and non-incumbents; for this reason, we evaluate these kinds of candidates separately. The left plot in Figure 7 examines cross-measure correlations for non-incumbent candidates; the right plot examines cross-measure correlations for incumbent candidates. The range of correlation values across both plots varies considerably, with a minimum value of 0.38 and maximum value of 0.94.

Figure 7: Correlations Across Early Money Measures for Non-Incumbents & Incumbents



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. Average pair-wise correlations are calculated for the 12-month calendar-centered measure, 9-month election-centered measure, and all candidate-centered measures (fundraising window held constant at 90 days). The left plot examines cross-measure correlations for non-incumbent candidates; the right plot examines cross-measure correlations for incumbent candidates.

Turning first to non-incumbents in Figure 7a, several noteworthy patterns emerge. Generally, we see higher correlations among similar types of measures. For example, the average correlation between the 9-month election-centered measure and 12-month calendar centered measure is 0.83. Comparisons within candidate-centered measures for early money (i.e., First Donation, Statement of Candidacy, and FEC Quarterly Report), produce similarly high average rates of correlation. We see lower rates of correlation *across* classes of early money measures; this is especially apparent when contrasting election-centered measures and candidate-centered measures. The average correlation between the 9-month election-centered measure and all candidate-centered measures does not exceed 0.44. This means that election- and candidate-centered measures can be expected to explain, at most, 19% of the variance in one another for non-incumbent candidates. Our preceding analyses provide a potential explanation for this weak relationship. Recall, election-centered measures are especially successful at capturing those early contributions that candidates raised well before their primary election. On the other hand, candidate-centered measures allow for early

money to be raised right before a candidate's primary election. Variation in these measures' relative success at filtering out candidates who began fundraising too close to their primary would account for marked differences in measurement.

Looking to incumbents in Figure 7b, we see high average correlations across most measures for early money—the noteworthy exceptions are those pair-wise comparisons that draw on the candidate-centered, campaign registration measure (Statement of Candidacy). The average between-measure correlation for pair-wise comparisons that include the Statement of Candidacy measure is 0.45, for all other comparisons the average correlation is nearly double (0.84). Recall from the previous section, incumbents generally begin to fundraise in the first few months of an election cycle; every incumbent in our data garnered some amount of early contributions in the year before their election. This consistency in fundraising timing across incumbents accounts for the high average correlation rates seen in Figure 7b. Incumbents, however, were similarly consistent in their campaign registration *tardiness*. In our data, over 30% of incumbents filed their registration paperwork delinquency, compared to just 16% of non-incumbents. It was for this reason we suggested registration-based measure may not well-capture incumbents' early fundraising. This aforementioned variation in measures' ability to capture those first receipts garnered by incumbents would account for low average correlation between a registration-based approach and other early money measures.

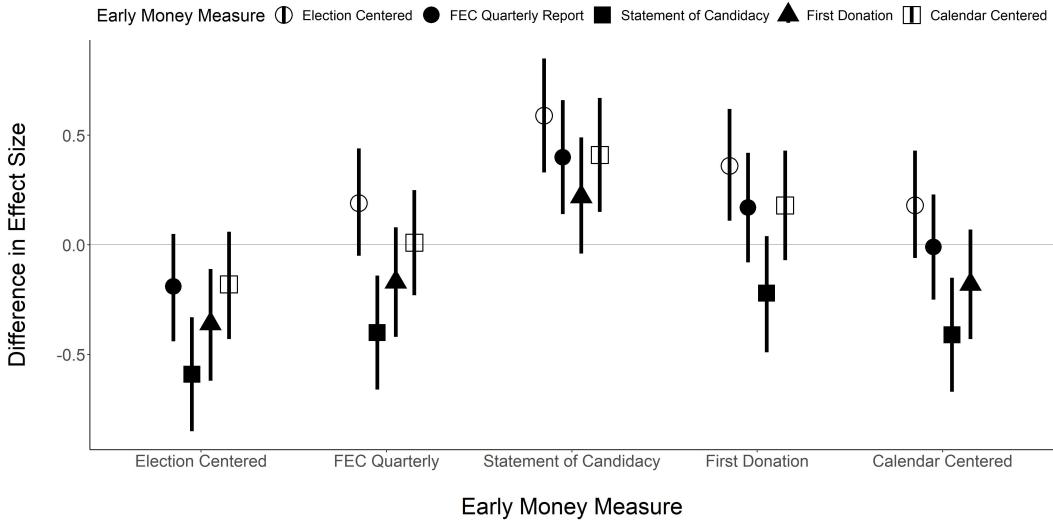
The Effect of Early Fundraising on Success

To assess if and how the relationship between early campaign fundraising and electoral success varies across measures for early money, we estimate a series of regression models. Our units of analysis across all models are candidates who ran in partisan primary elections from 2004 to 2020. Following the bulk of existing work on early money and electoral success, we focus our analysis on districts without an incumbent running for reelection (i.e., open seats). In these models, our dependent variable is a dichotomous indicator for whether or not a candidate won her partisan primary race. Similar to previous models, we control for candidate party, seat safety, candidate quality, primary type, candidate gender, and previous elected experience. Our key independent variable is total early fundraising, as estimated using the

12-month calendar-centered measure, 9-month election-centered measure, and all candidate-centered measures (fundraising window held constant at 90 days or first quarterly report). We once again include a random intercept by race to account for co-dependencies between observations. To be clear, across all models the units of analysis, controls, and dependent variable are held constant—the singular change between models is the estimation strategy used to determine candidate early fundraising totals. Full regression tables can be found in Online Appendix Table 7. It should be noted that, across measurement operationalization, the effect of early money is statistically significant and positive. However, for our purposes, we are primarily interested in the differences between effect sizes across models.

Comparing the marginal difference for regression coefficients across models is difficult for a few reasons. For one, estimates for total early fundraising take on different ranges of values across each mode for measurement; this impedes direct comparisons for early money coefficients across models. Furthermore, we lack a true covariance for early money coefficients drawn from different models; this is necessary to produce valid confidence intervals for marginal differences. To address these issues, our model estimation strategy is as follows: we first standardize all measures of early money to have a mean of zero and a standard deviation of 1. To estimate our models, such that covariance matrices for marginal differences are recoverable, we follow an approach laid out by Mize et al. (2019). In this approach, we stack models using seemingly unrelated estimation (SUEST) to combine estimates from multiple models. To do this, we construct a dataset, given n observations and k covariates in a single model estimation, with $2n$ observations, $2k$ covariates, a single outcome column, and a binary variable indicating if the observations came from the first model. For observations $1, 2, \dots, n$ from the first model, the same covariates from the simple model occupy covariates $1, 2, \dots, k$ in the stacked dataset and covariates $k+1, k+2, \dots, 2k$ are all equal to zero. For observations $n+1, n+2, \dots, 2n$ from the second model, the same covariates from the simple model occupy covariates $k+1, k+2, \dots, 2k$ in the stacked dataset and covariates $1, 2, \dots, k$ are equal to zero. We then estimate a stacked model for each set of pair-wise model comparisons, producing a total of 8 model outputs. Coefficients estimated in these stacked

Figure 8: Marginal Differences in Pair-Wise Comparisons for Early Money Coefficient



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. The x-axis indicates (from left to right) the number of days since the start date of each candidate's early fundraising window. The y-axis indicates the proportion of candidates who received at least one itemized donation for each day. In left-side plots, the start date for candidates' early fundraising window is defined using the receipt date of her first campaign contribution. In right-side plots, the start date for candidates' early fundraising window is defined using campaign registration dates.

models are identical to those produced when each model is run individually.

The marginal differences in early money coefficients across model pair-wise comparisons are presented in Figure 8 with 95% confidence intervals. The y-axis indicates the difference in effect sizes across pair-wise model comparisons. The x-axis indicates the main model used in pair-wise comparisons; this presentational approach produces duplicated points of comparison. For example, the election-centered v.s. calendar-centered comparison point (left-most group, outlined square) is a mirror reflection of the calendar-centered v.s. election-centered comparison point (right-most group, outlined circle). Points falling above the horizontal indicator line indicate that the early money measure specified on the x-axis had a larger effect size than the point of comparison model. For example, the election-centered measure for early money produced a smaller effect size than the calendar-centered early money measure (left-most group, outlined square).

Confidence intervals that do not intersect with the horizontal gray line indicate the differences across pair-wise models comparisons (i.e., marginal differences) are statistically significant. We find statistically significant differences across five of the eight unique pair-

wise comparisons made in Figure 8. The largest marginal difference is between the Statement of Candidacy and Election-Centered measure for early money (left-most group, solid square & middle group, outlined circle). To place this difference in substantive terms, we turn to predicted probabilities. For the Statement of Candidacy measure (i.e., all funds raised in the 90-days post-campaign registration), a one standard deviation increase in early fundraising (\$380,000) increases a candidate’s predicted probability of success from .27 to .59. Conversely, for the Election-Centered measure (i.e., all funds raised 9 months before the primary), a one standard deviation increase in early fundraising (\$280,000) increases a candidate’s predicted probability of success from .28 to .43. The difference-in-difference between these two measures is .17.

Note that what we present here is a conservative look into how inferences change regarding the effect of early fundraising on future electoral success conditional on different modes for early money measurement. As we have extensively shown throughout this paper, specific subsets of candidates will be the most predisposed to measurement bias (e.g., candidates running in early primaries and delinquent filers) and these candidate types vary across operationalization for early money (e.g., calendar-centered approach v.s. post-registration campaign receipts). Subsetting our analysis in Figure 8 to investigate these specific types of candidates should produce even more disparate characterizations of the relationship between early campaign fundraising and success.

Conclusion

In this paper, we assess existing approaches for the measurement of early campaign contributions. We begin by establishing a conceptual framework for money as “early.” In the section that follows, we evaluate well calendar-, election-, and candidate-centered modes for early money’s measurement definitional aspects of early money. Lastly, we show that differences across approaches for measuring early money lead to (1) variability in estimates for candidates’ early fundraising potential, and (2) inferential inconsistencies in the relationship between early fundraising and electoral success.

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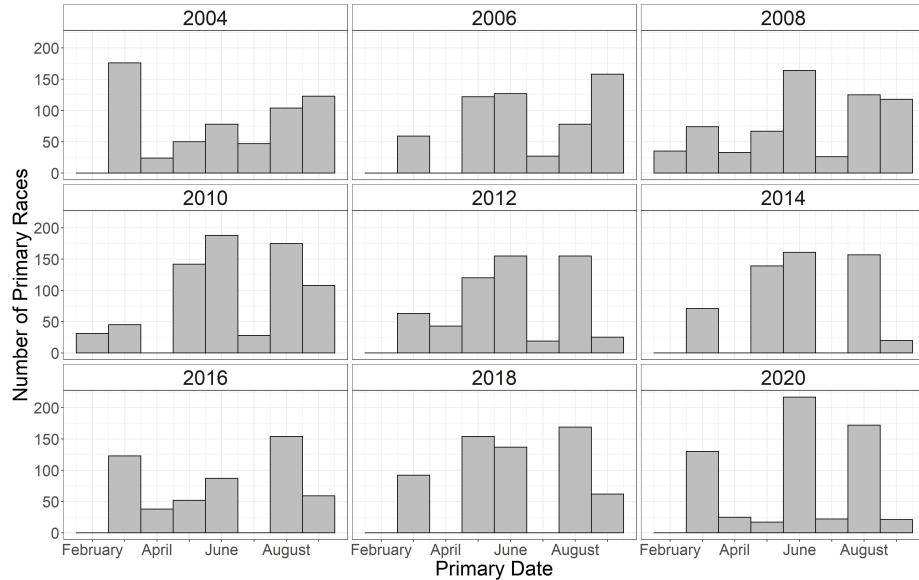
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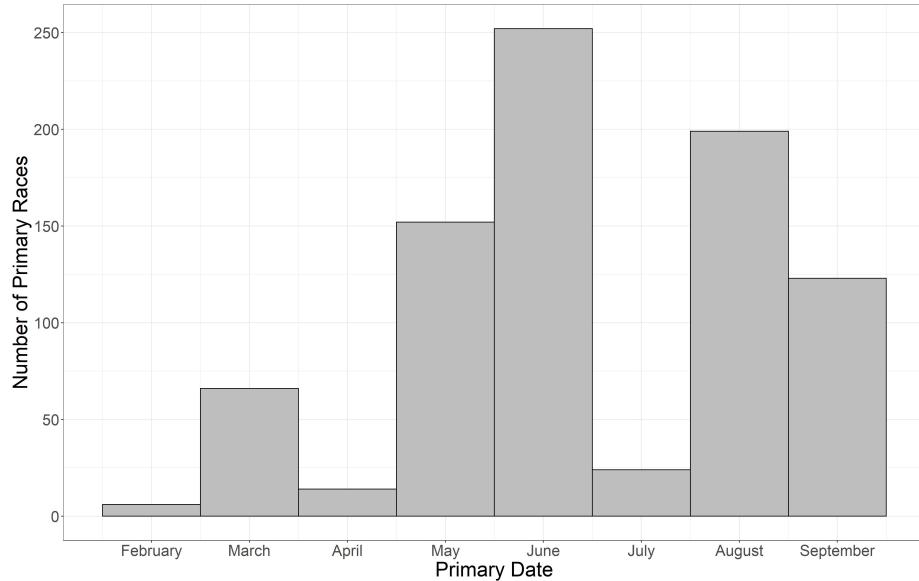
Appendices

Figure 1: House of Representatives Primary Timing by Congressional Race and Year, 2004 to 2020



Note: Units of analysis are congressional district primary elections from 2004-2020. Variability in the distribution for primary election timing by month is consistent across time.

Figure 2: House of Representatives Primary Timing at State Level, 2004 to 2020



Note: Units of analysis are primary elections aggregated to the state level. Variability in the distribution for primary election timing by month is consistent across time.

Table 1: Total Early Fundraising (9-Month) as a Function of Primary Election Timing

	DV: Early Money Raised	
	All Candidates	Non-Incumbents
Prior Experience in Elected Office	24,573.350* (6,940.036)	20,419.710* (6,415.218)
Incumbent	416,660.900* (10,392.560)	
No Incumbent in Primary Race	-6,386.456 (11,108.000)	
Unopposed Primary	534.963 (7,216.660)	23,802.810 (14,892.190)
Seat Safety: Same Party	-29,692.680* (10,444.380)	-22,390.590 (16,412.520)
Seat Safety: Competitive	64,012.170* (8,084.231)	12,447.370 (10,705.240)
Candidate Party: Republican	-13,781.070* (6,954.950)	-17,216.730 (9,859.873)
Late Primary	112,981.100* (6,851.531)	57,208.990* (9,555.451)
Constant	-29,524.130* (12,774.750)	27,618.550* (11,704.250)
Observations	8,078	1,766
Log Likelihood	-111,575.800	-23,318.100
Akaike Inf. Crit.	223,173.600	46,654.210
Bayesian Inf. Crit.	223,250.600	46,703.500

Note: Full model from Table 2. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts received 9 months in advance of a candidate's own partisan primary are "early." The left column model includes candidates running in all kinds of primaries, the right column model includes only those candidates running in primaries where an incumbent did not seek reelection (i.e., open seat). p<.05*

Table 2: Logged Early Fundraising (9-Month) as a Function of Primary Election Timing

	DV: Logged Early Money Raised	
	All Candidates	Non-Incumbents
Prior Experience in Elected Office	0.694* (0.120)	0.750* (0.210)
Incumbent	9.038* (0.182)	
No Incumbent in Primary Race	0.312 (0.180)	
Unopposed Primary	-0.053 (0.111)	0.179 (0.544)
Seat Safety: Same Party	-0.652* (0.157)	-1.150 (0.635)
Seat Safety: Competitive	0.315* (0.121)	0.058 (0.417)
Candidate Party: Republican	-0.613* (0.104)	-1.360* (0.380)
Late Primary	1.290* (0.102)	2.023* (0.373)
Constant	3.450* (0.202)	3.909* (0.446)
Observations	8,078	1,766
Log Likelihood	-22,600.580	-5,210.521
Akaike Inf. Crit.	45,223.160	10,439.040
Bayesian Inf. Crit.	45,300.130	10,488.330

Note: Replication of Table 2 using logged fundraising as DV. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts received 9 months in advanced of a candidate's own partisan primary are "early." The left column model includes candidates running in all kinds of primaries, the right column model includes only those candidates running in primaries where an incumbent did not seek reelection (i.e., open seat). p<.05*

Table 3: Total Early Fundraising (9-Month) as a Function of Primary Election Timing (Tobit Model)

	DV: Early Money Raised	
	All Candidates (1)	Non-Incumbents (2)
Prior Experience in Elected Office	49,233.070* (11,497.480)	43,917.210* (15,072.120)
Incumbent	640,052.500* (17,963.580)	
No Incumbent in Primary Race	11,113.930 (16,723.780)	
Unopposed Primary	-6,884.357 (9,326.087)	22,966.730 (30,396.710)
Seat Safety: Same Party	-60,829.280* (13,098.390)	-64,710.420* (27,028.170)
Seat Safety: Competitive	67,425.210* (9,716.286)	1,198.817 (17,509.750)
Candidate Party: Republican	-51,602.610* (8,573.221)	-93,623.310* (16,826.310)
Late Primary	157,107.200* (8,087.870)	123,370.100* (15,230.220)
Constant	-240,330.600* (18,537.630)	-115,594.700* (20,940.060)
Observations	8,078	1,766
Log Likelihood	-73,126.600	-10,219.710
Wald Test	5,662.271* (df = 8)	105.788* (df = 6)

Note: Replication of Table 2 using a tobit model. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts received 9 months in advanced of a candidate's own partisan primary are "early." The left column model includes candidates running in all kinds of primaries, the right column model includes only those candidates running in primaries where an incumbent did not seek reelection (i.e., open seat). p<.05*

Table 4: Total Early Fundraising (First FEC Reporting Quarter) as a Function of Fundraising Window Length (in Days)

	DV: Early Money Raised	
	All Candidates	Non-Incumbents
Prior Experience in Elected Office	42,116.620* (3,761.644)	25,573.000* (6,430.414)
Incumbent	102,028.800* (5,891.878)	
No Incumbent in Primary Race	16,108.550* (5,471.084)	
Unopposed Primary	-5,830.698 (3,355.992)	26,019.190 (13,292.870)
Seat Safety: Same Party	-12,131.160* (4,611.660)	1,976.641 (12,280.750)
Seat Safety: Competitive	24,575.240* (3,521.644)	17,975.640* (7,904.571)
Candidate Party: Republican	-3,082.325 (3,065.601)	1,194.272 (7,584.236)
FEC Window Length	627.101* (50.661)	437.835* (105.136)
Constant	-3,056.594 (6,579.794)	51,673.290* (10,396.360)
Observations	8,078	1,767
Log Likelihood	-106,054.000	-23,288.750
Akaike Inf. Crit.	212,130.000	46,595.500
Bayesian Inf. Crit.	212,207.000	46,644.800

Note: Full model results from Table 3. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts reported in a candidate's initial FEC Quarterly Report are considered "early." p<.05*

Table 5: Logged Early Fundraising (First FEC Reporting Quarter) as a Function of Fundraising Window Length (in Days)

	DV: Logged Early Money Raised	
	All Candidates	Non-Incumbents
Prior Experience in Elected Office	0.920* (0.047)	0.687* (0.084)
Incumbent	2.139* (0.074)	
No Incumbent in Primary Race	0.284* (0.068)	
Unopposed Primary	-0.118* (0.042)	0.213 (0.175)
Seat Safety: Same Party	-0.145* (0.057)	-0.044 (0.162)
Seat Safety: Competitive	0.269* (0.044)	0.192 (0.104)
Candidate Party: Republican	0.025 (0.038)	0.090 (0.100)
FEC Window Length	0.005* (0.001)	0.002 (0.001)
Constant	8.882* (0.082)	9.814* (0.137)
Observations	8,078	1,767
Log Likelihood	-15,012.360	-3,505.347
Akaike Inf. Crit.	30,046.720	7,028.695
Bayesian Inf. Crit.	30,123.690	7,077.988

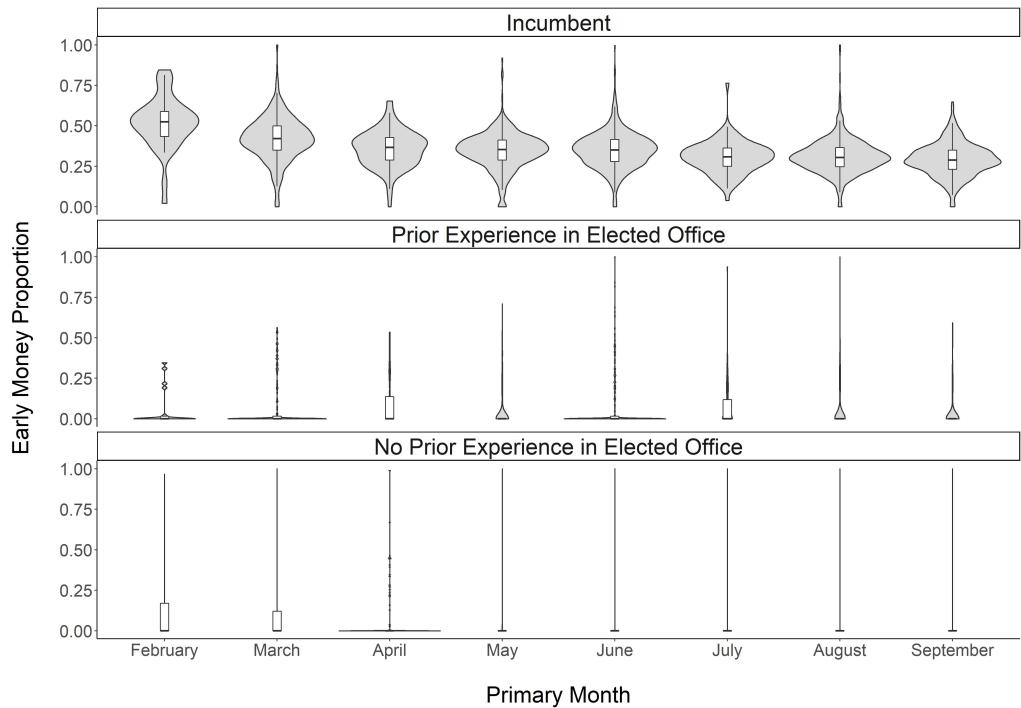
Note: Replication of Table 3 using logged fundraising as DV. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts reported in a candidate's initial FEC Quarterly Report are considered "early." p<.05*

Table 6: Total Early Fundraising (First FEC Reporting Quarter) as a Function of Fundraising Window Length (in Days; Tobit Model)

	DV: Early Money Raised	
	All Candidates	Non-Incumbents
Prior Experience in Elected Office	44,231.540* (3,756.162)	26,057.160* (6,419.137)
Incumbent	103,436.000* (5,947.935)	
No Incumbent in Primary Race	18,136.480* (5,291.778)	
Unopposed Primary	-6,481.180* (3,306.572)	26,599.620* (13,168.500)
Seat Safety: Same Party	-12,038.760* (4,386.338)	299.556 (11,332.410)
Seat Safety: Competitive	22,166.450* (3,317.618)	15,384.010* (7,281.641)
Candidate Party: Republican	-3,536.999 (2,908.253)	-86.204 (7,091.210)
FEC Window Length	627.213* (50.839)	437.735* (104.798)
Constant	-2,619.650 (6,397.187)	53,118.340* (9,984.244)
Observations	8,078	1,767
Log Likelihood	-106,151.700	-23,356.340
Wald Test	1,251.674* (df = 8)	46.228* (df = 6)

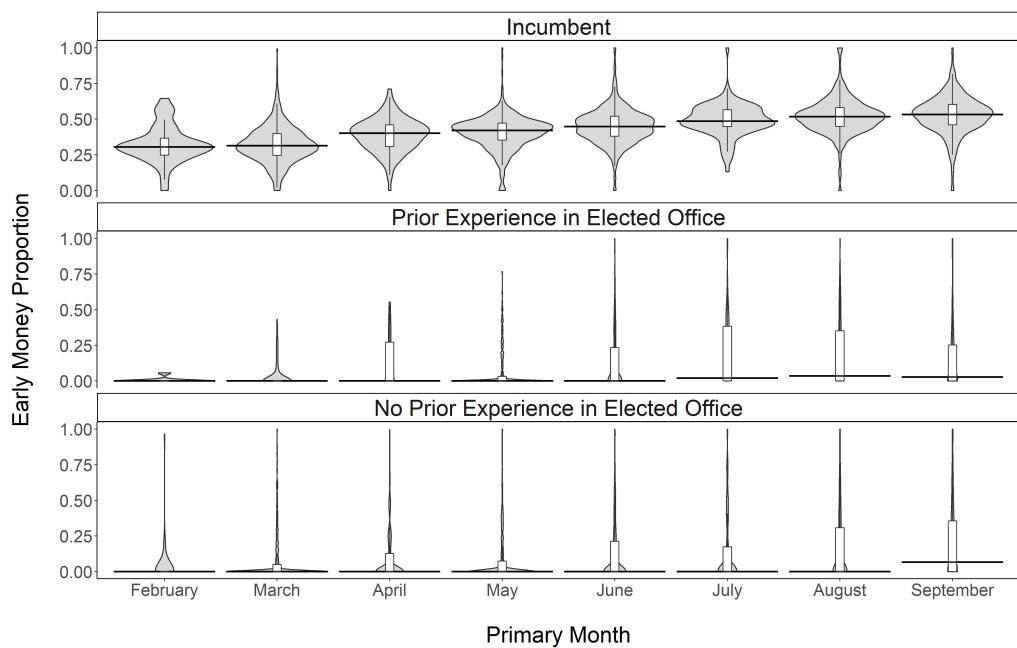
Note: Replication of Table 3 using tobit model. Units of analysis include all active candidates for Congress running in partisan primary elections for the U.S. House of Representatives from 2004 to 2020. Fundraising totals are calculated such that all receipts reported in a candidate's initial FEC Quarterly Report are considered "early." p<.05*

Figure 3: 6 Month Early Fundraising as a Proportion of Total Pre-Primary Fundraising



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. For illustrative purposes, early money is defined as all receipts from the first 6 months of an election cycle (i.e., January 1st through June 30th of the year prior to the election). The x axis indicates the month of each candidate's primary election; the y axis indicates the proportion of a candidate's early fundraising as a function of total pre-primary fundraising.

Figure 4: Election Centered (9 Month Cutoff) Early Fundraising as a Proportion of Total Pre-Primary Fundraising



Note: Units of analysis are active congressional candidates running in partisan primary elections from 2004 through 2020. For illustrative purposes, early money is defined as all receipts from the first 6 months of an election cycle (i.e., January 1st through June 30th of the year prior to the election). The x axis indicates the month of each candidate's primary election; the y axis indicates the proportion of a candidate's early fundraising as a function of total pre-primary fundraising. EDIT THIS

Table 7: Predicting Candidate Success as a Function of Various Measures of Early Money

	DV: Win Primary Election				
	(1)	(2)	(3)	(4)	(5)
First 90	1.443* (0.137)				
Filing 90		1.567* (0.145)			
FEC 90			1.231* (0.129)		
Election 9				0.781* (0.126)	
Year Prior					1.080* (0.127)
Republican	-0.252 (0.137)	-0.221 (0.138)	-0.261 (0.135)	-0.185 (0.133)	-0.160 (0.135)
Seat Safety: Same Party	0.025 (0.227)	-0.016 (0.229)	0.111 (0.223)	0.136 (0.217)	0.186 (0.220)
Seat Safety: Competitive	-0.165 (0.141)	-0.210 (0.142)	-0.164 (0.140)	-0.127 (0.137)	-0.139 (0.139)
Total Quality Candidates	-0.575* (0.055)	-0.574* (0.056)	-0.568* (0.054)	-0.549* (0.053)	-0.548* (0.054)
Primary Type: Open Primary	0.055 (0.136)	0.065 (0.137)	0.047 (0.134)	0.068 (0.132)	0.016 (0.133)
Primary Type: Partially Closed	0.174 (0.188)	0.194 (0.189)	0.210 (0.185)	0.168 (0.182)	0.200 (0.183)
Female	0.074 (0.145)	0.045 (0.147)	0.099 (0.143)	0.048 (0.141)	0.012 (0.144)
Quality Candidate: Other Elected	0.931* (0.177)	0.870* (0.178)	0.944* (0.175)	0.972* (0.172)	0.980* (0.174)
Quality Candidate: State Legislator	1.321* (0.156)	1.240* (0.156)	1.390* (0.154)	1.372* (0.151)	1.320* (0.154)
Quality Candidate: State Legislator	-0.273 (0.193)	-0.230 (0.194)	-0.312 (0.191)	-0.381* (0.188)	-0.375* (0.191)
Observations	1,656	1,656	1,656	1,656	1,656
Log Likelihood	-825.037	-817.601	-840.472	-870.358	-850.706
Akaike Inf. Crit.	1,674.074	1,659.202	1,704.943	1,764.717	1,725.412
Bayesian Inf. Crit.	1,739.020	1,724.148	1,769.889	1,829.663	1,790.358

Note: p<.05*