

Polls and Elections

Still Part of the Conversation: Iowa and New Hampshire's Say within the Invisible Primary

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We propose that the extant literature has underestimated the central roles of Iowa and New Hampshire within the invisible primary and, thus, party nominations. Since candidates and the news media focus disproportionately on these states early in the nomination season, impressions of candidate performance within these states have a disproportionate influence on the invisible primary long before their actual outcomes are observed. Using a Bayesian vector autoregression we find that polls within Iowa and New Hampshire have a more consistent influence on candidates' levels of national news media coverage and national polling than vice versa. We also find that campaign contributions are as responsive to early state polls as they are to national forces or campaign activities. Although these findings do not dispute that candidates need a broad basis of national support to win a party's nomination, they explain why candidates continue to campaign early and intensely in these first-in-the-nation contests.

The presidential nomination process continues to change, and so too does our understanding of which factors drive nomination outcomes. The most recent changes have come in the form of drastic adjustments to the schedule of state contests. Nomi-

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nation campaigns have become increasingly front-loaded, compressed, and nationalized (Mayer and Busch 2004), making the preprimary campaign, or what is also termed the invisible primary or the exhibition season, a powerful force in the selection of party nominees for president. Indeed candidates for nomination often withdraw in this period, and party nominations are clinched within, what was until recently, mostly shorter and shorter time periods (Haynes et al. 2004; Norrander 2006). Recent scholarship now emphasizes that a candidate's level of funding and national political support at the beginning of the primary season largely determine who wins the nomination (Adkins and Dowdle 2001, 2005; Cohen et al. 2008; Mayer 1996, 2003; Steger et al. 2004; Steger 2007). As a result, long shots have less of a chance to compete with early front-runners (Steger 2000), leading some scholars to conclude that parties have essentially turned back previous electoral reforms (Aldrich 2009; Cohen et al. 2008).

While the national invisible primary appears to hold greater importance, the role of the traditional early state bellwethers, Iowa and New Hampshire, is now in doubt. Recent analyses of what predicts nomination success have painted the contribution of New Hampshire as small and Iowa as nonexistent (Adkins and Dowdle 2001; Steger et al. 2004; Steger 2007), to the point some scholars liken these contests to "bumps in the road" (Adkins and Dowdle 2001, 2004). The minor role of these states thus pales in comparison to that of national party endorsements, campaign cash reserves, and national poll standings at the end of the invisible primary period.

Although convincing, these findings present a puzzle: why then are candidates still devoting a substantial amount of attention and resources to these contests?¹ We propose that Iowa and New Hampshire continue to be powerful players within nomination contests, because the increasingly visible invisible primary grants these states a different means of influence. National levels of candidate viability and exposure are responsive to the dynamics of these state contests, since long-shot candidates and the media predominately focus on these two states throughout the invisible primary. As a result, the happenings of the Iowa and New Hampshire campaign have an important say within the national invisible primary before the votes in these states are actually tallied.

Using data from the 2008 presidential nomination campaign, we evaluate these claims with daily measures of candidate prominence in national news coverage, national polls, and Iowa and New Hampshire polls during the last half of 2007. We accommodate for missing data, sampling error, and reciprocal influences by estimating a Bayesian state space vector autoregression model. We find that a candidate's early performance within Iowa and New Hampshire is equally if not more of a contributing factor to national polls and national media coverage as they are a reaction to them. The subsequent analysis of weekly campaign contribution totals also shows that polling performance within these early states has a strong influence on campaign contributions during the invisible

1. These questions were certainly at play for front-runners during recent nomination campaigns. In May 2007, newspapers reported that Hillary Clinton's deputy campaign manager advocated she pull out of Iowa and concentrate on the slew of states holding their contests on February 5; her campaign ultimately decided against this strategy. Although he only resorted to this strategy after he failed to show promise in these early states, Rudy Giuliani's concentration on Florida failed to materialize into any success. Four years later, Huntsman boldly ignored Iowa to focus on New Hampshire but failed to gain momentum there.

primary that equals the contribution of national polling performance. Although these findings do not dispute the importance of candidates needing sufficient national support entering an election year to win a party's nomination, they provide evidence that states like Iowa and New Hampshire still have a profound but indirect influence on the process. To the extent a candidate can gain early support in these states, they will likely increase their national popular support and campaign contributions before any election is held.

Front-loading and the National Invisible Primary

As presidential nominations have become more front-loaded the influence of early states within the selection process has been questioned. Initially, some scholars proposed that front-loading would bolster the influence of Iowa and New Hampshire within nominations by allowing a winner's momentum to affect more contests within shorter periods (Bartels 1988). However, front-loading has also forced candidates to have a campaign organization in place that can compete across numerous states almost contemporaneously. Thus, despite Iowa and New Hampshire's ability to propel candidates onto the national stage, candidates are unable to reap the benefits of an early victory if they lack a strong preexisting national organization (Aldrich 2009; Butler 2004).

Not only has a compressed and front-loaded primary limited the opportunity for early state momentum effects, but studies now suggest that Iowa and New Hampshire victories have little benefits compared to establishing a large national campaign organization. The bulk of the literature has suggested that a candidate's campaign funds, national poll standing, and party organization support entering election season are the strongest predictors of nomination success. Mayer (1996, 2003) has consistently shown that national poll standings at the beginning of the election year are powerful predictors of nomination success. Likewise, other scholars find a campaign's cash reserves entering the election year can determine who is the nominee (Adkins and Dowdle 2001). Cohen et al. (2008) and Steger (2007) have also recently added to this literature by pointing to the role of party insider support measured through endorsements as key predictors of success. Throughout their detailed analysis, Cohen et al. (2008) find that party endorsements are as powerful a predictor of nomination success as national poll standing, and it outperforms other factors like campaign funds and national media coverage.

Moreover, when included as a predictor of primary success, most analyses fail to demonstrate that Iowa or New Hampshire outcomes make a significant contribution. Adkins and Dowdle (2001) found that after controlling for national poll standings and fund-raising numbers, New Hampshire and Iowa outcomes mostly improve predictions of candidate placement but do not modify the winner. At most, Steger et al. (2004) and Steger (2007) find that New Hampshire has a "correcting" effect on candidate performance, where New Hampshire's contribution is much more influential among Democrats. In their analysis Cohen et al. (2008) found that early state victories make significant contributions, but they also found these victories reflect national invisible primary forces such as a campaign's overall level of funding.

Why Early States Still Matter

These findings demonstrate that candidates need a prominent national presence and insider party support when entering the contest period, but they also question the necessity of campaigning in the early state contests of Iowa and New Hampshire. We believe such analyses have yet to fully recognize the complete nature of Iowa's and New Hampshire's influences within the nomination process. As the invisible primary has gained importance and attention within nomination contests, these states have remained a focal point for candidate competition during the invisible primary. In fact, we propose that Iowa and New Hampshire are such an integral part of the exhibition season that many national forces, like media coverage, polls, and campaign funds, partially reflect the performance of candidates within these states before their votes are actually cast.

Iowa and New Hampshire possess a prominent role within the invisible primary partly because long-shot candidates essentially have to win these states if they hope to win the nomination. Front-runners may have enough money and a large enough organization to ignore these early states, but long shots have less resources to remain relevant without early success. Since they cannot divide their resources across multiple contests, these candidates focus on the early states in the hopes that an impressive showing will provide them with positive national media exposure and the resulting necessary resources and popular support to continue their candidacy. Indeed, recent long-shot candidates have explicitly stated their belief that by concentrating their efforts in Iowa or New Hampshire they can gain national support and slingshot their way through to victories in the immediately following contests (Will 2007).

With many candidates concentrating their efforts in these states and given their past role as first-in-the-nation contests, journalists covering the exhibition season often look to these states for indications of a candidate's potential success. Front-loading and greater candidate activity has increased journalist incentives to cover the invisible primary. Beyond national polls and campaign finance reports, the early competitive happenings in Iowa and New Hampshire are easily placed within journalists' predilection for a horserace narrative. Iowa and New Hampshire also provide familiar settings with established campaign events that occur throughout the years preceding the election, including debates, banquets and town hall meetings. Moreover, because many candidates and journalists concentrate on these states, front-runner candidates, who may not need to win these states, might still find that competing in these states provides beneficial levels of media exposure and momentum. These states are thus able to maintain their prominence within the exhibition season of the nomination campaign despite continued doubts about the necessity of winning such states.

Buell (1996) previously found that early activities in these first states were a prominent component of news media coverage and candidate activities prior to the election year. Even prior to the 2008 nomination, when numerous contests in large states were less than a month after New Hampshire's primary, there was a disproportionate focus on these early states among both the news media and candidates. For instance, Table 1 compares how often the national news media and candidates focused on Iowa and

TABLE 1
Relative Focus of 2007 Invisible Primary

<i>State</i>	<i>National Media Articles</i>	<i>Candidate Visits</i>
Iowa	50.9%	31.4%
New Hampshire	33.0%	16.2%
California	10.7%	5.6%
Observations	2861	1989

National media articles represent percent of *New York Times*, *Washington Post*, *Los Angeles Times*, or *Associated Press* articles referencing state contest. Candidate visits represent percent of candidate daily visits devoted to each state out of all daily visits recorded by *New York Times* and *Washington Post* candidate visit trackers. Numbers calculated over July 9–December 31, 2007.

New Hampshire relative to California, a large February 5 primary state, during the last half of 2007. Of the 2,861 news articles published by the national media organizations that we coded, over 50% made reference to the contest in Iowa, and 33% made reference to the competition in New Hampshire. In comparison, California was only referenced 10.7% of the time. A similar ratio of attention is also found when tabulating a candidate's daily visits. Of the 1,989 daily campaign visits recorded by either the *Washington Post* or *New York Times* calendar of candidate appearances, 31.4% of those appearances were in Iowa and 16.2% were in New Hampshire, whereas only 5.6% were made in California.²

High levels of media coverage and candidate attention provide these states with numerous ways to influence the nomination campaign in advance of the primaries and caucuses. First, candidates performing well in these early states can gain significant amounts of media exposure. For candidates to gain national support, voters must first have sufficient levels of information about that candidate (Bartels 1988). Since the news media often focus on these early states during the invisible primary and also focus on front-runners and those candidates who do better than expected (Just et al. 1996; Patterson 1980; Robinson and Sheehan 1983), then a candidate who is perceived to be performing well in this state should reap significant gains in national media exposure.

Early action in Iowa and New Hampshire can also shape strategic incentives for supporting a candidate, send credible cues, and also temper candidate evaluations. A strong early performance within these states informs expectations of who is likely to win these states and, consequently, journalist, voter, and contributor beliefs of a candidate's national viability. Moreover, along the lines of Morton and Williams (1999), early information from these highly competitive states can send important signals to voters and contributors about which candidate to support within multicandidate fields. Early success in these states might also motivate individuals to assess why a candidate is successful and then reevaluate their own evaluations based on such criteria (Mutz 1997). Indeed, a recent study has similarly proposed that what happens in Iowa and New Hampshire is especially important because it provides signals to the rest of the country

2. Similar disproportionate rates of attention also hold if one excludes December from the analysis to account for the proximity of each state's voting day.

about candidate viability (Redlawsk, Tolbert, and Donovan 2011). These gains in information and viability from early state performance can also benefit early levels of primary giving (Adkins and Dowdle 2002). Contributions often follow candidates who are portrayed as performing well by the media, as leaders within the news media's horserace frame are known to receive significant fund-raising advantages (Mutz 1995).

An important clarification to this proposition is that we do not view Iowa and New Hampshire performances as necessarily in opposition with party insider endorsements (Cohen et al. 2008). Indeed, Cohen et. al. clearly demonstrate that party insider support *within these states* has a strong predictive influence on early state performance and victories. Our perspective, however, is that as a focal point of candidate competition, these early states send loud and valuable signals to voters and party insiders outside these states. These signals not only operate during the nomination process, but much earlier on as well. This process allows insiders and residents within these states to have an early say on presidential nominations, and it allows candidates to gain from concentrating on these states during the invisible primary.

We acknowledge that one possible contention with this perspective is that increased front-loading and active national campaigns can instead mitigate the independent influence of Iowa and New Hampshire within the invisible primary. If the national contest is soon approaching, then Iowa and New Hampshire voters may rely more on assessments of which candidates can effectively compete (and win) at the national level. Along these lines, increased front-loading has the potential to make these early state outcomes mostly a reflection of national viability forces, like national polling, rather than a driving force. A strong early performance within these states may benefit candidates but not represent each state's independent contribution, simply its responsiveness to national forces.

We believe, however, that since news media coverage and candidate competition is mostly concentrated within these early states during the invisible primary, impressions of national viability are quickly tainted with local influences. Given the national news media's frequent focus on front-runners and horse race elements of coverage, a candidate's fortunes within these states have important implications for national levels of a candidate's exposure and viability. While virtually unexplored in the literature, the potential direction of influence is particularly important, because it suggests that the influence previous models have ascribed to national poll standings, campaign contributions, and levels of media coverage entering the election year may partially reflect a candidate's early performance within these states. Thus this article ends where most previous studies of the nomination process begin: at the start of the election year. Below we exploit longitudinal models and multiple data resources that allow us to uniquely parse out the direction of influence between these early state bellwethers and the national forces within the nomination process.

Data and Methods

We propose that the extant literature has underestimated the central roles of Iowa and New Hampshire within the invisible primary and, thus, party nominations. We

evaluate our claim in two steps using time series data from the invisible primary prior to 2008. Our first goal is to determine the direction of relationships between local and national campaign forces, so we investigate what influence national and early state performance factors have on each other by analyzing their dynamic interaction. We focus on national news media coverage and national polls as measures of national forces because they closely correspond to elements that should have an influence on early state support: information and viability. We address the complicated nature of their relationship by estimating a vector autoregression. This provides us with a unique ability to sort out causal relationships since it can determine how past movements in one variable relate to future movements in the other. Consequently, we recognize and account for the endogenous relationships that recently have been found to exist among national campaign forces (Box-Steffensmeier et al. 2009).

Our second analysis evaluates the relative contribution of national and early state performance on invisible primary campaign contributions. We analyze campaign contributions because cash reserves are another important predictor of nomination success (Steger et al. 2004). Although the independence of their influence is rightly questioned (Cohen et al. 2008), raising funds is still a necessary task that takes up a large portion of candidate efforts during the exhibition season. Moreover, early campaign donors also represent a group of skilled political observers and insiders who candidates desire and need to attract. If campaign donors are responsive to candidate performance within early states, then it demonstrates that the dynamics of these contests can partially mitigate fund-raising disadvantages for long-shot candidates with less extensive organizations.

National News Media Coverage

We measure national news media coverage by content analysis of newspaper articles on news web sites. The main benefit of newspaper web sites is that the content is preclassified in the form of web pages or news feeds that are dedicated to the presidential primary campaign. Considering newspaper stories on the web are also in available electronic format, coding newspaper web sites substantially reduces the time and effort needed to retrieve and identify relevant documents. Beginning in July of 2007, we employed daily automated content coding of newspaper web sites.³ Downloaded information includes the title, the journal, the time, and the content of the article, as well as the time of its posting.

Table 2 presents the details of our national news media content. We comprise our measure of national news media content using four sources: campaign coverage from the *Associated Press* politics wire and similar news feeds and pages from the *Washington Post*, the *New York Times*, and the *Los Angeles Times*. Each adds their own dimension to an indicator of the national news media's focus. The *Associated Press* politics wire provides national news media content that is likely distributed to numerous local newspapers. The other three sources provide different glimpses into the focus and content of the more elite national newspapers. Their content is less likely to be distributed nationally, but they

3. Using LexisNexis and other databases, we were able to ascertain a high level of similarity between a paper's print and online content.

TABLE 2
National News Media Sources

<i>News Organization</i>	<i>Source</i>	<i>Articles</i>	<i>Sentences</i>
<i>Associated Press</i>	Politics RSS	1667	45465
<i>Washington Post</i>	Election RSS	402	21163
<i>New York Times</i>	Politics RSS	640	26600
<i>Los Angeles Times</i>	Politics RSS	478	20362

remain influential as inner-ring cue givers who shape the attentions of elites in politics and news organizations (Shaw and Sparrow 1999).

For each party, we measure a candidate's status within the news media by simply tabulating the percentage of sentences referring to a candidate out of all sentences referring to a candidate of that party.⁴ For instance, if there are four sentences referencing Democratic candidates that day and two of these also referenced Hillary Clinton, then she would receive a score of 50% for that day. The measure creates a useful summary of a candidate's relative prominence within each article that also inherently gives greater weight to articles that talk about the candidates more. Although our results from an article-based measure are substantively the same, the sentence salience measure provides greater detail and more variance between candidate mentions.

National and State Polls

We supplement our longitudinal media coverage data with a collection of national and early state polls.⁵ National poll standings are important indicators of invisible primary success because they are considered to be one of the more powerful predictors of winning a party's nomination (Mayer 1996). State polls have their biases and are not necessarily the most accurate predictor of candidate success within a state, especially for caucuses. However, we are not concerned with who will win the primary or caucus, but rather popular perceptions of each candidate's relative standing in the state. Polls are perhaps the most important and prominent measure of candidate performance within a state as they are frequently reported and used by the media and others to evaluate each candidate's relative standing.

We include in our analysis any poll asking a close variant of the following question: "If the Republican/Democrat primary election were held today, who would you vote for—or who are you leaning toward today?" The consistent presence of this question in state and national polls provides the opportunity to create time series of candidate standing from July 2007 through to the end of December. For the respective Democrat and Republican contests, our sample includes 187 national polls covering 80% and 84% of the days of our analysis, 102 polls in Iowa covering 66% and 65% percent of days in our analysis, and 77 New Hampshire polls covering 60% and 67% of days in our analysis.

4. Candidate references were coded based on explicit name references (i.e., no pronoun references) and using a standard variety of derivative keywords for each candidate's campaign.

5. We used pollingreport.com and pollster.com to collect relevant polls from each population.

Our models of these polls take into account missing data and differences in each poll's sample size to weigh their relative accuracy. When more than one poll is in the field on the same day, we take a weighted average of the two results based on sample sizes.

Campaign Contributions and Candidate Spending

For our second analysis, we test whether early state performance has significant effects on future campaign contributions over the invisible primary. We focus on campaign contributions because it represents one of a candidate's main goals for the invisible primary (Goff 2004). Although funds alone do not determine victories, they are an important indicator of national party support and are necessary for party nomination success. Moreover, contributors represent a powerful group of attentive political elites who we expect are responsive to signals from these early states.

We combine our measures of national media coverage and national and state polling levels with longitudinal measures of campaign contributions using the Federal Elections Commission (FEC) individual donor data set. The data record the receipt date and contribution amount of all contributions made by individuals giving over \$200 to a campaign organization. These contributions represent over a majority of the funds raised for each candidate and range up to, for the case of Giuliani or Clinton, almost 90% of a campaign's total amount.

We also include additional control variables in our campaign contribution analysis. Previous studies emphasize that candidates who spend money on fund-raising are more effective at earning contributions (Hinckley and Green 1996), and a candidate's fund-raising spending shows a significant positive association with fund-raising totals during the invisible primary (Adkins and Dowdle 2002). To measure fund-raising activity, we used the FEC's itemized candidate expenditure reports and coded each transaction for its possible connection to fund-raising activities. Our resulting measure totals the weekly amount of money each candidate reported spending on travel, events, and staff-related expenses outside of the early primary states.⁶

Methods

Daily measures of a candidate's polling level and media prominence suffer from sampling error and frequent missing data. In the case of the news media series we have few missing data but a small daily sample. In the case of the public opinion series, the

6. There is a great deal of similarity in how reports account for their expenses. For example, all campaigns have entries listing "catering" or "event food" to detail expenses for serving food. We used a selection of keywords and regular expressions to first automatically code transactions into broader categories of expenses and then personally examined these results to verify each transaction's classification. All expenses that are listed for the purposes of airfare, travel, lodging, transportation, or flights were deemed travel-related expenses. All expenses that are listed for the purposes of catering, decorations, audio-visual, equipment rental, events, facility rentals, or staging were deemed event-related expenses. All expenses that are listed for the purposes of personnel, payroll, salary, consulting, office expenses, computers, rent, or research were deemed staff-related expenses, which could be used for the purposes of fund-raising. All expenses that are in Iowa, New Hampshire, South Carolina, Nevada, and (for Republicans) Michigan were excluded since activities in these early contest states are more likely related to campaigning.

opposite case is true; polls are not taken every day, but when they are taken, they have relatively small levels of sampling error. To accommodate both these problems, we specify a Bayesian state space model to estimate the underlying population parameters via Gibbs sampling.

State space models specify two structural equations. The first is an *observation model*, where each day's observation is considered a sample estimate of a parameter and where the number of news articles or surveyed individuals determines the level of uncertainty in the day's estimate. The second is a *transition model* that specifies how the underlying parameters relate to each other over time. In short, the two equations allow one to take into account both the level of error in the daily observations (or nonobservation) and the knowledge of previous and future observations to generate estimates of the structural parameters.

For our series, let p_{it} be the observed proportion of sentences or individuals mentioning or supporting candidate i on day t and n_t be the sample size. For ease of estimation, we use the normal approximation of the binomial distribution to estimate the extent of sampling error in each observation.⁷ Following the Central Limit Theorem, we can specify p_{it} as an unbiased estimator the latent proportion, θ_{it} , with normally distributed sampling error:

$$p_{it} \sim N(\theta_{it}, \sigma_{it}^2)$$

where

$$\hat{\sigma}_{it}^2 = \frac{p_{it}(1-p_{it})}{n_t}$$

Estimates of θ_{it} are derived from the observation model but also a transition model that specifies how past and future observations relate to each other, thereby accommodating for missing observations. These two estimates are combined by using Bayes Theorem to adjust the expected value from transition model using the observation model, a process commonly termed the Kalman Filter. If there is no observation at time t , then the expected value of θ_{it} is simply the predicted value based on previous observations and the transition model. If there is an observation at time t , the Kalman Filter estimate of θ_{it} becomes a weighted average of the transition model's predicted value and the observed value based on each the observed value's error variance. As the observed value's sampling variance gets smaller, the weighted estimate will approach the observed value. We can also adjust our estimates by using future observations; if we observe a value for p_{it} that is higher than expected, we can revisit and adjust past estimates of θ_{it} higher as well.⁸

In terms of specifying a transition model, as stressed above, the relationship between the media, the electorate, and the candidates is not necessarily unidirectional. Rather, the primary campaign is often perceived as self-reinforcing, where the different players feed off one another. As Buell (1996, 11) comments, the "sheer volume of news

7. To address rare instances when observed proportions of zero, we replace the observed proportion with its Laplace proportion calculation (adding one to the numerator and two to the denominator) and standard error estimate.

8. Green, Gerber, and De Boef (1999) provide a full discussion of the basic logic and benefits of the Kalman Filter and smoother for public opinion data.

coverage generally interacts with poll ratings in so reciprocal a fashion that cause and effect are difficult to disentangle.” Thus evaluating their longitudinal relationship is not a straightforward task.

To sort out these influences we specify a vector autoregression (VAR) transition model, where past values within each candidate series—national news, national polls, and state polls—are regressed on one another (Freeman, Williams, and Lin 1989). This allows us to measure the influence of national forces on state polls while at the same time controlling for the influence state polls have on these national forces. We regress each latent or underlying series on its own past values as well as the past values of other regressors. For instance, on day t a candidate’s latent level of national news coverage (θ_{NM_t}), national public support (θ_{NP_t}), and the Iowa and New Hampshire public support (θ_{IA_t} , θ_{NH_t}) are expressed as follows:

$$\theta_{NM_t} = c_{NM} + \beta_{11}\theta_{NM,t-1} + \beta_{12}\theta_{NP,t-1} + \beta_{13}\theta_{IA,t-1} + \beta_{14}\theta_{NH,t-1} + e_t$$

$$\theta_{NP_t} = c_{NP} + \beta_{21}\theta_{NM,t-1} + \beta_{22}\theta_{NP,t-1} + \beta_{23}\theta_{IA,t-1} + \beta_{24}\theta_{NH,t-1} + e_t$$

$$\theta_{IA_t} = c_{IA} + \beta_{31}\theta_{NM,t-1} + \beta_{32}\theta_{NP,t-1} + \beta_{33}\theta_{IA,t-1} + \beta_{34}\theta_{NH,t-1} + e_t$$

$$\theta_{NH_t} = c_{NH} + \beta_{41}\theta_{NM,t-1} + \beta_{42}\theta_{NP,t-1} + \beta_{43}\theta_{IA,t-1} + \beta_{44}\theta_{NH,t-1} + e_t$$

where the vector e_t is distributed multivariate normal with mean zero and a covariance matrix Σ . We utilize the Sims-Zha prior (Brandt and Freeman 2006) to calculate posterior estimates for our VAR transition model. We present estimates from a transition model with a single lag since estimates of each series are relatively smooth, where lagged observations are highly collinear, such that substantive inferences do not change with additional lags.⁹

We derive estimates of each parameter by taking samples from its posterior distribution using the Gibbs sampler. Sample draws of θ were taken using the forward-filtering backward-sampling algorithm (Frühwirth-Schnatter 1994) and then used to calculate and update draws from the posterior distributions of β and Σ (Brandt and Freeman 2006). The simulation chains converge quickly with little autocorrelation. The first 1,000 iterations were discarded, and the presented estimates are based on a sample of 6,000 draws from three separate MCMC chains (18,000 total). Raftery-Lewis and Gelman-Rubin diagnostics all indicate convergence and sufficiently sized samples of the posterior distribution.

We estimate a model for each candidate with consistent polling and media exposure levels over our sample time frame. This resulted in separate models for Hillary Clinton, John Edwards, Barack Obama, and Bill Richardson for the Democrats and Rudy Giuliani, Mike Huckabee, John McCain, Mitt Romney, and Fred Thompson for the

9. In this case, the benefit of the Sims-Zha prior is that it is expressed in terms of the structural parameters and not their reduced form. We use the following hyper-parameters: $\lambda_0 = .8$, $\lambda_1 = .7$, $\lambda_2 = 1$, $\lambda_3 = 1$, $\lambda_4 = .2$, $\mu_5 = 0$, $\mu_6 = 1$. We specify $\mu_6 > 0$ since these four variables are partly driven by external structural forces, such as party insider support, that help or hurt a candidate as the campaign progresses and can create common trends.

Republicans. Each series starts on July 9 and runs until the day before the Iowa caucus (January 2), a total of 178 daily observations for each series.

To determine the direction of influence, we focus on the results of our impulse response functions (IRFs), which simulate the system-wide consequence that a change in one variable has on future values of all other variables. Compared to analyzing the reduced-form coefficients, this allows us to estimate the combined effect of direct and indirect relationships for each series. Using the posterior sample of the reduced form coefficients, we impulse the system with the mean of the Cholesky decomposition of Σ , where national media coverage is ordered first, followed by national polls, Iowa polls, and then the New Hampshire polls.¹⁰

Our second analysis uses these same measures from the nine candidate models to examine whether early-state performance during the invisible primary provides benefits for a candidate's campaign contribution totals. Since many campaigns report their receipts only during the weekdays, we aggregate our contribution, polling, and media coverage measures to the weekly level, resulting in 24 observations per candidate. In this case, we are less concerned about reciprocal relationships (campaign contribution levels are only publicly observed through quarterly reports) and are more interested in determining whether contributions are responsive to a candidate's early state performance. To do so, we estimate a within-effects (or fixed effects) panel data model where each candidate's weekly contribution totals (logged) are regressed on lagged weekly averages of the filtered measures of national media exposure, national polling, state polling, and a candidate's spending on fund-raising-related activities. We present within-effects estimates because they control for any constant candidate-specific differences and instead test for how much past changes in national or early-state forces drive future changes in campaign contribution levels for each candidate.

Results

To demonstrate how our measures capture the nature of media and polling dynamics within both the Democratic and Republican contests, we present the latent or filtered values of media exposure and polling percentages for Huckabee and Obama in Figure 1.¹¹ Both graphs illustrate how national and state forces exhibit similar dynamics during the invisible primary. These dynamics provide some indication of whether state or national forces have an influence within the entire system for a candidate. For the case of Huckabee, his polling numbers in Iowa were first to take off, and his media exposure and national poll numbers soon followed. By the time polls in Iowa showed him tied or ahead of Romney, his national polling and media profile grew substantially higher, although

10. We present results from this ordering since it is favored *against* our hypothesis, as it grants national forces a greater opportunity to influence state polls.

11. Similar graphs and summary tables of results for each candidate's model have been made available as supplemental material in a web appendix.

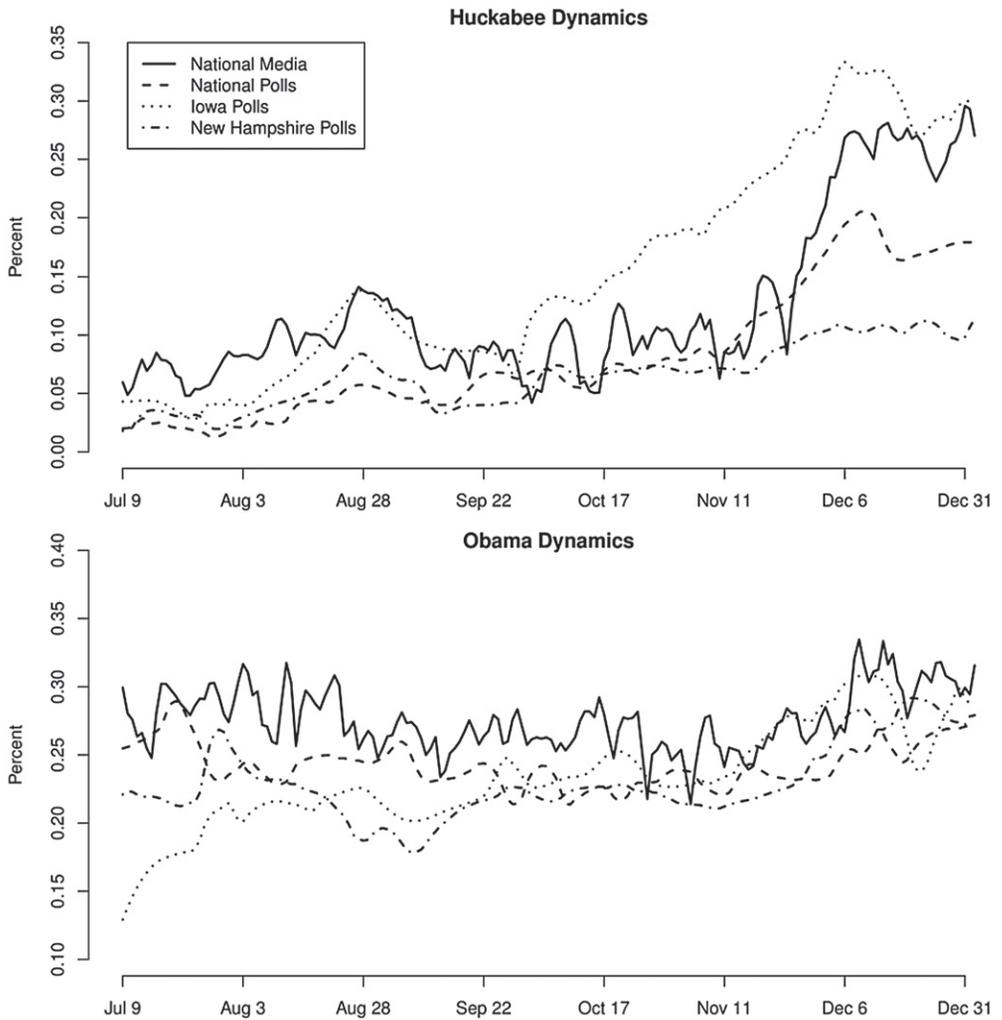


FIGURE 1. Invisible Primary Media Coverage and Polling Dynamics.

Lines represent daily mean expectations from the state space vector autoregression posterior sample of Huckabee and Obama's latent or filtered levels of national media exposure, national poll standing, Iowa poll standing, and New Hampshire poll standing.

New Hampshire polls failed to show a similarly sized response. For Obama's estimates, we find that national and state forces shared gains and losses, but it is less clear which of these was a driving force.

An analysis of the impulse response functions allows us to identify the extent to which these various possible relationships are supported by our statistical estimates. For instance, the first column of Figure 2 plots out our estimate of the mean response of each series in response to a percentage point shock in Huckabee's Iowa poll numbers, where the shaded region indicates the 90% Bayesian central credible intervals (CCI). As our

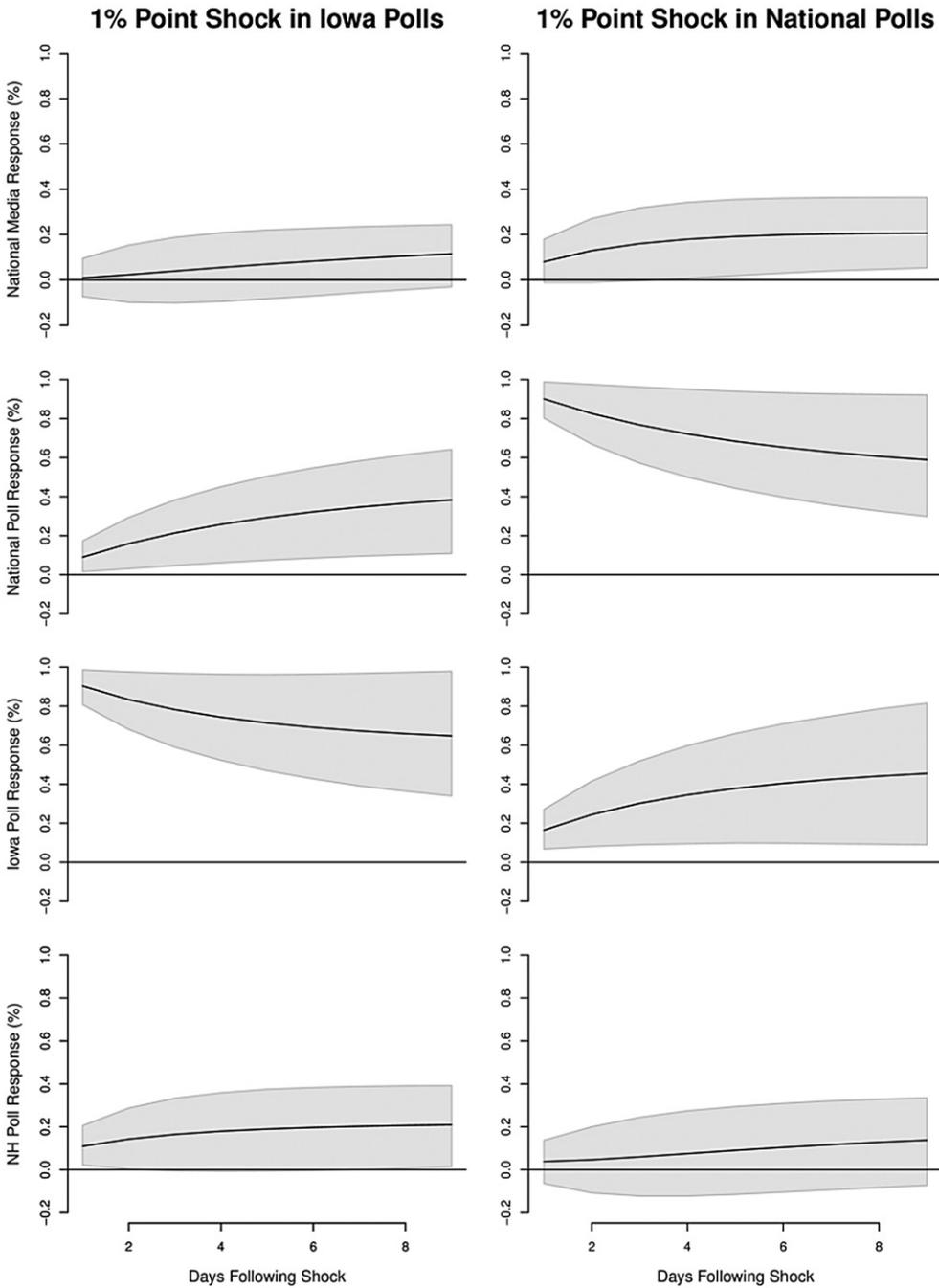


FIGURE 2. Impulse Response Function Estimates for Mike Huckabee.

Lines represent mean estimates and shaded regions indicate 90% Bayesian central credible intervals. Each series on percentage point scale.

initial inspection suggested, we find that a percentage point shock in Huckabee's Iowa polls produces a clear increase in his national poll and New Hampshire poll standings the next day. Furthermore, as time develops, these positive effects reverberate to make approximately 60% of Huckabee's Iowa polling gain permanent and further increase his national media coverage, national poll numbers, and New Hampshire poll numbers.

To understand why the responses of these other series grew over time, examine the second column of Figure 2. For national polls, we also estimate that an increase in national support has immediate effects on Huckabee's support in Iowa. But again, as his Iowa poll numbers respond, they also help to maintain his national polling and create positive trends in media coverage and support in New Hampshire. In summary, Huckabee's initial success in Iowa was an instigating force that started his campaign's rise, but it is also apparent that his gains in national support had positive repercussions for his campaign in Iowa.

To summarize the multiple results from all our IRF estimates, we present our estimates of each series' response to a percentage point shock from each other series seven days previously.¹² We focus on the effects of shocks after seven days, since our interest is in identifying which forces have persistent effects, and since such time allows for indirect relationships to reverberate within the system. The square boxes plot out the estimated mean response in each figure, and the vertical lines represent the 90% Bayesian CCI.

Figure 3 presents the expected change in state and national polls in response to a percentage point increase in national news media coverage one week prior. Across all candidates, we observe a consistent pattern of results, where past changes in national media exposure fail to produce any clear benefits in future polling levels. Even when examining predicted changes in polls only one or two days later, we fail to find that increases in national news media exposure, while holding polling forces constant, produce any consistent future changes in public support. In combination with results from recent analyses (Cohen et al. 2008; Steger et al. 2004), there is little evidence that a gain in national news media exposure, in and of itself, provides any polling benefits within the invisible primary.

In contrast to national media exposure, there is sufficient evidence that an increase in national public support is associated with future increases in support at the state level for some candidates. A summary of these results are presented in Figure 4. Interestingly, the responsiveness of state polls to national support was most consistent for each party's national poll front-runner, Giuliani and Clinton. For both of these candidates, a one percentage point increase in national polls averages out to produce around a .3 percentage point increase in either state's polling levels seven days later. Note that an interpretation of these positive relationships can cut two ways; not only did increases in national poll numbers improve candidate support at the state level, but the reverse is also true. For the case of Giuliani, his withdrawal from competing in these states made his already low

12. The traditional way to present these results is with graphs of the impulse response functions (IRF), as shown in Figure 2. Figure 2, however, only shows the IRFs for two of the four impulses and for only one candidate. To show the IRFs for all relationships would require 144 graphs—that is, 16 graphs for each of 9 candidates. In order to summarize these results, we provide instead the estimates for each of the candidates in each of the relationships one week after the impulse in Figures 3-6.

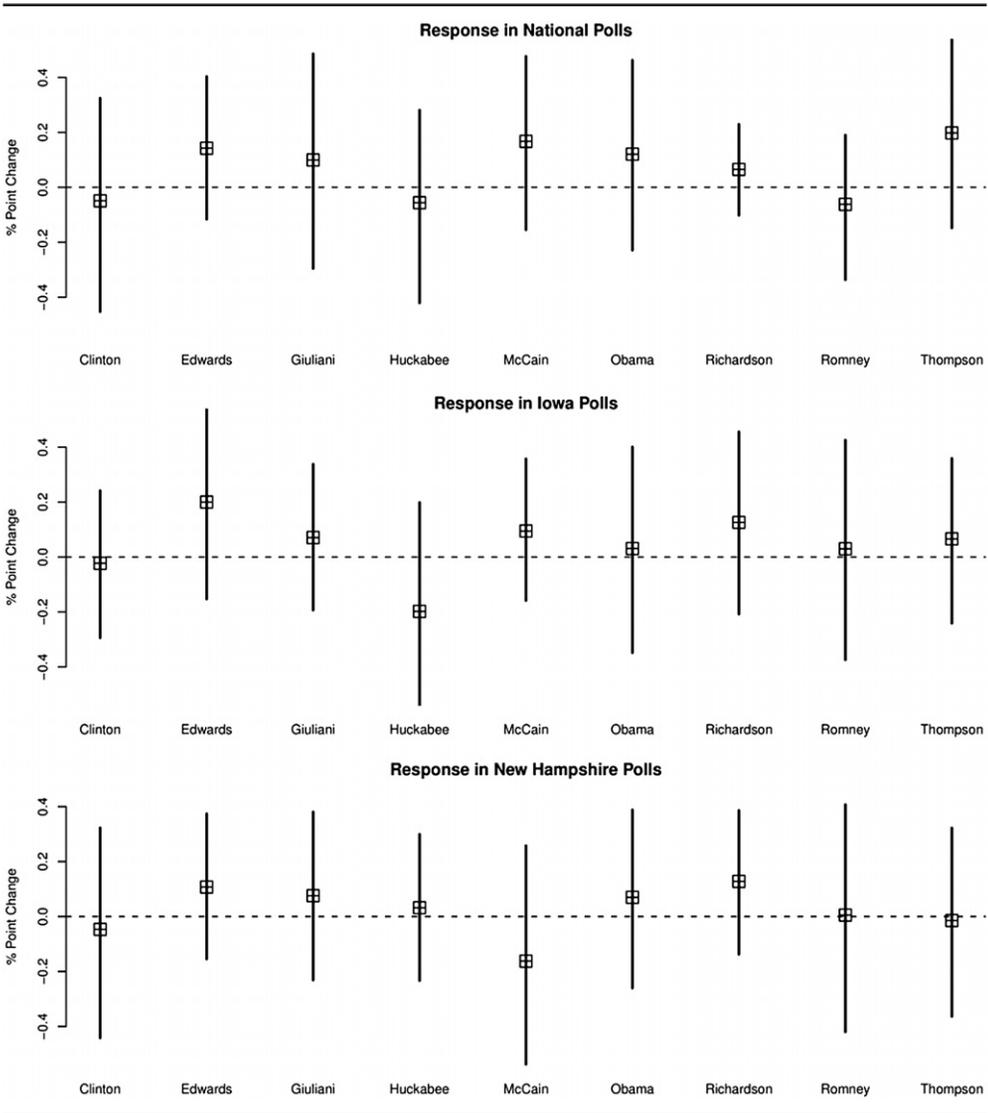


FIGURE 3. Response of National and State Polls to a Past Increase in News Media Coverage. Estimated response in each candidate's national and state public support series to a 1% point increase in one's national news media exposure one week earlier. Squares are centered on posterior means and vertical bars represent 90% Bayesian central credible intervals.

levels of support essentially a function of his levels of national support and national viability, which declined over the latter half of the period. In contrast, both Thompson's and Huckabee's rise of national popularity during the summer and late fall apparently provided each with greater levels of support in Iowa. For other candidates, the estimated benefits of gains in national polls are also positive but not with clear certainty.

In combination, our estimates indicate that changes in national polling numbers were associated with future movements in state polls for some candidates. Therefore,

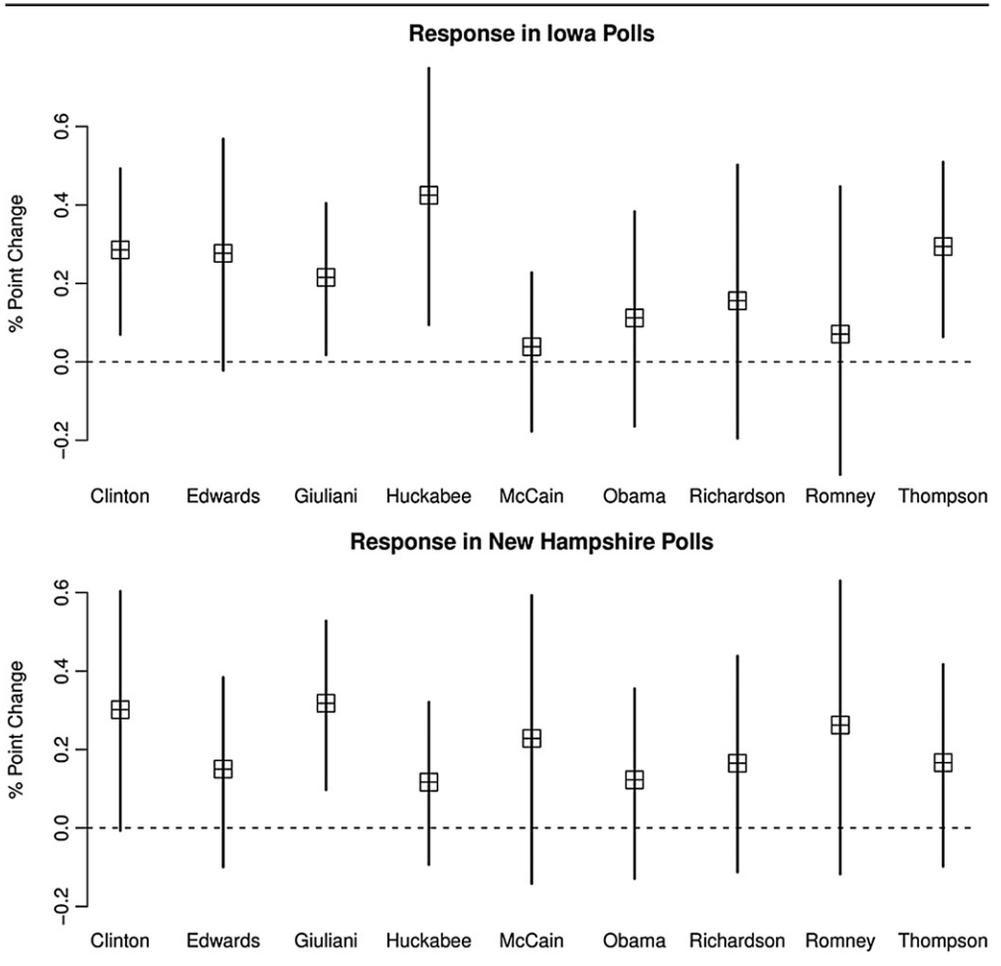


FIGURE 4. Response of State Polls to a Past Increase in National Poll Levels.

Estimated response in each candidate's state polling series to a 1% point increase in one's national public support one week earlier. Squares are centered on posterior means and vertical bars represent 90% Bayesian central credible intervals.

characteristics of the national invisible primary can influence each early state contest. But when we compare these results to the estimated effects of state polling performance on national news media coverage and national polling, it is also clear that these early states play a similar role in shaping characteristics of the national invisible primary campaign.

To evaluate the role of early states, we first compare the responsiveness of the national media to early state poll increases to increases in national polls (Figure 5). For many candidates (Edwards, Huckabee, Obama, Thompson), future levels of national media exposure were positively associated with past changes in their national polling. However, state polling effects were just as frequent and had as similar a size of influence. The national media showed a clear response to previous Iowa polling numbers for Edwards, Richardson, Romney, and Thompson, and responded to New Hampshire

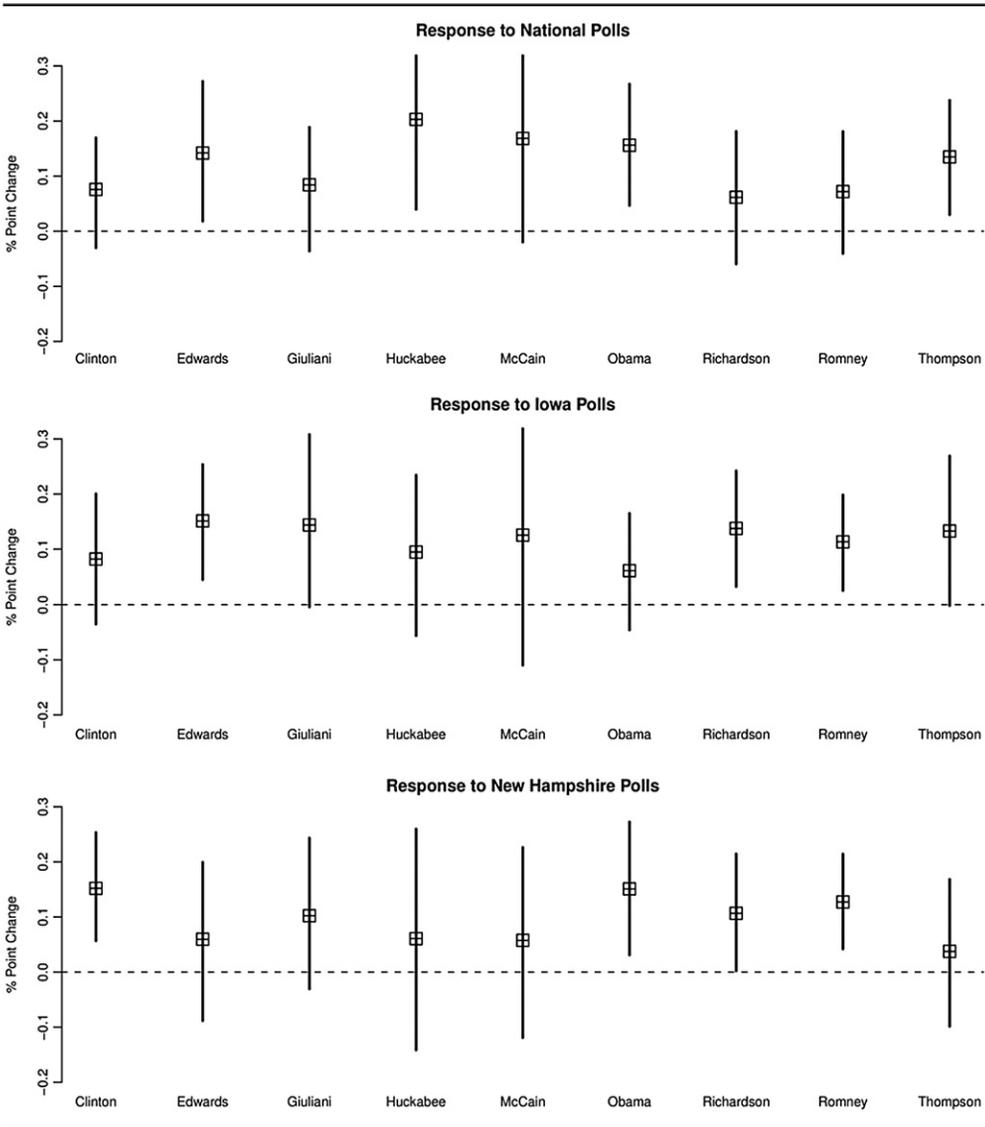


FIGURE 5. Response of National Media to Past Increase in Polls. Estimated response in each candidate’s national media coverage to a 1% point increase in one’s national or state polling series one week earlier. Squares are centered on posterior means and vertical bars represent 90% Bayesian central credible intervals.

polling levels in the case of Clinton, Obama, Richardson, and Romney. In most cases, a percentage point gain in polling levels is associated with a .1 to .2 percentage point change in future media coverage levels.

Additional evidence of the responsiveness of national forces to local factors can be found in Figure 6, which presents the predicted response of national polling levels to a percentage point increase in either state’s poll. The estimates indicate that for two of the

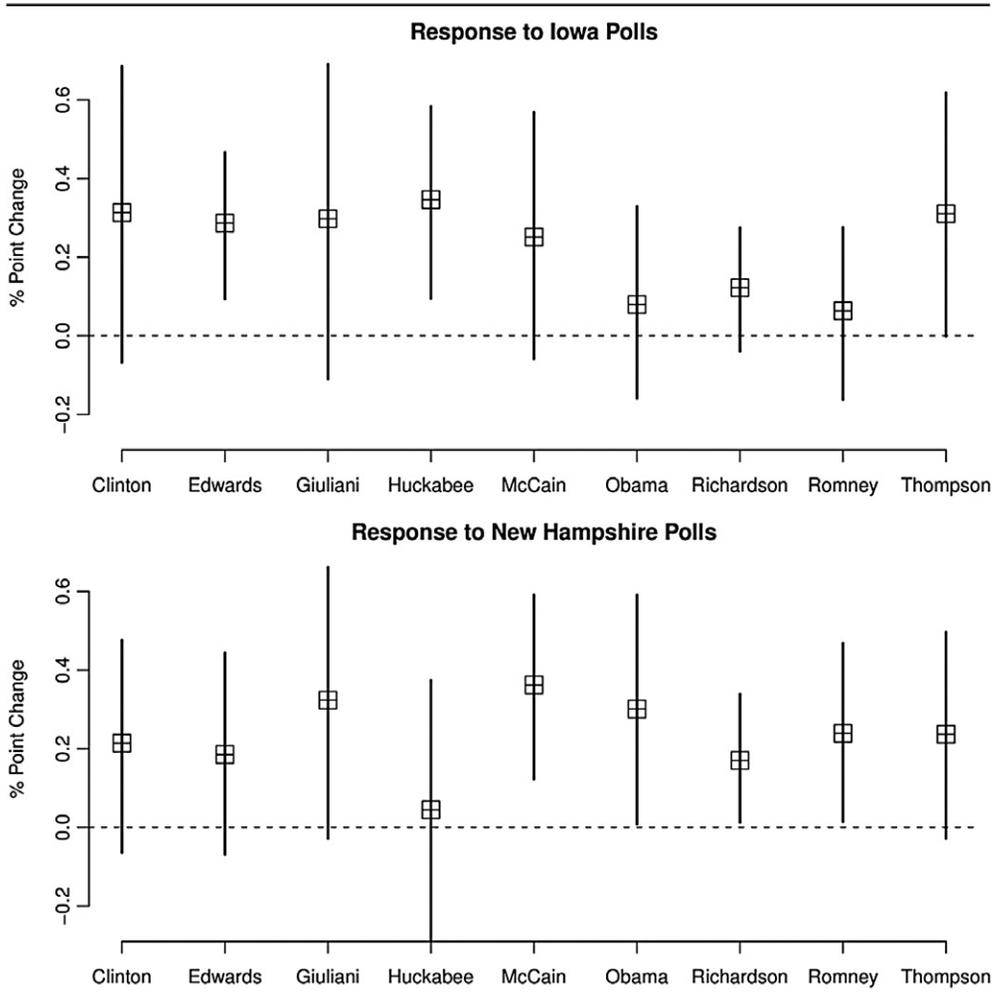


FIGURE 6. Response of National Polls to Past Increase in State Polls.

Estimated response in each candidate's national public support series to a 1% point increase in the Iowa or New Hampshire public support one week earlier. Squares are centered on posterior means and vertical bars represent 90% Bayesian central credible intervals.

candidates who concentrated their efforts on Iowa, Edwards and Huckabee, their national level of support was a product of their performance in this state. In the case of New Hampshire, an increase in state polls for McCain, Obama, Richardson, and Romney produced an average change of .2 to .3 percentage points in their national support one week later. Overall, for six out of the nine candidates we analyze, changes in early state poll levels show a strong association with future national polling gains. Moreover, among those state polls estimates that do not show clear differences from zero, the results are of a similar size and in a positive direction. In comparison to their response to national polls, state polls show a positive influence on national polls that is more consistent and of equal size.

In summary, the evidence across states and candidates does not suggest that either state or national levels of support act as a dominant force driving invisible primary dynamics. In contrast, the results speak much more to the concept that the invisible primary is a period wherein national and early state components speak to and influence each other to generate a shared dynamic. While the spark behind Huckabee's campaign started in Iowa, his success was also driven by the responsiveness of national polls to his success, which brought greater national interest and reverberated back to Iowa to produce even more support among Iowa residents. Overall, the responsiveness of the national invisible primary campaign to a candidate's performance in Iowa and New Hampshire demonstrates that campaign dynamics in Iowa and New Hampshire are an important part of the national conversation that takes place during the invisible primary. National media coverage and national polls respond to candidate performance in these states, allowing candidates to benefit from devoting significant campaign efforts in these states.

Early State Polling and Campaign Contribution Levels

Gains in national media exposure and higher national polls provide some benefits for nomination candidates, but there are many other characteristics of the invisible primary that are associated with nomination success. Raising campaign contributions is an especially prominent element of the invisible primary (Adkins and Dowdle 2002). Candidates devote extensive time and resources to hold fund-raisers and meet donors, and cash reserves are a significant predictor of primary success (Steger 2007).

But a boost in early state polls is another possible route toward gaining contributions. Our results above demonstrate that state polling levels influence national polls, which are an important predictor of fund-raising success (Adkins and Dowdle 2002). Secondly, horse race media coverage of early state polling success may motivate donors in a manner similar to what occurs during election season (Mutz 1995). Considering the amount of attention placed on Iowa and New Hampshire during the exhibition season, it is likely that many campaign donors pay attention to and respond to candidate performance in these early states.

Our analysis of each candidate's weekly contribution amounts from the FEC individual donor data set allows us to evaluate if campaign donors are responsive to a candidate's performance in these early states. Each candidate's weekly contribution total is regressed on his or her early state poll numbers, national poll numbers, and national media exposure levels from the previous week, as measured by our filtered estimates. Since candidate spending on fund-raising efforts influence contribution totals (Hinckley and Green 1996), we include our measure of candidate spending on fund-raising-related activities by averaging the amount spent by the candidate over the previous four weeks.¹³ Finally, since campaign finance receipts for all candidates show systematic trending and

13. To account for decreasing marginal returns to scale of spending, we used a logarithmic transformation of each four-week average.

peaks as the two quarterly reporting deadlines approach, we include a dummy variable to control for the report deadline and another trend variable indicating the number of weeks until the next reporting deadline.

Table 3 presents the results from our fixed effects regression explaining logged weekly contribution totals. We estimate three separate models; the first two include each early state's polling level separately, and the third model includes both measures. Across all these models, we find that the reporting deadline calendar has a significant influence on a candidate's weekly fund-raising total. In support of previous findings, we also find that candidates gain significantly higher contribution levels when they spend more on fund-raising-related activities over the previous weeks. Moreover, although national media exposure again shows no significant influence, our estimates show that gains in a candidate's national polling numbers have significant benefits for future contribution levels.

Regarding the role of early state polls, we consistently find that there are significant financial benefits of early state campaigning. All three model specifications indicate that a candidate's performance within early state polls has significant future benefits for contribution totals. Models 1 and 2 show Iowa and New Hampshire poll numbers each have significant positive effects on campaign receipts when controlling for a candidate's national poll performance as well. Moreover, Iowa and New Hampshire polls emerge as significant predictors over national polls in the combined model (Model 3). However, in

TABLE 3
The Resource Benefits of Early State Campaigning

<i>Variables</i>	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>
Report Deadline	1.443* (.187)	1.475* (.188)	1.473* (.186)
Weeks to Deadline	-0.074* (.011)	-0.074* (.011)	-0.072* (.011)
Fund-raising Spending	0.388* (.146)	0.609* (.144)	0.485* (.150)
Media Exposure	-1.847 (1.97)	-1.493 (1.96)	-2.120 (1.96)
National Polling	5.514* (2.38)	6.491* (2.26)	3.903 (2.46)
Iowa Polling	4.869* (1.56)		3.981* (1.59)
N.H. Polling		5.872* (1.96)	4.658* (2.01)
Constant	6.820* (1.74)	3.586* (1.74)	5.258* (1.84)
N	216	216	216
Within R^2	.558	.556	.569

Dependent variable is the natural log of candidates' total weekly contributions as reported by the Federal Election's Commission individual donor data set. Weekly observations run from July 2007 to the end of the year. Within-effects (fixed-effects) panel data regression coefficients printed with standard errors in parentheses; * indicates $p \leq .05$, two-tailed test.

all cases a joint F-test is unable to reject the null hypothesis that these three coefficients are equal. In short, the financial benefits of a boost in either New Hampshire or Iowa poll numbers are equal to a similar gain in national public support. Therefore, we find further evidence that the dynamics within Iowa and New Hampshire shape and inform many of the national level forces that characterize the nomination campaign and determine candidate success.

These results also provide clear evidence as to how candidates can benefit from concentrating on these early states as opposed to campaigning elsewhere. For example, take a candidate two weeks from a report deadline who has a profile equal to Edwards' observed average. This candidate is expected to earn approximately \$177,600 from contributors over the week. If that candidate were to gain three percentage points in the Iowa polls the previous week, then we estimate he or she would experience an increase in contributions of about \$23,000 next week. If state polls levels did not change, however, then we estimate that the same candidate would have to increase average weekly spending by \$100,000 to receive an equivalent boost in weekly campaign contributions. The relative size of these financial benefits illustrates how early and intense campaigns within Iowa and New Hampshire can provide candidates with resources that may be otherwise costly to obtain.

Discussion

Recent studies make a strong case that front-loading has raised the stakes of the invisible primary and diminished the positive benefits of winning early state primaries (e.g., Cohen et al. 2008). If they ultimately hope to win their party's nomination, candidates require a large national campaign organization and sufficient levels of support among the entire nation and among party elites before primary voting begins.

Despite these developments, we continue to see candidates and journalists turning to Iowa and New Hampshire during the exhibition season. Our findings document why this is the case. Endorsements and national polling numbers entering an election year may be the strongest predictors of nomination success, but this obscures what possible influence early states have on these predictors. Our analysis of 2007 indicates that campaign performance in Iowa and New Hampshire can direct national polls and campaign contributions long before the constituents of these states cast their votes. To the extent national-level forces influenced the Iowa and New Hampshire dynamics, a candidate's national polling performance showed consistent but hardly unparalleled levels of influence. On the contrary, support in Iowa and New Hampshire polls had an equal and more consistent effect on national media exposure, national polling, and campaign contribution totals throughout the 2007 invisible primary.

One clear conclusion from these results speaks to our understanding of candidate strategy during the invisible primary. Strategists and scholars have at times questioned the necessity of campaigning and winning in Iowa or New Hampshire. However, we have provided consistent evidence that a candidate in 2007 was well served by concentrating on these states and making polling gains. Candidates who performed well in Iowa and

New Hampshire in 2007 received gains in national media exposure, national poll numbers, or increased campaign funds as a result. These benefits may not be enough to level the playing field for a long-shot candidate, but it is unclear what better mechanisms are available to these candidates during the invisible primary. Moreover, even front-runner candidates with plenty of resources and national support may benefit from campaigning in these states as a way of preventing their competition from reaping the benefits of early state success.

A second conclusion from our results regards the status of national support within the nomination process. It is not surprising that past research has questioned Iowa and New Hampshire's bellwether status in the face of the strong predictive influence of national forces. However, our findings indicate that some of these national forces can be a reflection of a candidate's success within the campaigns of these early states. Considering the amount of media and candidate attention paid to these states, these competitions send prominent and valuable signals to donors and the mass public as to which candidate may deserve their support. Along these lines, our findings suggest the sequential nature of the nomination process might matter long before the first outcome is decided and perhaps as long as there is prominent and meaningful competition in these states.

Of course, an important qualification to these conclusions is that the ultimate influence of early state performance remains conditional on the response of national forces. Even if financial contributors or the mass public respond to the happenings of Iowa and New Hampshire, it is ultimately a candidate's large basis of national support and sufficient cash reserves entering the election season that determines nomination victory. For example, our examination of the forces behind Huckabee's rise in Iowa found that he would not have done as well in Iowa if it were not for the fact that his initial success reverberated among the national public. Success in Iowa or New Hampshire may be able to put a candidate in the national spotlight, but that candidate may falter once there, or simply not be appealing to individuals outside these states.

This was likely the case for Michelle Bachmann during the Republican nomination contest prior to 2012. Her win in the Iowa straw poll and her lead in Iowa polls from late June until mid-August boosted her national poll placement into second behind Romney and increased her national media exposure. But once in the spotlight, her national poll numbers started to falter in August, and her Iowa polls soon followed. Therefore, candidate performance within these states is an important component of the invisible primary but not solely determinative, since it is the reaction of these national forces that likely have the final say.

To be sure, some caution is necessary in extrapolating out the implications of this study. The 2008 presidential nomination was extraordinary, and these findings only speak to this election. However, the study concerns a year when both nominations were up for grabs and the contests in many large states, like California and New York, were only a month after New Hampshire. Despite the specter of these later and larger contests, Iowa and New Hampshire received a disproportionately large portion of attention from candidates and the media during 2007. In addition, subsequent nomination contests will likely have similar rates of front-loading and a compacted season, though some of 2007's

other distinctive features—the open seat, ongoing wars, and the abundance of candidates, including viable black and female candidates—may not be equaled. To the extent that these unique features changed the nomination game, however, they are unlikely to threaten the generalizability of our findings. The compressed electoral schedule meant candidates had to campaign widely and early, reducing their and the media's focus on the early states. The presence of a viable black candidate and a former first lady candidate provided the contest with many national storylines that obscured the role of local campaigning and early state performance. Despite these aspects, we find that early state performance exhibited a consistent influence on national forces.

These findings from the 2007 invisible primary suggest that the many features of nomination campaigns operate as interdependent processes. In this period, multiple forces respond to each other and shape each other's progression. Most notably we show that Iowa and New Hampshire make it possible for successes in retail politics and local campaigning to translate into national success. If this has been missed in the literature, it is because the national forces that typically occupy the greatest interest contain elements of these local forces long before the results are known in Iowa and New Hampshire.

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