

The Visible Primary: Dynamics in Presidential Primary Campaign Coverage

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Abstract

We investigate the mechanisms of presidential primary exposure and candidate success, with a focus on the Iowa Caucuses and the New Hampshire Primaries. We utilize an original and extensive dataset of campaign articles from local and national newspaper websites coupled with a collection of statewide polls to analyze the dynamic relationships in primary campaigns. Results from Bayesian vector autoregression models in state-specific samples show that local media, national media and candidate preferences have endogenous impacts on one another, conditional on the candidate. Furthermore, and contrary to extant literature, there is firm evidence that success in the polls is not purely reactive but also determinative.

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What are the mechanisms of the Invisible Primary and what influence does it have on actual nomination contests? While often considered influential, the importance of the early or pre-competition portions of nomination campaigns is not clear. As has been made apparent by the campaigns of John Connally, Howard Dean, and Rudy Giuliani, large campaign funds or leads in national polls do not always translate into primary success. Candidates are human and prone to make strategic mistakes, such as the case of Connally, or run inefficient or lackluster organizations, a claim most recently associated with Hillary Clinton.

Nevertheless, the conventional wisdom is that to win a party's nomination a candidate has to perform well during the time before the contests. The basis for this perception is simple. Nomination campaigns are increasingly being shrunk into what is effectively a national primary. States have moved their nomination contests earlier and earlier within the election year (Cain & Mullin 2002, Mayer & Busch 2003). Candidates now need to effectively compete within a multitude of states soon after the small-scale operations of Iowa and New Hampshire and others. This was no more apparent than this year when California and New York and as many as 20 other states and one U.S. territory moved up their contest dates to February 5, creating what some in the media termed "Tsunami" Tuesday. To compete within a majority of these states requires extensive organizational support, funding, as well as credibility as a viable candidate.

While winning the Iowa caucus or New Hampshire primary might confer these attributes, these first two factors take time to manifest themselves in response. Winning early contests boosts a candidate's coffers (Mutz 1995) and Internet fundraising decreases the lag in gaining such funds, but such money is only effective if a broad-based organization is already in place. Indeed, there is considerable doubt regarding how determinative campaign finances are in determining a party's nominee. In contrast, candidates who build local political support and organizational strength across a multitude of states are better able to compete within the nationwide element of nomination contests. Therefore, the importance of gaining political support and funding ahead of the early caucuses and primaries is believed to have increased

as nomination contests have gotten more and more frontloaded.

For the most part, researchers have produced evidence supporting the importance of what Hadley (1976) termed the Invisible Primary. An examination by Buell (1996) found candidate advantages in fundraising, national media exposure, and early poll standings often were an accurate predictor of primary success, although not perfect. Likewise, Mayer (1996) found that pre-nomination polls are strongly associated with nomination contest performances. In a forthcoming book, Cohen, Karol, Noel & Zaller (N.d., i) argue that “party insiders rather than candidates or voters, dominate presidential nomination contests.” Within their analysis, Cohen et al. detail how endorsements from key political figures are the strongest predictor of a candidate’s primary success and delegate counts, in contrast to advantages in poll standings, fundraising, or media coverage. In total, the weight of their evidence heavily favors an interpretation that party insiders remain a strong determinant of candidate success.

We seek to add to this literature by analyzing how these various aspects of the Invisible Primary interact and lead to candidate victories within nomination contests. Given the body of evidence and the extreme level of frontloading within the 2008 presidential primaries we expected the Invisible Primary leading up to 2008 to be more influential, and competitive, than ever. Many scholars argue frontloading increases the role of the Invisible Primary in determining presidential nominations (e.g. Buell 1996, Cohen et al. N.d.). The case of 2008 was also the first time since 1952 in which there were no incumbent-administration candidates running within either party. This would suggest that endorsements or other elements of Invisible Primary success could be even more influential and meaningful as forces within nomination politics. In combination, two simultaneous campaigns which contained no preanointed party favorite offered a unique opportunity to evaluate the mechanisms and influence of the Invisible Primary. In what follows, we first outline the theoretical motivation for our project, the extent of our data collection efforts, and then we present the preliminary findings examining national and local media coverage dynamics, as well as their relationship with polls in Iowa and New Hampshire.

From Invisible to Visible: The Role of Information and Viability

Our motivation starts with an apparent disconnect between the voting behavior literature on primary voting and work concerning the Invisible Primary. It has yet to be determined how or what elements of Invisible Primary success translate into primary success. Specifically, how does winning the Invisible Primary manifest itself within actual primary contests and how is it that voters are influenced by the Invisible Primary? Such questions center on detailing how the ascribed determinative elements of the Invisible Primary operate within those mechanisms we know to influence primary voters.

While not expansive, the literature on primary voting has identified a couple of basic forces within primary voting behavior. We believe both of these determinants offer a possible mechanism for Invisible Primary influence. The first of these is information. As Bartels (1988, 80) argues and shows, a “minimal level of familiarity is virtually a necessary condition for supporting any candidate.” Being known is an important political resource for candidates and doing well during the Invisible Primary confers some advantages in voter familiarity. Endorsements generate news coverage of a candidate early in the primary season. Likewise, greater campaign coffers enable candidates to visit important locales more often, which also generates greater local news coverage (Just et al. 1996, Haynes & Murray 1998). By winning the Invisible Primary candidates are perceived as more viable or they receive front-runner status; this also results in greater levels of media exposure given the media’s proclivity for horserace coverage. As a result, candidate gains in financial and organizational support not only have direct influence on voter familiarity but also translate into greater levels of media exposure and attention toward a candidate.

The second possible route of Invisible Primary influence among voters is through its ability to enhance voters expectations or assessments of popular support for a candidate. Impressions of popular support shape strategic incentives for supporting a candidate, send

credible cues, and also influence how voters evaluate a candidate. Voters may not want to waste a vote on a preferred but relatively weak candidate and instead support the most palatable viable candidate (Abramson et al. 1992). Greater expectations also enhances voter evaluations of a candidate's electability in the fall, which improves their overall evaluation of the candidate (Abramowitz 1989). Holding advantages in level of endorsements, fundraising, or polling also send credible cues to voters about the candidate's current performance and future chances for success. Finally, good poll numbers and a number of endorsements also have a contagion or bandwagon effect that operate beyond strategic incentives (Bartels 1988). For instance, Mutz's (1997) analysis finds that greater levels of public support motivate individuals to assess why a candidate is successful and then reevaluate their own evaluations based on such criteria.

The News Media's Behavior and Potential Influence

The Invisible Primary has the ability to directly determine voter evaluations through both of these avenues of influence. Endorsements by a politician also connote the support of the politician's ground organization capable of contacting voters. Campaign funds buy advertisements, local visits, and other resources to grant a candidate further exposure and enhance perceptions of viability. However, we believe the influence of most of these factors might also operate through news media coverage of the campaign. Indeed, it is reasonable to suggest that the media operate as a key mediator of the Invisible Primary's influence.

In relation to voter familiarity with candidates, a dependence on news media coverage is natural. Voters have little incentive to seek out political information or go to candidate rallies. This makes them hard to target via candidate efforts at direct communication. In contrast, voters are more likely to seek out and be exposed to information from national or local news organizations. This suggests that success within the Invisible Primary is dependent on gaining greater exposure within news media coverage.

This mechanism is most likely exasperated by the news media's tendency to focus on

the horserace aspect of campaigns. Horserace coverage dominates issue coverage within campaign stories (Patterson 1993). This pertains to primary coverage as well, as it has been found to predominately focus on winners and those candidates who do better than expected (Robinson & Sheehan 1983). Patterson (1980, 45) found that 60 percent of the network news' primary coverage went to the week's primary winner and Just et al. (1996) found this tendency was even greater among local television news primary coverage.

The horserace narrative is a predominant theme and dominant influence within the Invisible Primary's news coverage as well (Flowers, Haynes & Crespin 2003). The news media tend to focus on those candidates who are ahead in the polls, raising large amounts of money, or reaping in important endorsements. The national media especially like to focus on the quantifiable or concrete measures of primary success, such as early polls and fundraising figures (Flowers, Haynes & Crespin 2003). This relationship is somewhat explosive as horserace coverage within the media may boost a candidates' respective fundraising levels (Mutz 1995).

The news media's focus on frontrunners also serves as a cue to voters about which candidates are likely to succeed. Since the media have no explicit political motivations and are expert watchers of politics, voters might even perceive them as the most credible cue-givers during the Invisible Primary. As a result of media coverage, and despite little scholarly evidence demonstrating such, winners of the Invisible Primary benefit in terms of greater levels of familiarity with voters as well as higher expectations of success.

The Broader Project and Our Current Task

Based on these thoughts, we are interested in explicitly evaluating the mechanisms of the Invisible Primary within primary campaigns - both in its means of influencing nomination contests and its internal workings. The broader project seeks to evaluate a number of questions. How do factors like fundraising levels, endorsements, polling levels, and news media coverage interact during the early stages of the nomination contest? What influence do endorsements, poll standings, and campaign funding levels have in shaping news media

coverage? How does frontrunner status contribute to primary success or downfalls? Given the context of this Invisible Primary, we might expect it to have greater influence than usual; and therefore we might gain sharper estimates of the nature of its influence and mechanisms. Additionally, we were presented two evenly open contests in 2008; thus we can use one party's primary as a way of gaining leverage on the other.

We are in the efforts of collecting data on local media coverage, national media coverage, public opinion polls, campaign finance records, campaign visits, campaign endorsements, and other factors over the course of the 2008 contest. These data may also be combined with external data sets, such as WiscADS advertising measures, in the future. This paper seeks to describe the initial results from this project by looking at dynamics in media coverage and its relationship to candidate support over the course of the campaign. Since news media coverage shows the potential to be a major conduit of Invisible Primary effects, knowing the nature and influence of news media exposure serves as a nice starting point for analysis. Related future analyses will examine how endorsements, fundraising levels, visits, and polling levels influence such coverage.

Starting in July of 2007, we downloaded and collected each day's news stories concerning the presidential nomination contest from a selection of both local and national news source websites.¹ We sought to analyze both local and national news media attention since past research has suggested the two cover campaigns in different manners (Buell 1987, Just et al. 1996, Shaw & Sparrow 1999, Flowers, Haynes & Crespin 2003). In their analysis of state and national news coverage of the 1992 primary, Haynes & Murray (1998) found candidate spending and visits were much more influential within state coverage than within national news coverage. They also argue that the national news media's attention to a candidate has a positive influence among local news coverage. Buhr (2000) found that local newspapers in New Hampshire give greater attention toward policy issues than that of national news

¹Using LexisNexis and other databases, we were able to ascertain a high level of similarity between a paper's print and online content. For evidence of the public's increasing use of online sources, and decreasing reliance on print sources, within 2008 see the online Pew Report "Internet's Broader Role in Campaign 2008," January 11, 2008

coverage.

Our main goal for this paper is to decipher which candidates won the Invisible Primary based on their level of news media exposure. We are interested in whether there were noticeable differences between local and national news media attention levels toward candidates and whether the two sources have a different level of influence on local candidate support. For example, if voters are more responsive to local than national news coverage, then candidate activities and spending that influence local media coverage might be a more successful way for candidates to gain in familiarity and viability. However if national media exposure bestows an influence both on local news coverage and voter opinions, then perhaps there are extensive gains to be had in winning the Invisible Primary within the national media.

Data and Methods

We seek to clarify the role and mechanisms of the Invisible Primary by examining the relationships between a variety of campaign forces. The roles at play in the primaries and caucuses are the candidates and their policy platforms, the diverse state electorates, the media - in their various forms, and the schedule of the elections. We also believe the primary campaigns to be an inherently dynamic and collaborative process (Just et al. 1996). Therefore, in line with the aforementioned research agenda, we collected longitudinal data with measures of political information in the media and voter preferences.

Data

Traditional investigations of this kind have been limited by both data and research design. Recent inroads into the dynamic nature of campaigns have been furthered by data collection projects like the Annenberg Election Studies and the Wisconsin Advertising Project; however there continues to be a gap in our understanding of the dissemination of political information. While individual level information and advertising shed light on campaign dynamics, the role

of the electorate's predominant information source is still unaddressed. As such the role of a key causal factor in primary behavior, the media, is still contentious. Our project seeks to fill this gap.

News Media Coverage

Beginning in July of 2007 we employed daily automated content coding of newspaper websites. Few studies endeavor to grasp the role of the traditional and information-abundant medium of newspapers; many of those that have tried have relied on a large and often expensive group of coders (e.g Beck et al. 2002). Modern computing capabilities and the duplication of newspaper articles on internet websites present an easier alternative.

We have collected national and local newspaper articles from the web using an automated retrieval program written in Perl. News sites are increasingly devoting topic-specific pages intended for daily readers who only want to read the most recently posted articles. These pages offer an advantage to researchers since they precode what articles specifically relate to the presidential campaign - a previously cumbersome task in content analysis. These pages often work with Really Simple Syndication (RSS). RSS documents typically contain articles or blog entries from an associated website that is organized in terms of date and content. Because it is a web feed format, subscribers to an RSS can choose to read the updated entries in their email, their preferred browser or in various filtered displays. Our data was gathered largely by visiting campaign related RSS pages and downloading the updated articles. When RSS pages were not available, we relied on the Perl program to download relevant articles from topic-specific web pages. Subsequent manual and automated editing ensured that there were no campaign irrelevant articles nor duplicated articles within the same newspaper.

We have been running our program every day for the last nine months from a central computer in the Ohio State University Political Research Lab.² Downloaded information

²Unfortunately a power outage at Ohio State that coordinated with APSA resulted in us losing five days of data around Labor Day weekend. We are currently in the efforts of retrieving information from newspaper databases to supplant this gap.

included the title, the journal, the time, and the content of the article, as well as the time of its posting. The program was written to retrieve information from a nonrandom sample of newspaper websites; collecting articles from all news sites across the country would indeed be worthwhile, but beyond realizable computational space. Given the necessity of a sample, we set out to balance the data collection across a few potential confounders, including timing of the primary, population size of the state, newspaper syndication size, and even the ideological tendencies of the newspapers. The data currently includes over 1,100 articles on the primary campaign spanning more than 200 days from *AP Politics Wire*, *Washington Post*, *New York Times*, *Los Angeles Times*, *San Francisco Chronicle*, *Houston Chronicle*, *Miami Herald*, *St. Petersburg Times*, *Chicago Tribune*, *Des Moines Register*, *Las Vegas Review Journal*, *Union Leader*, and *The State*.

In Table 1 we lay out the sources of the news media data collection and some of their basic characteristics. Although we have data from Florida, currently we only consider Iowa, Nevada, New Hampshire and South Carolina to be early primary states. These papers hold the largest circulation within each state and are important actors within each state's contest. California, New York, Texas and Florida were the largest states in the study, and therefore those with the greatest convention delegates. We had four news sources that we consider to be national syndications: *AP Politics Wire*, *Washington Post*, *New York Times*, and *Los Angeles Times*. In terms of ideological leanings, one is tempted to suggest a balance between the *New York Times* and *San Francisco Chronicle* on the liberal side and the *Los Angeles Times* and *Chicago Tribune* on the conservative side. We resist the temptation here to likewise categorize the remaining newspapers, however we believe that even on an ideological spectrum the sample is balanced.

National and Statewide Polls

Our longitudinal media data is supplemented by a myriad of statewide polls. Prohibitive costs prevent polling by the same organization over the entire span of the campaign and in

Table 1: News Media Sources and Categorization

CATEGORY	STATE	NEWSPAPER	SOURCE
Early States	Iowa	<i>Des Moines Register</i>	Presidential Caucus RSS
	New Hampshire	<i>Union Leader</i> (Manchester)	Primary HTML
	Nevada	<i>Las Vegas Review Journal</i>	Politics RSS
	South Carolina	<i>The State</i> (Columbia)	Politics RSS
	Florida*	<i>Miami Herald</i>	Politics RSS
		<i>St. Petersburg Times</i>	Politics HTML
Feb. 5 States	California	<i>Los Angeles Times</i>	Politics RSS
		<i>San Francisco Chronicle</i>	Politics HTML
	New York	<i>New York Times</i>	Politics RSS
	Illinois	<i>Chicago Tribune</i>	Politics HTML
Late States	Ohio	<i>Plain Dealer</i> (Cleveland)	Politics HTML
	Texas	<i>Houston Chronicle</i>	Politics RSS
National Media		<i>AP Politics Wire</i>	Politics RSS
		<i>Washington Post</i>	Election RSS
		<i>New York Times</i>	Politics RSS
		<i>Los Angeles Times</i>	Politics RSS

* - not included as early state media source in this paper.

every competitive state; rather it is common for various different organizations to purchase questions from a survey house to be administered at a particular time and state. Fortunately, a great deal of these polls ask a slight variant of the same question at different times, namely: “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 statewide polls provides the opportunity to create a single time series of electoral preferences across the campaign and in each state of interest. Given size restrictions and the descriptive nature of this paper, we limit this paper’s analyses to the statewide polls from the first two elections, New Hampshire and Iowa; subsequent papers will exploit statewide polls in the rest of our state sample.

Our models of the statewide polls take into account differences in the polls' sample sizes and are capable of controlling for variants of question wording. In addition, when more than one poll is conducted at the same time we model the scores with a decrease in the standard error. Contrary to common practice, we are not concerned with who will win the primary or caucus, but how the electorate collectively changes their favored candidate(s) in response to news media coverage and other external events. As stressed above, however, the relationship between the media, the electorate and the candidates is not unidirectional. Rather the primary campaign is a self-reinforcing cannibal whereby the different players feed off one another. Coupling news media data with statewide polls allows us to illustrate the dynamic impact of the news on likely voters, and vice versa: we can just as well perceive the influence of candidate events and electoral outcomes on news coverage by mapping these relationships; duties we now turn to.

Methods

The use of daily measures of a candidate's polling level and media prominence suffer from both large levels of sampling error and frequent missing data. In the case of the news media series, we have few missing data but a rather small daily sample. In the case of the public opinion series, the opposite case is true; polls are not taken every day but when they are taken 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.³

State-space models, of which the Kalman filter is a variant, typically estimate two structural equations. The first is an *observation model* wherein each day's observation is specified as a random sample from an underlying parameter and the number of news articles or surveyed individuals are used to calculate the level of uncertainty in the day's sample. The second equation is the *transition model* wherein we specify and estimate the nature

³Variants of such methods have frequently been used by scholars to estimate dynamics in polling data (Beck 1990, Stimson 1991, Green, Gerber & Boef 1999), but are infrequently applied to dynamics in news media coverage.

of daily movements in the underlying population parameter. In short, the two equations allow one to take into account both the level of uncertainty in one’s daily observations (or non-observation) and the knowledge of previous and future observations to form a best guess of the underlying parameters.⁴

For instance, within the news article series let y_{it} be the number of observed articles mentioning candidate i on day t . We specify the observation model as:

$$y_{it} \sim \text{Bin}(n_t, \theta_{it})$$

where n_t represent the day’s total number of observed articles and θ_{it} represents the underlying level of media prominence for candidate i on day t . We then also specify the daily change in each candidate’s media prominence as a function of the previous day’s level and a random error term. This results in the following transition model:

$$\theta_{it} = \theta_{i,t-1} + e_{it}$$

At this time, for ease of estimation, we use the normal approximation of the binomial distribution to estimate the extent of sampling error in each observation.⁵ That is, letting p_{it} represent the observed proportion of news articles referencing candidate i on day t we estimate the following observation equation:

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

⁴See Green, Gerber & Boef (1999) for further description of the intuition, in-depth treatments are found in West & Harrison (1997) and Durbin & Koopman (2001), among others.

⁵In the rare occasion that an observation of zero and one occurs within the media series, the estimate of the measurement error variance collapses at zero. To amend this problem we use a slight modification to the binomial approximation as suggested by Alan Agresti, where one is added to the numerator and two to the denominator. This slightly biases point estimates toward 50 percent, but allows us to better approximate the uncertainty of the observed proportion.

where

$$\sigma_{it}^2 = \frac{p_{it}(1 - p_{it})}{n_t}$$

Likewise, we specify each underlying series as following a completely persistent random walk process, where each the day’s shock follows a multivariate normal distribution. That is, for the field of K number of candidates, the vector of the candidates’ daily change is distributed as: $e_t \sim \phi_K(0, \Sigma)$. At this time, the random walk assumption is for computational convenience, future tests will seek to analyze the degree of persistence in media prominence and pre-nomination candidate support.⁶

Estimation

To estimate the underlying parameters we first specify priors on the initial level of candidate prominence within the media and the polling series (θ_{i0}) using a diffuse normal prior with mean \bar{p}_i and variance $2\hat{\sigma}_i$. We specify an Inverse Wishart prior for Σ with degrees of freedom $K + 2$ and a diagonal scale matrix using each series’ estimated variance. We derive posterior distribution estimates of each parameter using the Gibbs Sampler. Draws for each latent series θ were calculated using the forward-filtering backward-sampling algorithm (Carter & Kohn 1994, Frühwirth-Schatter 1994). The simulations converge quickly with little auto-correlation. Presented estimates are based on a sample of 2000 draws from the posterior distribution after a set of 100 burn-in iterations were discarded.

Results

We first present summary results from our campaign coverage data. We analyze data from July 9, 2007 to February 5, 2008; as such we limit our analysis to the first three sections of the campaign: the pre-primary campaign, the early state primaries and super Tuesday.

⁶We also currently fail to accommodate the added information of the compositional polling data series. In the future we intend to estimate a multinomial-based observation model for the state polling series in the lines of Cargnoni, Müller & West (1997).

Naturally, we begin with a macro-perspective of the campaign, investigating the national media coverage of the two parties. Given the national framework, we move on to investigate differences in media coverage within party articles. Specifically, we compare national media attention with local media attention in the early states for each party's top six candidates. In this exploratory study, we limit our analysis to a simple count of candidate name mentions per day and per news source.

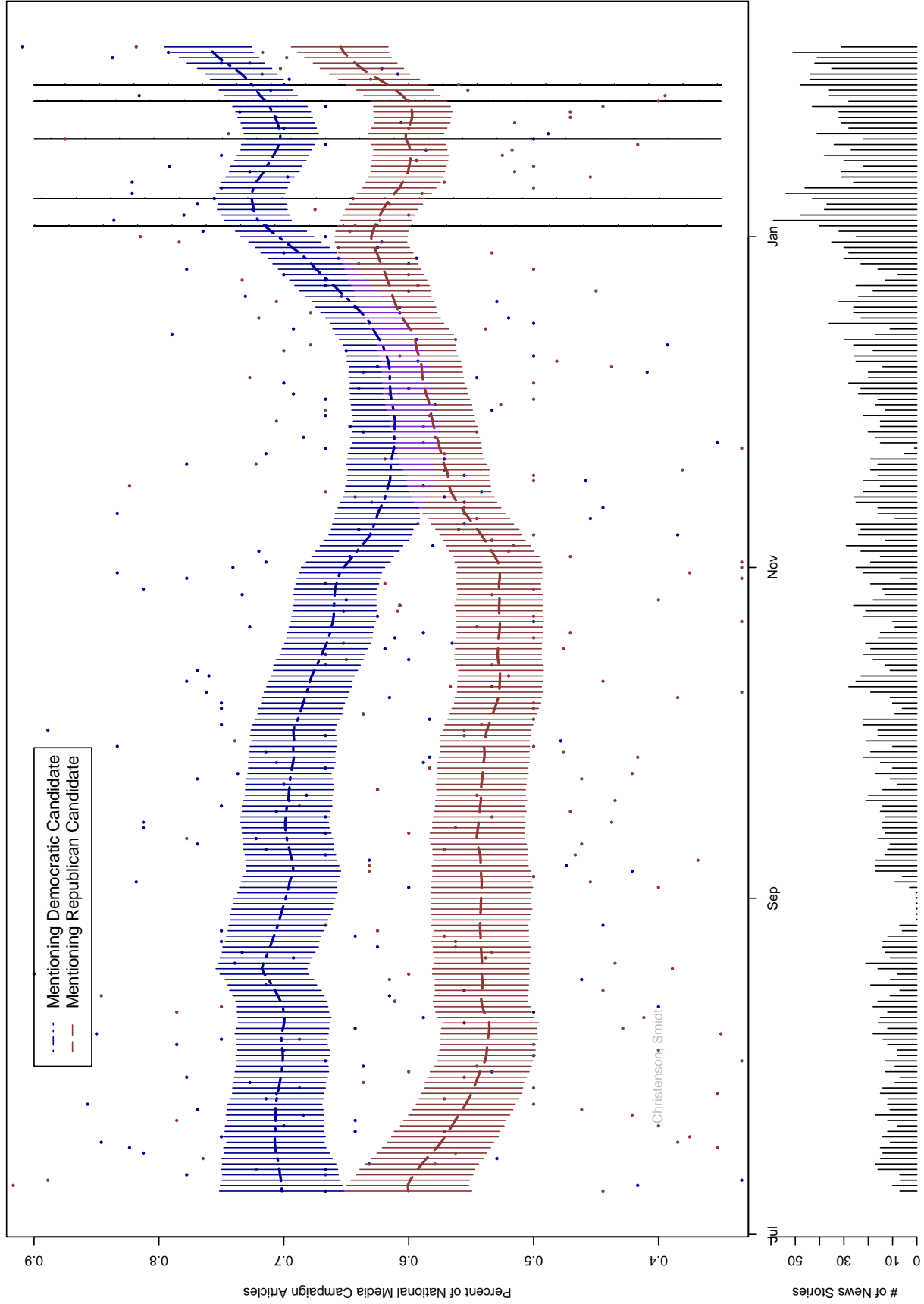
Descriptive Dynamics in Campaign News Coverage

Throughout our observed time period, the national news media were mostly consistent in devoting greater attention to the Democratic contest than that of the Republicans. Beginning in the summer of 2007, low approval ratings for the President and Congress, an increasingly unpopular war and a faltering economy primed the country for change. As a result, a disproportionate amount of pre-primary media attention focused on candidates not hailing from the incumbent administration's party.

Figure 1 illustrates the expected Democratic dominance. It is composed of a time series of candidate name mentions in the national media. In this case, a single article can count as both Republican and Democratic, if two or more candidates are mentioned in the article and at least one of them is from the other party. Below the time series is a count of collected campaign stories for that day. The article count is large enough to provide us significant statistical leverage. Both fitted time series include Bayesian Confidence Intervals (BCI) at the 95th percentage points. The estimates suggest that the Democratic race held a clear advantage until November. At that time, attention to the Democratic race dropped as attention to the Republican race heightened. A series of well publicized Republican debates in late October and November likely boosted the media's and the public's attention to the Republican field. In particular, CNN's so-called "YouTube" debate and Fox's Orlando debate garnered widespread attention by the national media. Furthermore, the Republican rise mirrors the simultaneous climbs of Huckabee and McCain, a point we will return to

Figure 1: National Media Attention Toward Major Party Nomination Contests

National Media Attention to Primary Candidates by Party



Vertical lines indicate dates of Iowa Caucuses, New Hampshire Primaries, Nevada Caucuses, Democratic S.C. Primary, and Florida Primaries, respectively. Vertical point shadows indicate 95% BCI.

discuss with the subsequent graphs. It appears that November marks the first time the media recognized that both parties were running equally intense primary campaigns.

While media attention to the Republican contenders rose over 15 points from the summer to the winter, the Republican field clearly returned to second place on the eve of the first primaries. Toward the beginning of January on through the Iowa caucuses, the national media's attention returned to the Democratic race, pushing them back over 70 percent by the New Hampshire primaries. The Republican campaign was in some ways pushed aside and exhibited flat levels of attention for most of January. Another striking finding from this graph is the steep increase for both groups following the Nevada caucuses. Democratic candidates saw a steady increase of their name mentions in national media articles immediately following the Nevada caucuses, while the Republican candidates did not see their pre-super Tuesday increase until after the Florida primary. In sum, the national media attention went from highly Democratic at the start of the campaign, to virtually equal as they approached the new year, only to return to a Democratic focus following Iowa and New Hampshire.

Differences between National and Early State Candidate Prominence

As aforementioned, various scholars have suggested that national and local news not only systematically diverge on campaign coverage but they also take cues from one another (Buell 1987, Just et al. 1996, Haynes & Murray 1998, Shaw & Sparrow 1999, Buhr 2000, Flowers, Haynes & Crespín 2003). Our data allow us to look at how these two kinds of media relate to one another, by carving out samples of media type. Figure 2 and Figure 3 provide time series lines for national and early state media attention to the top six Democratic candidates: Biden, Clinton, Dodd, Edwards, Obama and Richardson. In both of these figures, the total amount of articles is limited to those that mention at least one member of the Democratic Party; for example, articles that only mention candidates from the Republican Party do not get counted in the Democratic article total, and vice versa.

Figure 2 suggests that the Democratic primary race was largely a Clinton-Obama contest

in the argus eyes of the national media. In fact, the percent of national attention for Edwards never made it within 10 percent of the second place candidate, Obama. If nothing else, the national media is shown to be largely consistent in its attention. Clinton was the main focus from start to finish, Obama, was her main competitor, and Edwards came in third with the other candidates way behind.

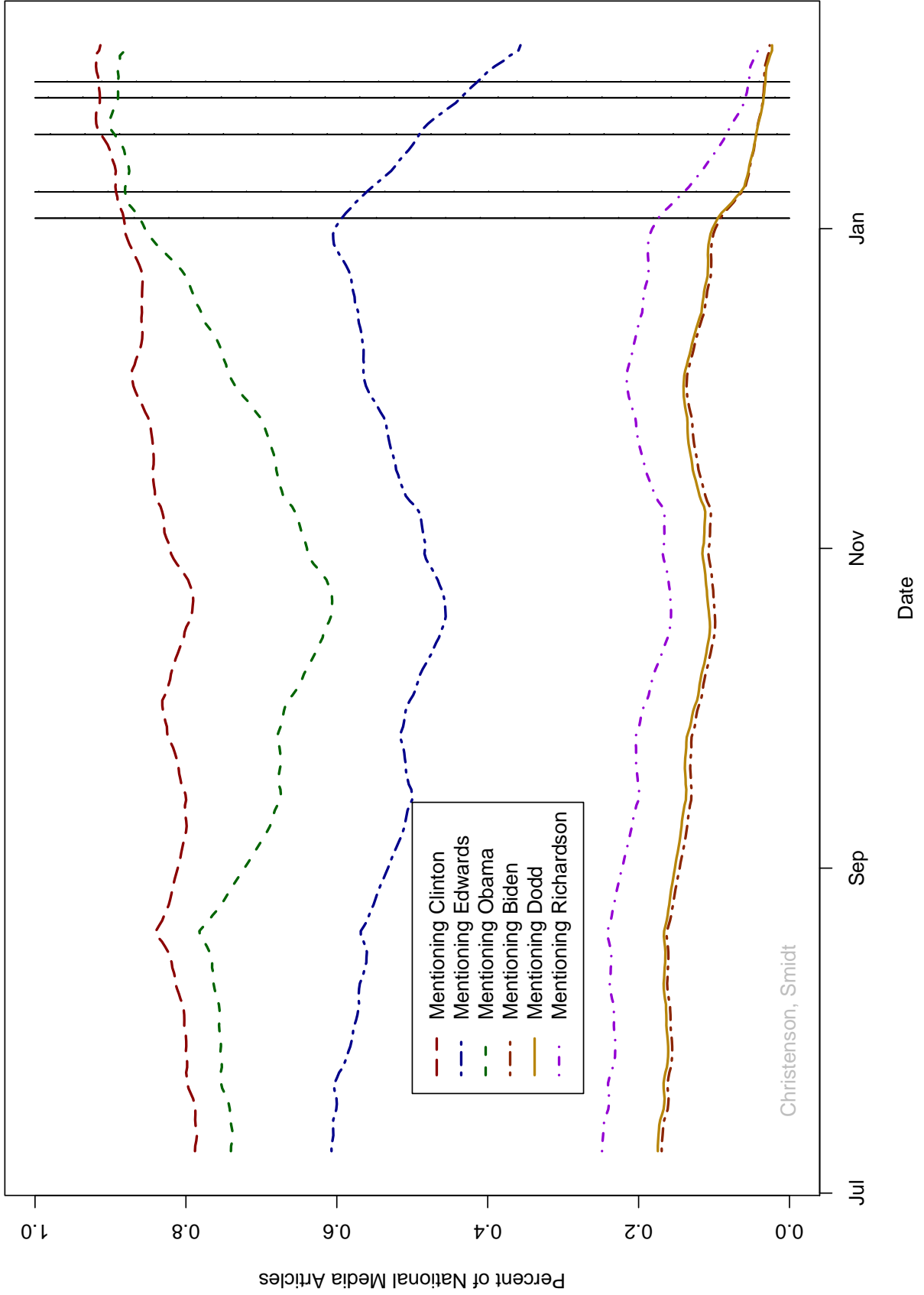
Clinton was clearly the subject of the Democratic contest. After Obama's win in Iowa, the national media essentially gave equal levels of attention to Clinton and Obama, as he became her main counterpart. What is perhaps more intriguing is the complete drop in Edwards' placement. Edwards, who finished second in Iowa, did not receive as equal a role as a Clinton opponent. In fact, his national attention rating dropped despite beating Clinton in Iowa, most likely because he was not considered a contender in New Hampshire's primary.

The early states' media attention, which includes the *Des Moines Register*, the *Las Vegas Review Journal*, the *Union Leader*, and *The State*, has a similar ordering of candidate preferences (see Figure 3). In this case the series runs until the date of the South Carolina primary. Clinton led the pack for most of the time, followed closely by Obama and Edwards, the latter of whom failed to gain as they moved through November. Furthermore, in both the local and national media, three candidates could not break the 35 percent marker. Dodd and Biden exchanged last place at times, while Richardson stayed a head above the pack but not competitive with the leaders.

There are two key contrasts between these two sources. In contrast to the national news, the local news began as a much closer three person race with Clinton, Edwards and Obama falling within 10 percent of their nearest neighbor. Secondly, local coverage was initially much more balanced in its attention toward all candidates. This can be seen by the relatively smaller difference in attention during July and August. However, this balance changes to reflect the national media's series as time progresses. Local coverage of Clinton and Obama goes from less than 60 percent in the summer of 2007 to over 80 percent in January. The

Figure 2: National Media Attention Toward Democratic Candidates

National Media Attention to Democratic Candidates within Democratic Articles



Vertical lines indicate dates of Iowa Caucuses, New Hampshire Primaries, Nevada Caucuses, Democratic S.C. Primary, and Florida Primaries, respectively.

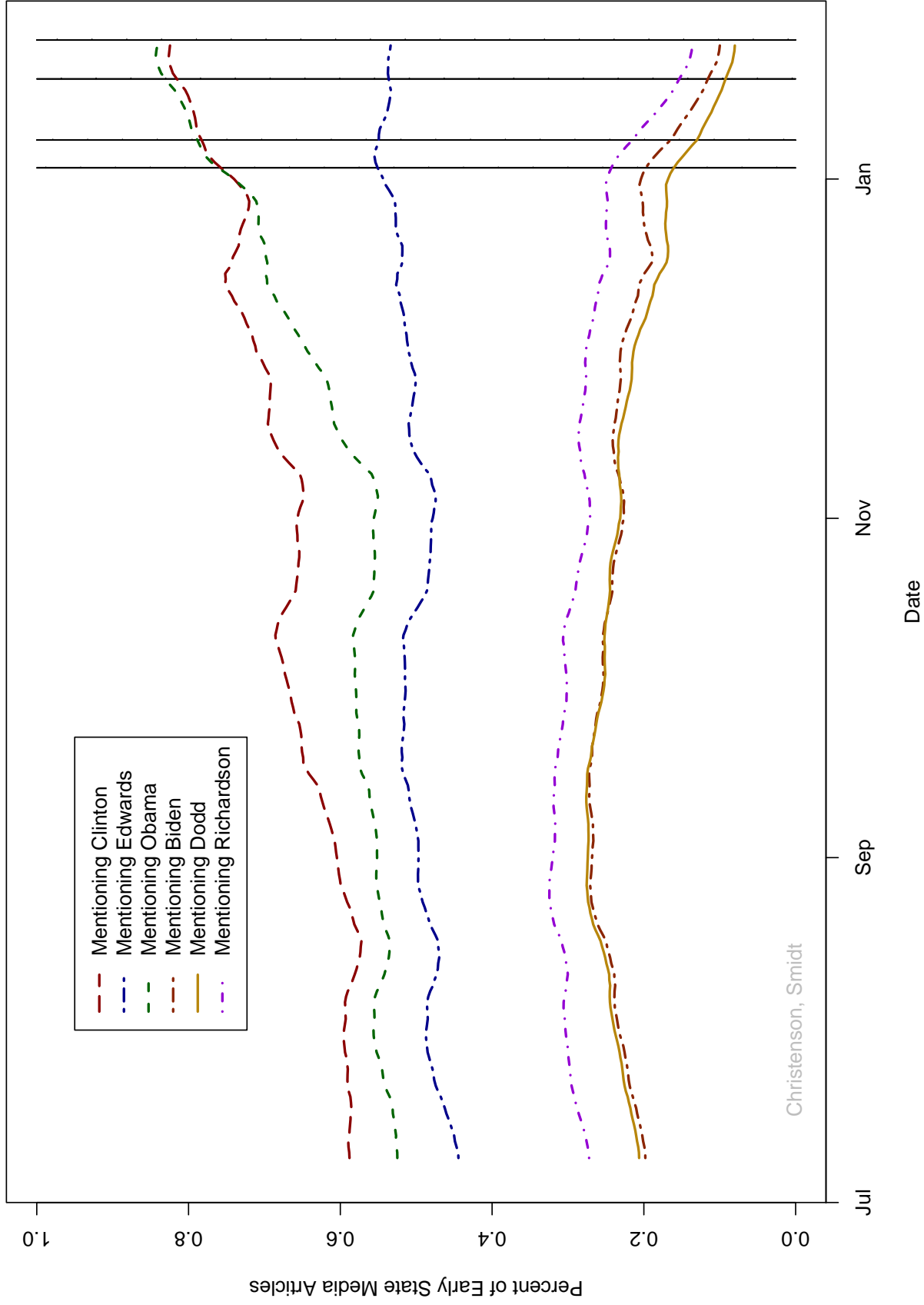
increase in national attention was about half the local gain, and, as the election neared, local media name mentions increasingly reflected the levels within national newspapers.

Despite the relatively small amount of attention given to the Republican candidates in the national media, the Republican campaign dynamics were more entertaining from a media attention perspective. At the outset, the Republican candidates were less dominant than the Democrats, as the top contenders received less media attention relative to their lower-tier contenders. Like the national media attention given to the Democratic crowd, that of the Republican group pointed to some clear frontrunners in the summer of 2007: Romney and McCain. While Romney maintained a top billing until New Hampshire, drastic changes in media attention occurred during October and November. McCain's staff dismantling during the late summer nearly pulled Giuliani within step during October. Soon after, Giuliani and Thompson fell to the 20s, while Huckabee soared to nearly 70 percent at the time of the Iowa Caucus. Huckabee's surprise attention was practically exclusive to Iowa and shortly thereafter he fell to a distant third. Conversely, McCain dropped to third place in December, but rebounded weeks later as New Hampshire approached. In less than a month's time he made a steep climb from third to first that made him the national media favorite well in advance of Super Tuesday.

The early state media attention for the Republican candidates was incredibly similar to that of the Democrats. We find an initially more balanced level of attention between all candidates. Still, in both cases there were two easily delineated groups at the start and at the end of the series. The major difference is that in the Democratic field, the positions remained largely consistent, while in the Republican field the third and fourth positions at the outset switched near the end. The exchange of positions by Huckabee and Giuliani began as Huckabee picked up attention in Iowa in November. Attention for Giuliani likely dropped after a lackluster performance at the CNN "YouTube" debate and increasingly negative coverage about his actions as mayor. Media attention for the two crossed in the first week of December.

Figure 3: Early State Media Attention Toward Democratic Candidates

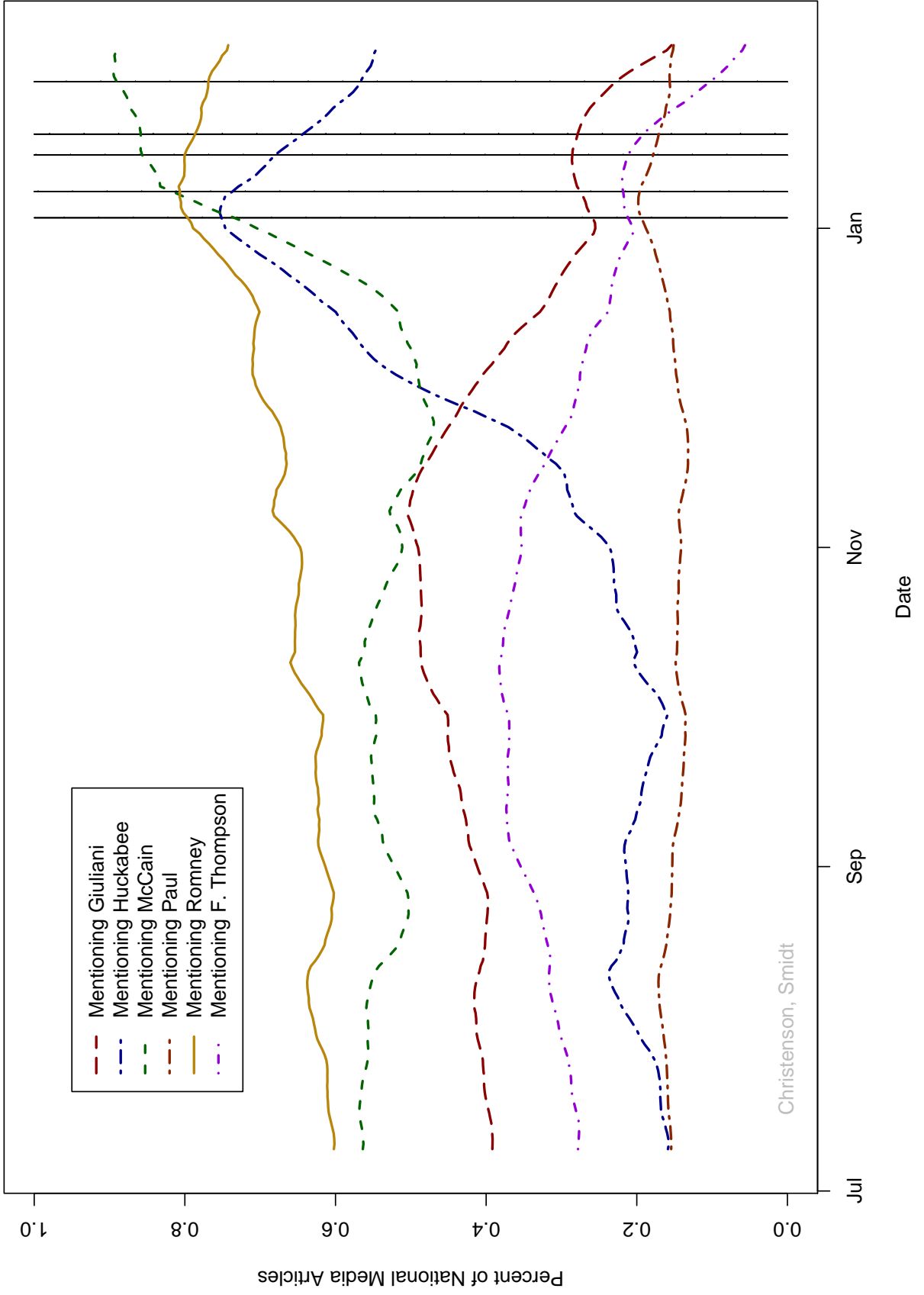
Early State Media Attention to Democratic Candidates within Democratic Articles



Vertical lines indicate dates of Iowa Caucuses, New Hampshire Primaries, Nevada Caucuses, and S.C. Primary respectively.

Figure 4: National Media Attention Toward Republican Candidates

National Media Attention to Republican Candidates within Republican Articles



Vertical lines indicate dates of Iowa Caucuses, New Hampshire Primaries, Michigan Primary, Nevada Caucuses and Republican S.C. Primary, and Florida Primaries, respectively.

Comparing the national and local media for the Republicans we note a few intriguing findings. First, Giuliani's attention dropped about a month earlier in the national media. Despite rather steady attention in the local media throughout November, his numbers plummeted in that same period in the national news. Such preliminary findings suggest local news took cues on the electability of Giuliani from the national news. Second, McCain stayed ahead of Huckabee in the local news, despite dropping below him in the national. This most likely reflects his stronger presence in New Hampshire and South Carolina, whereas Huckabee was reliant on winning Iowa to project him forward. And finally, after Iowa the national media perceived it as a two man contest. In contrast, media within Nevada and South Carolina were much more likely to include Huckabee as a candidate for discussion.

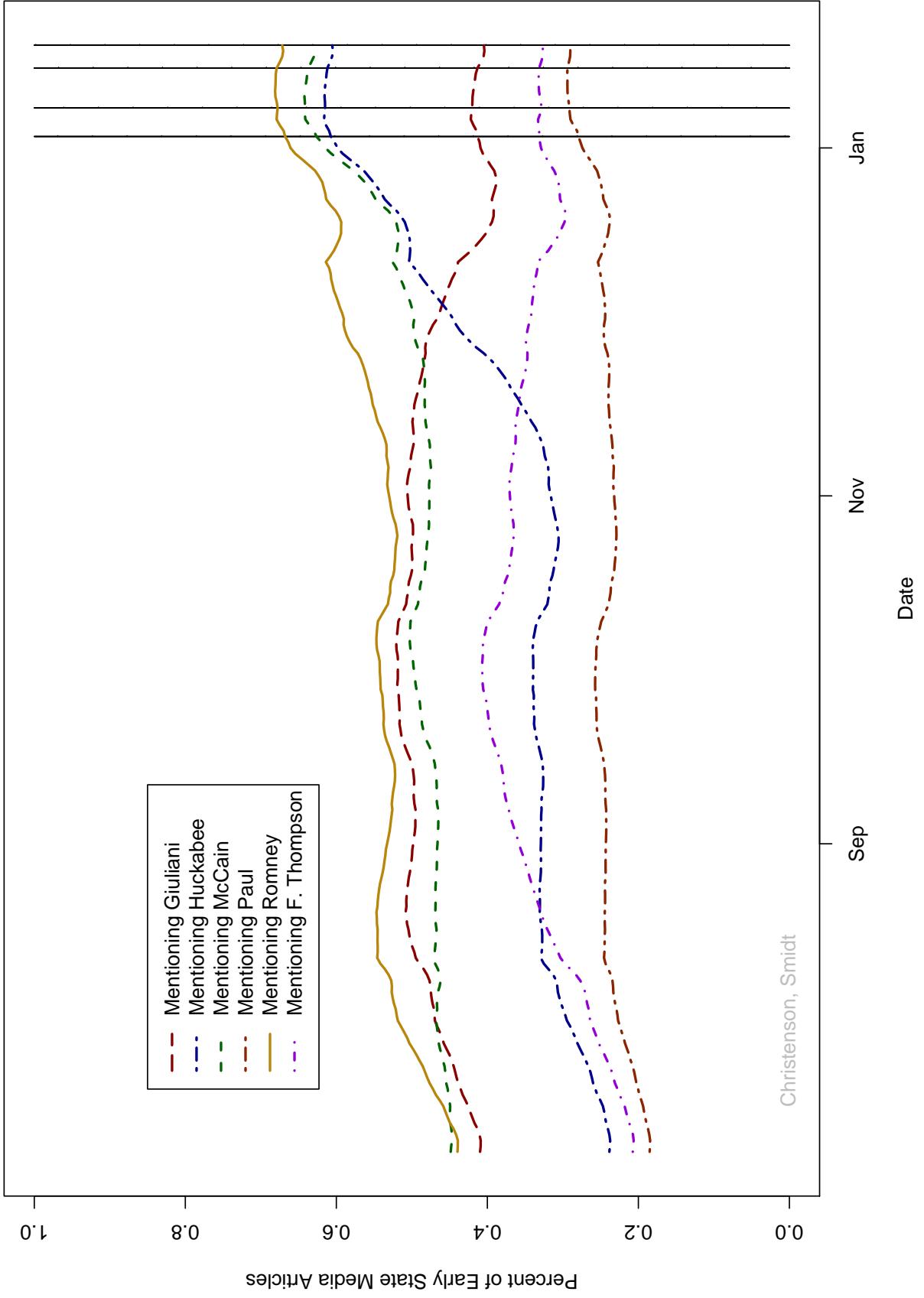
For the Republicans in both the local and national media attention samples, the key narrative was not as much a one-on-one fight as a three man race. A virtual unknown in both the national and local media, Huckabee's hard campaigning in Iowa had almost all the ingredients of a Cinderella story - all but the fairytale ending. His rise from the bottom rung coincided with McCain's. The complimentary climbs were so noteworthy as to not only bring about greater name recognitions in both the local and national papers, but also to raise the overall national media attention to the Republican Party primaries. For the Democrats, the narrative of focus was only really between Obama and Clinton. However, Obama was not an underdog like Huckabee, but one of two early frontrunners in the national media and one of three in the local media. His story was not about whether he could climb to the top, but whether he could stay there given two strong competitors and unfamiliar electorates. While such a story eventually proved most intriguing to the local media, Clinton's own impressive story maintained its dominance in the national media.

Public Support and Local and National News Exposure

Although they differed in their level of attention, it appears that national and local media show some notable shared dynamics. Having observed this association across these two

Figure 5: Early State Media Attention Toward Republican Candidates

Early State Media Attention to Republican Candidates within Republican Articles



Vertical lines indicate dates of Iowa Caucuses, New Hampshire Primaries, Michigan Primary, and Nevada Caucuses and Republican S.C. Primary, respectively.

information outlets it is interesting to evaluate how they relate to one another and to public levels of candidate support. Do local news take cues from the national media in determining what candidate to cover, as they do in other areas (Shaw & Sparrow 1999)? What is the relative influence of national and local media exposure among a state’s electorate?

However, answering these questions is not a straightforward task. As Buell (1996, 11) comments, the “sheer volume of news coverage generally interacts with poll ratings in so reciprocal a fashion that cause and effect are difficult to disentangle.” We seek to investigate these questions by recognizing and accounting for the possible endogenous relationship between polling levels and news media attention. To accurately measure the influence the news media have on the public we also estimate and control for the influence state polls might have on media coverage. The resulting system of equations attempts to test for all possible endogenous relationships. To do so we apply a Vector Autoregression (VAR) framework where past values within each candidate series - national news, state news, and state polls - are regressed on one another (e.g Freeman, Williams & Lin 1989). We estimate these Bayesian VARs (Brandt & Freeman 2006) models separately for each candidate, by each party, within separate Iowa and New Hampshire polling series.

The VAR method uses the same state-space set up as with the previous models, however we change the transition models such that each latent or underlying series is regressed on its own past values as well as the past values of other regressors. For instance, on day t Hillary Clinton’s latent level of national news coverage (θ_{Nt}), state news coverage (θ_{St}), and the state’s public support (θ_{Pt}) are expressed as follows:

$$\begin{aligned}\theta_{Nt} &= c + \sum_{i=1}^p \beta_{1p} \theta_{N,t-p} + \sum_{i=1}^p \beta_{2p} \theta_{S,t-p} + \sum_{i=1}^p \beta_{3p} \theta_{P,t-p} + e_t \\ \theta_{St} &= c + \sum_{i=1}^p \beta_{1p} \theta_{N,t-p} + \sum_{i=1}^p \beta_{2p} \theta_{S,t-p} + \sum_{i=1}^p \beta_{3p} \theta_{P,t-p} + e_t \\ \theta_{Pt} &= c + \sum_{i=1}^p \beta_{1p} \theta_{N,t-p} + \sum_{i=1}^p \beta_{2p} \theta_{S,t-p} + \sum_{i=1}^p \beta_{3p} \theta_{P,t-p} + e_t\end{aligned}$$

Where p represents the number of lagged values included as a regressor within each equation. To determine who influences whom, we estimated item response functions (IRFs), which simulate the system-wide influence the change in one series has on future values of all other series. This allows us to test for both direct and indirect significant influences.

We were able to estimate a VAR for those candidates with consistent polling and media exposure levels over our time frame within either Iowa and New Hampshire. This resulted in separate models for Clinton, Edwards, Obama, and Richardson for the Democrats and Giuliani, Huckabee, McCain, Romney, and Thompson for the Republicans. Each series starts on July 9 and runs to the day before the election for each state. For each series we estimated a BVAR model with 3 lags using the Sims-Zha prior.⁷

Iowa Results

Many consider the national media an important component of the Invisible Primary. National exposure establishes credibility for a candidate and may send a stronger signal of viability to local voters. In contrast, individuals might have greater exposure to local news and may only seek local election news to get informed about the upcoming contest. Our analysis suggests that neither media source completely drove dynamics in public support for a candidate (Table 2). Out of the nine candidates, only Edwards' national media exposure was associated with future levels of his Iowa poll standings. Likewise, out of the nine candidates, only Obama was estimated to significantly gain support in future polls after he received an increase in his local level of media exposure.

Candidates may also find some other benefits from media exposure at either level. In particular, it seems that the *Des Moines Register* was reflective of changes in the national media's attention to Giuliani. In the case of Giuliani, this relationship may not have been beneficial, as we saw the early-state media appeared to drop their level of interest as his national media profile decreased. We also found the *Des Moines Register* to pick up many

⁷We use the following hyperparameters: $\lambda_1 = .8$, $\lambda_2 = .5$, $\lambda_3 = 1$, $\lambda_4 = .5$, $\mu_5 = 0$, $\mu_6 = 2$

Table 2: Significant Iowa News Media Effects by Candidate

Dep. Var.	<i>Type of Media Exposure</i>	
	National	State
Iowa Polls	Edwards	Obama
National News		Romney
State News	Giuliani	

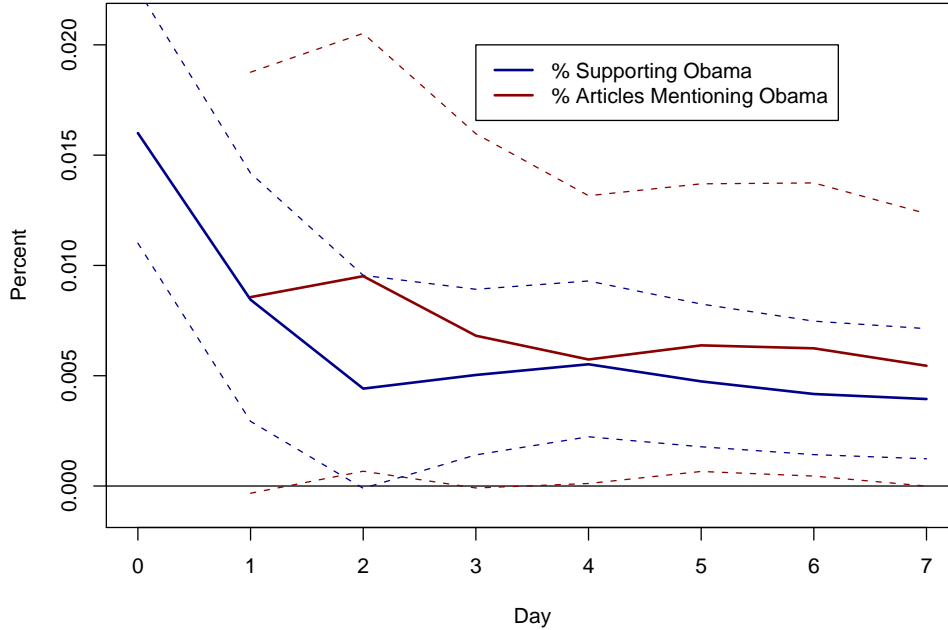
Table 3: Significant Iowa Polling Effects by Candidate

<u>Dep. Var.</u>	<u>Candidate</u>
National News	Huckabee
State News	Huckabee Obama

negative national stories concerning Giuliani during November, such as billing the New York City government for his then mistress’ security. Indeed, while not significant, the effect of Giuliani’s local media exposure is estimated as consistently negative. Interestingly, the estimates also suggest that the national media might have responded to increased local media interest. Mitt Romney was estimated to reap significant gains in national media exposure after he received more media attention from the Des Moines Register (or, conversely, less national coverage in response to less local attention).

Contrast these news media effects with those estimated for changes in public opinion (Table 5). Here we find that local and national media are as responsive to the candidate support as they are influential. For the two “winners” of the Iowa caucuses, we find that changes in their polling figures were positively associated with future levels of national and local media attention. Not surprisingly, this relationship exists among both local and national

Figure 6: Obama’s Poll Numbers and Local Coverage



IRF results; dotted lines represent 90% BCI.

news for Huckabee. Huckabee’s sudden explosion from a second-tier candidate to one who came to challenge Romney for a lead in the Iowa polls launched a spike in media exposure. Starting in November, the *New York Times* and other outlets responded by writing in-depth articles explicitly focusing on Huckabee and his campaign. For Obama, his ability to gain support among Iowa voters fueled further candidate attraction within the *Des Moines Register*. In fact, looking at the results from both tables suggest a self-reinforcing cycle, where further media coverage boosted candidate support which then brought about greater media attention.

We graph out the nature of this reciprocal dynamic suggested by the IRFs within Figure 6. The estimates suggest that for a 1.5 percent increase in Obama’s poll numbers, one should expect a 1 percent increase of Obama’s exposure in local news by the second day. This bump in local news exposure then is estimated to increase Obama’s level of public support by half

Table 4: Significant New Hampshire News Media Effects by Candidate

Dep. Var.	<i>Type of Media Exposure</i>	
	National	State
N.H. Polls	Obama	Clinton (Neg.)
National News		McCain
State News	Huckabee	

a percentage point by day four. This, in turn, creates another significant boost in local news media exposure by day six. All of these movements are in response to the original 1.5 percent increase in Obama support. Considering a jump in the polls of 1.5 percent is a substantial gain, the size of the media’s response is not very large. However, this relationship certainly could have culminated to a large total effect over the campaign, as Obama managed to make steady gains on either front.

New Hampshire Results

Turning to New Hampshire we find a number of the relationships observed in Iowa are found to exist within New Hampshire as well, although among different candidates. In terms of the news media’s influence on candidate support, we find that Obama once again benefited from increased news media coverage, but in this case through the national media. Most likely this boost in Obama’s poll numbers likely represent the bump in poll numbers he received soon before and after the Iowa caucus win. It also demonstrates a noted pattern for challengers to the perceived frontrunner; Obama’s poll numbers benefited from increased media exposure across both states.

In the case of Hillary Clinton, greater levels of local news media attention were also associated with changing future poll numbers. However, the relationship for Clinton is negative, suggesting that the observed increased levels of media attention hurt her levels of

public support. While we doubt greater exposure or familiarity was damaging her chances, we do believe that as the frontrunner Clinton received extra attention from the media because other candidates were talking about her and criticizing her. While the story line in the last three days of the campaign was that the crying and media attacks helped Clinton win the primary, for the greater period of time leading up to the primary it appears her support decreased as the local media increased focus on her campaign.

Once again, we also find local and national news media to be responsive towards one another. Not surprisingly, Huckabee got a boost in New Hampshire news attention as the national news media gave greater attention to his campaign. Considering that Huckabee's campaign was strongly focused on winning Iowa and that he visited New Hampshire infrequently, it would make sense that local attention toward his campaign here was driven by his ability to gain exposure within the national media. What is perhaps the more interesting finding is that New Hampshire voters did not respond to the Iowa winner as they did for Obama. Greater media exposure for a relatively unknown candidate did not boost Huckabee's standing among New Hampshire voters. Huckabee did reap the information and exposure benefits from his Iowa success, but the voters did not respond.

The estimates also suggest that local media attention had a positive relationship with future values of McCain's national media exposure levels. The ability of local media to impact national media is less explored and certainly less expected; and we think it is one of our most intriguing findings. It might be that the state to national news impact was based on McCain's particular relationship with New Hampshire. Having pulled off a sizable victory there in the 2000 primary, the chances for the man from the "Straight Talk Express" were considered largely mysterious by the national media. Thus, the national media took to following the local media on McCain.

Turning to the influence New Hampshire public opinion had on news coverage, the results suggest that the news media were even more reactive to the public than in Iowa. For the case of Giuliani and Thompson, their polling numbers were positively associated with future

Table 5: Significant New Hampshire Polling Effects by Candidate

Dep. Var.	Candidate
National News	Giuliani Thompson
State News	McCain Romney

movements in their national media exposure levels. As was shown in Figure 4, it appears that both candidates' failed efforts within the state dropped their national-level exposure. As Giuliani and Fred Thompson campaigned within the state and their poll numbers dropped the national media also lowered their rate of attention to their campaigns. The media were clearly adjusting their level of attention in response to these candidates' inability to win over New Hampshire voters. We also find that both McCain and Romney garnered greater local media attention as their poll numbers grew. This relationship suggests the *Union Leader* decided to give greater attention to these candidates as they emerged as the main contenders within the state.

So within both Iowa and New Hampshire we find some fairly consistent results. First, national news media attention towards a candidate did not drive local media attention extensively. Of the nine candidates and two states, we only found two relationships where national media attention influenced the local media's attention toward a candidate. Secondly, dynamics in national media exposure did not show a strong influence on a candidate's polling within these two states either. Interestingly, these few occasional influences were about equal with the local media's influence, since changes in local media exposure did not show a pervasive influence on future polls either. In combination, the dynamics within our current measures of media exposure suggest local and national news coverage are roughly equal forces in determining Iowa and New Hampshire polls, although the size and pervasiveness of this

influence is minimal.

Since these are estimates for Iowa and New Hampshire, two states where a multitude of candidates are competing for an extensive time period, this is not a huge surprise. These voters were perhaps beyond the point where hearing and knowing about a candidate is an important condition for candidate support. Media exposure and voter familiarity is, after all, a necessary but insufficient condition for candidate success. We hope to evaluate whether national media exposure shows equal influence among states with later primaries, where voters may not be as familiar with the candidates and may be more subject to the media's influence. It is also important to note that exposure's effect was not conditional on exceeding expectations. Mike Huckabee got a wave of national and local media exposure based on his success in Iowa, but apparently this was not enough to convince New Hampshire voters to support him.⁸

A second consistent finding is that poll standings are as, or even more, influential in shaping local and national media exposure as they are reactive. For the case of Iowa, both Huckabee and Obama, two candidates who were fifth and third in the polls in Iowa in June and July, went on to gain consistent levels of public support which in turn boosted their local and national media profiles. In New Hampshire, the *Union Leader* appeared to focus on McCain and Romney as they became the dominant two challengers in the Republican race. Likewise, we found two candidates, Giuliani and Thompson, whose inability to maintain or gain public support within New Hampshire lowered their national media profiles.

The ability of polling levels to shape news media exposure also suggests that estimates of exposure's influence within primary campaigns will be biased if one does not take into account the reverse relationship as well. Since gains in a candidate's poll standings might produce greater media attention, simple estimates of the exposure's relationship with candidate support will be biased upward. In combination, we believe these results offer further

⁸Another possibility is that Iowa wins are only convincing to voters outside New Hampshire; it is often said New Hampshire voters have a friendly rivalry with Iowans where they respond negatively to Iowa's choice.

evidence that primary campaigns and the preceding Invisible Primary are a collaborative process, where voters and the media respond to one another in determining their favored candidate (Just et al. 1996).

Conclusions

This first cut at our data has highlighted a couple of interesting observations within the 2008 primary campaign. First, local and national news media coverage showed some noticeable differences in attention levels to both Democratic and Republican candidates. Local media were much more balanced initially, giving all candidates a roughly equal chance, but increasingly reflected the national media's dynamic as time developed. Although we found the national media to have some influence among local media, this shared movement was also determined by a candidate's level of public support within a state. Indeed, it seems that national and state news coverage were as reactive to public opinion as they were influential.

The consistent influence of poll standings on media exposure make clear that part of winning the Invisible Primary is having success among voters and not just party leaders, campaign donors, or the media's talking heads. Since these changes in public support are hard to observe, casual observers might too often claim the media as the driving force of primary success. However, it is interesting to note that the so-called media darlings of both parties, Obama and McCain, were only estimated to benefit from increased exposure after they did better within the polls. Likewise, Giuliani, a candidate with large campaign funds and early poll leads, was unable to use these resources to gain local support within a state like New Hampshire; such local ineffectiveness clearly lowered his profile within the national media. While we hope to further investigate this relationship, we have found firm evidence that success in the polls is a determinative element within campaigns. Furthermore, we have amassed a series of findings pointing to highly endogenous relationships among these and other key determinants of primary campaigns. We believe that traditionally such

findings have been unrealized and understated, due to model misspecification and/or a lack of appropriate media data.

At this time these results are preliminary. We acknowledge the need to improve our coding of media exposure levels in the future by going beyond article mentions and measuring a candidate's relative salience within each article. In addition, we intend to code policy mentions within articles as well as the general topic of each article. Note also that we have only presented a small sample of the many questions we hope to answer in the future about how campaign finances, candidate visits, and endorsements relate to these dynamics. Regardless, we believe these initial efforts suggest some promising avenues for further study.

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