

# Knockout Blows or the Status Quo? Momentum in the 2016 Primaries

---

**Joshua D. Clinton**, Vanderbilt University  
**Andrew M. Engelhardt**, Vanderbilt University  
**Marc J. Trussler**, Vanderbilt University

Notions of momentum loom large in accounts of presidential primaries despite imprecision about its meaning and measurement. Defining momentum as the impact election outcomes have on candidate support above and beyond existing trends and leveraging a rolling cross section of more than 325,000 interviews to examine daily changes in candidate support in the 2016 nomination contests reveal scant evidence that primary election outcomes uniquely affect respondents' preferences over the competing candidates. Preferences sometimes respond to election outcomes, but the estimated effects are indistinguishable from effects occurring on nonelection days. There is also no evidence that those who should be most receptive to new information are more affected by election outcomes. As a result, our investigation strongly suggests that election outcomes are not uniquely important for affecting opinions and shaping the outcome of nomination contests.

Journalistic accounts of the 2016 presidential primaries once again focused on the supposed impacts of momentum. In a Republican contest dominated by an untested political outsider and in a Democratic contest in which the front-runner faced off against a surging (and insurgent) independent senator from Vermont, momentum was broadly and frequently employed to explain the changing contours of the two races as primary elections came and went.<sup>1</sup> Despite its frequent invocation, however, it was often unclear what was meant by “momentum” and whether the changes being attributed to momentum were sensible.

Although momentum was typically used as a catchall explanation for nearly every fluctuation in the polls, momentum is most frequently discussed in the context of an iterative election process in which states vie for position in the sequence of elections being held (Nagourney 2007). If the outcomes of primary elections directly influence whom voters choose to support, then the sequence of elections clearly

matters: not only because of the differential costs of campaigning in the various states, but also because of the direct impact that winning (or losing) may have on which candidates voters choose to support (Morton and Williams 2000). In fact, depending on the size and scope of the momentum effects, a different electoral calendar might even produce a different nominee.

In addition to being relevant for better understanding the consequences of iterated elections, the concept of momentum is also important because of what it reveals about voters' decision-making processes. Insofar as it is not simply a description of successive electoral successes, momentum involves electoral outcomes changing voters' preferences over the candidates—either by offering new information (e.g., candidates proving electoral strength or suggesting that they possess the qualities needed to win an election) or else by inducing simple bandwagon effects whereby voters coalesce around the winner—perhaps because the increased attention to the winners

---

Joshua D. Clinton ([josh.clinton@vanderbilt.edu](mailto:josh.clinton@vanderbilt.edu)) is the Abby and Jon Winkelried Professor of Political Science and codirector of the Center for the Study of Democratic Institutions, Vanderbilt University, Nashville, TN. Andrew M. Engelhardt ([andrew.m.engelhardt@vanderbilt.edu](mailto:andrew.m.engelhardt@vanderbilt.edu)) is a graduate student, Department of Political Science, Vanderbilt University, Nashville, TN. Marc J. Trussler ([marc.j.trussler@vanderbilt.edu](mailto:marc.j.trussler@vanderbilt.edu)) is a graduate student, Department of Political Science, Vanderbilt University, Nashville, TN.

Supplementary materials are available in an online appendix available at <https://dx.doi.org/10.1086/703383>. Data and supporting materials necessary to reproduce the numerical results in the article are available in the *JOP* Dataverse (<https://dataverse.harvard.edu/dataverse/jop>).

1. A Lexis-Nexis search for (democratic OR republican) AND primary AND momentum returned 908 newspaper results between January 1 and June 30, 2016.

makes them more accessible to survey respondents (Kam and Zechmeister 2013; Zaller and Feldman 1992).<sup>2</sup> While partisanship is an increasingly powerful influence (Azari and Hetherington 2016; Smidt 2017), because party primaries remove party cues, other sources of information like electoral fortunes may provide a widely covered and easily understood basis on which to select a candidate to support—perhaps because other valued but hard-to-observe traits such as competence, skill, and organizational strength are thought to be correlated with the ability to win electoral contests (Abramowitz 1989; Bartels 1988; Knight and Schiff 2010; Morton and Williams 2000; Rickershauser and Aldrich 2007; Stone, Rapoport, and Atkeson 1995). If so, the act of winning may directly affect voters' decisions about whom to support. To be sure, information revealed during the primary process through poll results (Ansolabehere and Iyengar 1994; Ceci and Kain 1982), campaign messages (Bartels 2014; Gerber et al. 2011; Hill et al. 2013), and media coverage (Gelman and King 1993; Gilens, Vavreck, and Cohen 2007; Sides and Vavreck 2013) can also affect voters' candidate preferences, but it remains an important open question whether primary election outcomes themselves can also have a unique and powerful role.

In part, our uncertainty about the importance of electoral outcomes for public opinion follows from the difficulty in detecting effects during an election campaign with almost weekly elections. We compensate for this shortcoming by exploring these questions using a data set consisting of more than 325,000 interviews conducted every day of the primary campaign beginning in December 2015. With more than 1,600 respondents a day on average, we are able to measure individual-level opinion on every day of the primary campaign to determine whether election outcomes shift a candidate's support in statistically and substantively meaningful ways above and beyond any preexisting trends. Our data's granularity is important; primary election campaigns present a relatively unique opportunity to observe candidates competing in multiple contests across several months with varying frequency and with different sets of voters able to participate at different times during the process. Our data allow us to characterize how winning a primary election affects the level of support conditional on observable characteristics. We can also determine whether electoral outcomes

differentially affect voters' responses in theoretically expected ways according to the amount of time until the election (Morton and Williams 2000), gender (Verba, Burns, and Scholzman 1997), education (Verba, Scholzman, and Brady 1995), and strength of partisanship (Mason 2015).

Our data are limited to the 2016 primary elections, but the 2016 nomination contests are informative, are interesting, and are an appropriate focus for several reasons. First, the absence of an incumbent president meant that both parties had contested primaries. Second, the amount of money, resources, and attention devoted to the campaign was unprecedented. More than 457 state primary polls were conducted in the two weeks prior to elections, and the candidates collectively raised more than \$900 million. Third, both primaries saw the unexpected rise of a political outsider: businessman Donald Trump quickly dispensed with the presumptive Republican front-runner, former Florida governor Jeb Bush, and the independent senator from Vermont, Bernie Sanders, challenged former Secretary of State Hillary Clinton up until the Democratic convention. Perhaps because of Trump's and Sanders's emergence and importance, "momentum" received persistent attention throughout the 2016 campaign (*The Hill* 2016; *Huffington Post* 2016; *National Review* 2016; *New York Times* 2016; *Politico* 2016). If ever we would expect to find momentum, there is a good case to be made for the 2016 primaries.

Despite many reasons to suspect that momentum would exist in the 2016 campaign—and a research design that has enough power to uncover even small effects with, on average, 1,600 daily responses—we find no evidence that a candidate's electoral fortunes change respondents' support in substantively significant ways. Not only are the correlates of candidate support relatively unchanged over the primary campaigns, but our ability to explain candidate support using a preprimary baseline prediction model does not vary over time in response to electoral outcomes. Digging deeper and using an interrupted time series model to identify whether primary elections change opinions above and beyond preexisting trends also reveals less than convincing evidence that the momentum associated with election outcomes produces uniquely important effects. To be clear, statistically significant opinion changes sometimes occur in response to an election outcome, but these are short-term impacts and they are not substantively distinguishable from the distribution of placebo-type effects that occur on nonprimary days. Moreover, there is no evidence that electoral outcomes affect the responses of those that are theoretically expected to be more responsive to the information conveyed or implied by a primary victory: we do not find larger effects among respondents living in states that have yet to vote, with weaker

2. To be clear, work on bandwagoning often focuses on opinion change in the positive feelings derived from supporting a winner (see, generally, Ansolabehere and Iyengar [1994]; Kenney and Rice [1994]). Some scholars treat bandwagoning and momentum as empirically distinct concepts, with bandwagoning often offering an explanation for momentum (Ansolabehere and Iyengar 1994; Bartels 1988; Callander 2007; Kenney and Rice 1994; Mutz 1997; Nadeau, Cloutier, and Guay 1993).

partisan attachments, with lower education levels, or by gender.

Collectively, our results consistently suggest that momentum has a limited impact for contemporaneous nomination contests. Attitudes toward candidates can certainly change over the course of a long nomination campaign (Sides and Vavreck 2013), but contrary to the ubiquitous attention that momentum is given in the coverage of nomination contests, it does not appear to be the case that the ability to win or lose an election itself is uniquely important or responsible for producing such changes. The fact that primary election outcomes in and of themselves do not uniquely or notably drive opinion change is important not only because of what it reveals about voter decision making but also because it suggests that the outcome of a nomination contest with an iterated primary election sequence is not simply a consequence of the sequenced elections shifting people's willingness to vote for the winning candidate.

### THE MEANING OF MOMENTUM

For momentum to be a substantively meaningful and important concept relevant for understanding voters and elections, it must produce an actual change in candidate preferences: for example, increasing the support for a candidate above and beyond preexisting trends in public opinion.<sup>3</sup> If a candidate's level of support is unresponsive to primary outcomes, then attributions and interpretations of momentum either are purely descriptive—for example, a candidate has momentum because he has won two elections in a row—or else are a spurious consequence of similar states (in terms of primary type, demographics, or both) holding elections in succession. For example, when Vermont Senator Bernie Sanders won the contests of Idaho, Utah, Alaska, Hawaii, Washington, and Wyoming between March 22 and April 9 during the 2016 Democratic primary contest, was that evidence of voters responding to Sanders's success by becoming more likely to vote for him or was the sequence of victories a result of demographically (with the exception of Hawaii) and electorally (all but Wisconsin were caucuses) similar states voting successively?

For momentum to matter for understanding voter decision making and the impact of sequential election contests, it must be the case that at least some citizens are sensitive to election outcomes.<sup>4</sup> Many theories of voter decision making

suggest that election outcomes would cause individuals to update their beliefs and potentially change the candidate they would vote for. Especially in the absence of a party cue, potential primary voters are presumably more responsive than usual to other sources of information when forming and updating their preferences for the competing candidates. An election outcome may provide a variety of information to voters about the viability and quality of the candidates involved if the ability to win an election is thought to reveal something about a candidate's skill, ability, and resources (Abramowitz 1989; Bartels 1988; Knight and Schiff 2010; Morton and Williams 2000; Rickershauser and Aldrich 2007; Stone, Rapoport, and Abramowitz 1992; Stone et al. 1995). In addition to the possibility that election outcomes provide a signal about hard-to-observe candidate traits, there may also be more straightforward bandwagon effects: some individuals may simply be attracted to winners and repelled by losers (Bartels 1988, chap. 6; see also Ceci and Kain 1982; Kenney and Rice 1994). Perhaps because of the positive psychological benefits derived from supporting a winner, some may rally around the winning candidate (see also Ansola-behere and Iyengar 1994; Ceci and Kain 1982; Nadeau et al. 1993). Alternatively, others may be more likely to support winning candidates if they think that the ability to attract support is itself an indication of quality and they update their beliefs accordingly on the basis of the presumed "wisdom of the crowd" (McKelvey and Ordeshook 1985, 1986; Murr 2015). A final possible reason why winning may matter is that electoral outcomes affect elite actions that may have subsequent effects. Primary winners, for example, receive more attention and resources from the media or other elites (Aldrich 1980; see also Cohen et al. 2008; Sides and Vavreck 2013), and these benefits may enable winners to more easily attract support (Bartels 1988, chap. 4).

---

the election were held today. It is possible that momentum also affects participation—e.g., which potential voters are mobilized or demobilized in future election contests. While recognizing this possibility, we focus on momentum's impact on candidate support. First, most statements about momentum are in reference to changing poll numbers and, by extension, changing respondent preferences. Second, identifying participation change is exceptionally difficult because it requires identifying and tracking likely voters in elections with considerable differences in the rules governing participation (e.g., primaries vs. caucuses, open vs. closed primaries, and also variation in early voting and voter identification laws). Predicting turnout based on self-reported likelihood of voting introduces considerable error, and it seems likely that the noise introduced by attempting to identify mobilization effects for heterogeneous electoral environments over time exceeds the quality of the signal that can be extracted. For these reasons, we focus our attention exclusively on the cleanest quantity of interest: the extent to which electoral victories produce changes in voters' candidate preferences.

3. Unless an election increases the rate of support above and beyond preexisting trends, it seems difficult to conclude that the election result was responsible for the change.

4. To be clear, our conception of momentum focuses on whether election outcomes affect whom respondents report they would vote for if

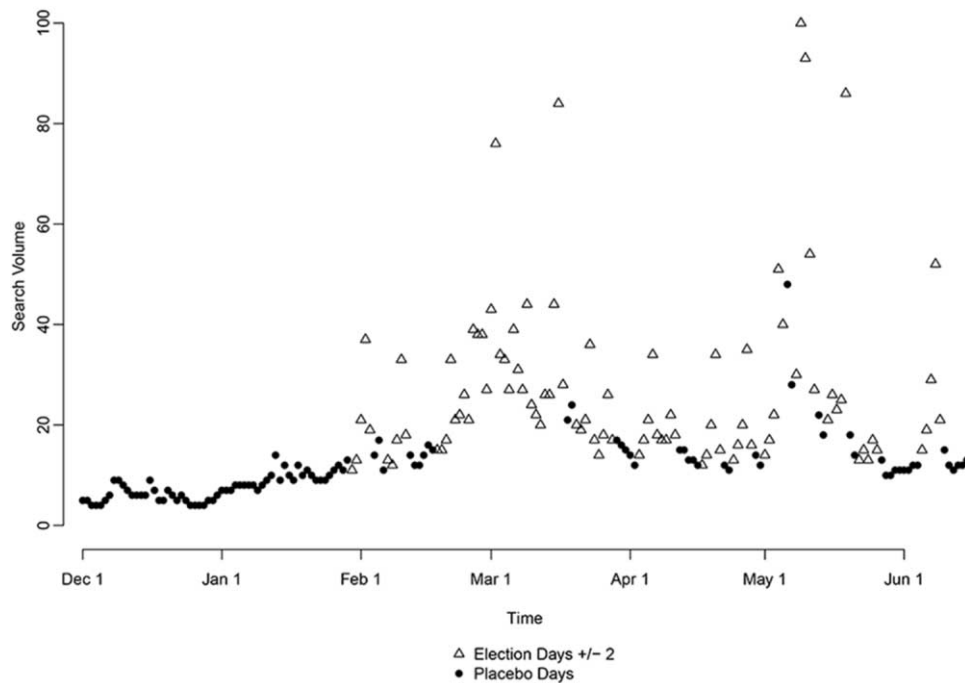


Figure 1. Google search volume for election 2016 over time

Although there are many reasons and mechanisms for why an election outcome may affect public opinion toward the winning candidate, we focus on answering the first-order question of whether there is any evidence of momentum regardless of the mechanism. That is, rather than trying to parse the impact of momentum into its various pathways to assess their relative importance—an especially difficult task because these mechanisms involve how individuals interpret the meaning of an election outcome—we focus on identifying whether election outcomes in and of themselves affect a candidate’s level of support regardless of the mechanism.

Even so, we do explore whether momentum affects some individuals more than others in theoretically expected ways. A large literature offers consistent expectations regarding which individuals should be most responsive to the information contained in electoral outcomes. If respondents update their beliefs using Bayesian updating, for example, those with the weakest preexisting commitments to a candidate will be most responsive to election outcomes (Bartels 1988). If so, the impact of momentum should vary according to several characteristics regardless of the precise mechanism(s) of influence. First, momentum effects should be largest among those living in states that have yet to vote because they have the most incentive to use this new information to update their preferences before voting (Knight and Schiff 2010; Morton and Williams 2000). Second, effects should be largest for those with the weakest priors; individuals with the most uncertainty about whom to support—perhaps because of a weak

connection to the party or lower interest in, or attention to, politics—may be most affected by momentum (Bartels 1988; see also Mutz 1997).

A necessary condition for the existence of election-driven momentum effects is that election events are able to capture the public’s attention. Comparing interest and attention to a nomination contest over time to determine whether election events are particularly salient is difficult, but one possible measure of public engagement is provided by examining the relative number of Google searches related to the presidential campaign over the course of the primary election and determining whether the amount of information seeking around primary elections increased in ways that would suggest a possible greater-than-average potential influence on public opinion.<sup>5</sup>

Figure 1 shows the relative amount of searching related to the 2016 US presidential election for each day of the primary campaign, highlighting days within two days of a primary election. It is immediately clear that the main drivers of public interest in the campaign were the elections themselves; there are very few days that drove as much search volume as election dates. While variation in search volume certainly does not prove that the elections were consequen-

5. Google Trends captures a random subset of searches on each day and categorizes them into “topics.” These data can be accessed at [https://trends.google.com/trends/explore?date=2015-12-01%202016-06-15&geo=US&q=%2Fm%2F0ncc\\_0w](https://trends.google.com/trends/explore?date=2015-12-01%202016-06-15&geo=US&q=%2Fm%2F0ncc_0w).

tial for changing public opinion, it does show that public interest in the campaign was arguably highest during these points. As such, insofar as individuals were most likely to be exposed to information relevant for their decision making in the days immediately surrounding a primary election, it seems plausible that the outcome of such elections may affect public opinion. It is to this task that we now turn.

#### DATA AND IDENTIFICATION STRATEGY

Identifying the impact of momentum requires the ability to identify an election outcome's impact on individuals' candidate preferences independent of the impact of preelection events. The need to disentangle the impact of election and preelection events places a significant burden on the data required to investigate the extent to which momentum exists, the characteristics of the elections that produce momentum effects, and whether election outcomes affect some respondents' opinions more than others.

Political scientists have persuasively argued that many events may change opinions, but identifying the impact of momentum requires answering the following question: independent of the events leading up to a primary election, does winning or losing a primary contest directly and distinctly change responses about whom the respondent would support if the election were held today? To be clear, we do not deny that events and discussions separate from the primary elections themselves may also change responses (see, generally, Sides and Vavreck [2013, chap. 4]), but for momentum to be a meaningful independent explanatory concept, it must be the case that responses also change as a consequence of the election outcome itself (cf. Aldrich 1980; Bartels 1988; Kenney and Rice 1994; Knight and Schiff 2010; Stone et al. 1995).

State-level data are not well suited to identifying momentum because it is impossible to determine whether some individuals are more responsive to electoral outcomes than others as extant theories would suggest, and the number and quality of preelection polls also vary tremendously across contests (see, e.g., Kennedy et al. 2018). Because state-level polls vary on multiple dimensions (e.g., mode, weighting parameters, likely voter models) and state polls are conducted only prior to an election, it is nearly impossible to precisely estimate the effects of momentum given the sources and magnitude of variation in state-level data.

We thus turn to individual-level data collected by SurveyMonkey over the course of the 2016 primary for the NBC News/SurveyMonkey weekly tracking polls. SurveyMonkey and NBC News fielded a survey every week drawing from the nearly 3 million people who take surveys on the SurveyMonkey platform each day. A random subset of these participants had

the opportunity to take the tracker poll every single day between December 1, 2015, and June 13, 2016 (although residents of upcoming state primaries were sometimes oversampled immediately prior to the contest).<sup>6</sup> Overall, more than 325,000 individuals were interviewed during the time period we examine—an average of 1,681 respondents a day. The process was identical for Spanish language respondents, except they were selected from the pool of respondents who completed a user-generated survey whose language setting was listed as Spanish. The “thank you” page and the questionnaire itself were translated into Spanish.<sup>7</sup>

The size and scope of these data make it possible for us to investigate whether election outcomes change respondents' candidate preferences holding individual-level characteristics fixed. Moreover, because we use the same recruitment protocol throughout the primary election campaign, we are able to hold aspects related to sample selection fixed—critical aspects for providing internal validity and ensuring that the comparisons we make between respondents over time are due to the campaign rather than the method of collecting data. There is also no evidence to suggest that SurveyMonkey polls were systematically worse than other polls in the 2016 primary contests (Tartar 2016).<sup>8</sup> Consistent with the claim that online panels are generally representative of traditional random digit dialing polls in terms of their performance (see also Kennedy et al. 2018), prior work using an X-Box Live panel produces inferences that are qualitatively and substantively similar to work relying on more traditional survey modes despite the fact that this panel would appear to be an extremely self-selected sample (Gelman et al. 2016).

To begin, figure 2 plots the number of daily respondents we are able to analyze. While the number of respondents sometimes differs depending on whether there was a holiday (e.g., Easter) or an upcoming election event (e.g., Super Tuesday), a substantial number of responses are received every single day starting in December 2015.

6. Because SurveyMonkey election tracking polls are samples of respondents who complete surveys on the SurveyMonkey platform, the type of respondents included in election tracking polls may experience some seasonality. For example, vacation-themed surveys may be more prevalent around the holidays. It is unclear how this might affect responses as it is unclear how this might affect preferences for the primary candidates competing in the nomination contests, but we condition on individual-level demographics to minimize the potential impact.

7. While our daily sample is larger than most publicly released preelection polls, online app. 9 reports power analyses for our daily samples over time.

8. Appendix 1 reports the performance of state-level SurveyMonkey polls in the 2016 primary and general election and shows that the polls that were released performed no worse than average.



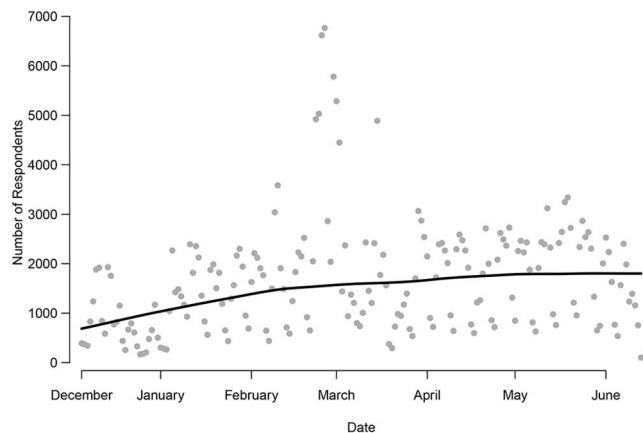


Figure 2. Number of NBC News/SurveyMonkey tracking poll respondents per day.

To situate these responses in the context of the primary election calendar, table 1 lists the primary events we analyze.<sup>9</sup> Following the Iowa caucuses, primary elections occur regularly and frequently. The frequency of primary elections highlights the importance of daily data in identifying the impact of momentum because it is impossible to investigate the dynamics of back-to-back primary elections (e.g., the month of March, when primaries are held every week) and to separate the effect of elections from other campaign events (e.g., debates) without such high-frequency data. Because our daily surveys start in December 2015, we have two months of data we can use to identify trends in responses prior to Iowa.

To measure the impact of elections on responses, we measure the support for each party's eventual nominee: Republican Donald Trump and Democrat Hillary Clinton.<sup>10</sup> Each day, the outcome variable is simply whether the respondent supported the eventual winner (1) or not (0). Respondents were asked about their vote choice only if they self-identified as a partisan or an independent who "leaned" toward a party.

To make our comparisons as comparable as possible over time, we weight each daily sample to an identical composi-

tion according to race, gender, education, age, region, and strength of partisan identity, and we weight separately for self-identified Democrats and Republicans. Because the goal is simply to normalize the daily composition of respondents, we choose a day prior to the onset of primary elections to provide the demographic targets for each partisan sample. Weighting each day to produce demographically equivalent samples allows us to account for potential nonresponse biases correlated with observed characteristics, and so doing helps ensure that the fluctuations we detect are not due to differences in observable sample composition differences (Gelman et al. 2016).<sup>11</sup> To be clear, while our daily weights account for sample composition effects, they are not intended to produce a representative sample of the United States because we do not know the within-party distribution of partisan strength.

Figure 3 presents support trends for Clinton among Democrats and Trump among Republicans from December 1, 2015, to June 13, 2016, for our demographically balanced daily samples. Recall that we want to compare responses over time for a sample with fixed demographics. We do not attempt to construct likely voter models and predict actual support.

The key question of interest is whether the fluctuations in figure 3 follow the outcomes of the elections of table 1. While some jumps clearly follow election events—for example, Trump's support seems higher in the time period around his victory in the New Hampshire primary—we use two approaches to identify the effects of momentum more rigorously and precisely. First, we evaluate our ability to predict individuals' candidate preferences throughout the primary campaign using a model constructed using data collected prior to any primary elections being held (in December 2015). Comparing how actual and predicted responses based on the December data differ provides an upper-bound estimate of the total change due to the campaign and election outcomes. Momentum effects are clearly a subset of this difference, but the total change provides a baseline assessment of the maximum impact. Second, to identify the impact of election outcomes relative to other election events more precisely, we also use an interrupted time series model applied to the daily individual-level data to identify whether election outcomes shift responses above and beyond preexisting trends. By also allowing election events to differentially influence individuals based on characteristics likely related to their susceptibility to

9. Due to our modeling strategy, which focuses on the impact of certain days, some primary events had to be dropped from analysis for being too close to other primary events. In all cases we chose to model those days on which more delegates were at stake. For the Democrats we did not analyze SC (Feb. 27), AK/HI/WA (March 26), and WY (April 9). For Republicans we did not analyze HI (March 8), DC/WY (March 12), and CO (April 8). Further, NBC/SurveyMonkey suspended the primary choice question for Republicans once Donald Trump had secured the nomination. As such, we do not have data for NE/WV (May 10), OR (May 17), WA (May 24), and CA/MT/NJ/NM/SD (June 7).

10. It is obviously possible to predict the support for any candidate, but we focus on the eventual winners as they won more primaries than any other candidate. The results are unchanged when using the runner-up.

11. Although Gelman et al. (2016) address nonresponse using multilevel regression with poststratification, they note that conventional survey adjustments like the rake weighting employed here produce qualitatively similar findings (127–28).

Table 1. Primary Elections Analyzed

Democrat			Republican		
Date	Label	Primaries Held	Date	Label	Primaries Held
Feb. 1	IA	IA	Feb. 1	IA	IA
Feb. 9	NH	NH	Feb. 9	NH	NH
Feb. 20	NV	NV	Feb. 20	SC	SC
March 1	ST	AL, AR, CO, GA, MA, MN, OK, TN, TX, VT, VA	March 1	ST	AL, AK, AR, GA, MA, MN, OK, TN, TX, VT, VA
March 8	MI	MI, MS	March 5	LA	LA, KS, KY
March 15	FL	FL, IL, MO, NC, OH	March 15	FL	FL, DC, WY, IL, MO, NC, OH
March 22	AZ	AZ, ID, UT	March 22	AZ	AZ, UT
April 5	WI	WI	April 5	WI	WI
April 19	NY	NY	April 19	NY	NY
April 26	AC	CT, DE, MD, PA, RI	April 26	AC	CT, DE, MD, PA, RI
May 3	IN	IN	May 3	IN	IN
May 10	WV	WV			
May 17	OR	OR, KY			
June 7	CA	CA, MT, NJ, NM, ND, SD			

Note. ST = Super Tuesday; AC = Acela primary.

opinion updating, we can determine whether momentum’s effects vary between respondents in ways consistent with extant theories of voter decision making.

**THE NET EFFECT OF THE 2016 PRIMARY CONTESTS**

To characterize the net impact of momentum over the course of the campaign we follow Bartels (1988) and evaluate our ability to predict a candidate’s support over time using data

and relationships collected prior to any primary elections. So doing provides an upper bound of momentum effects by revealing the total amount of opinion change that occurs at each point of time regardless of whether the change is a consequence of momentum or other campaign events. Moreover, if primary outcomes and campaign events affect voters’ preferences over the candidates, then (1) our ability to predict responses based on demographic-based relationships that

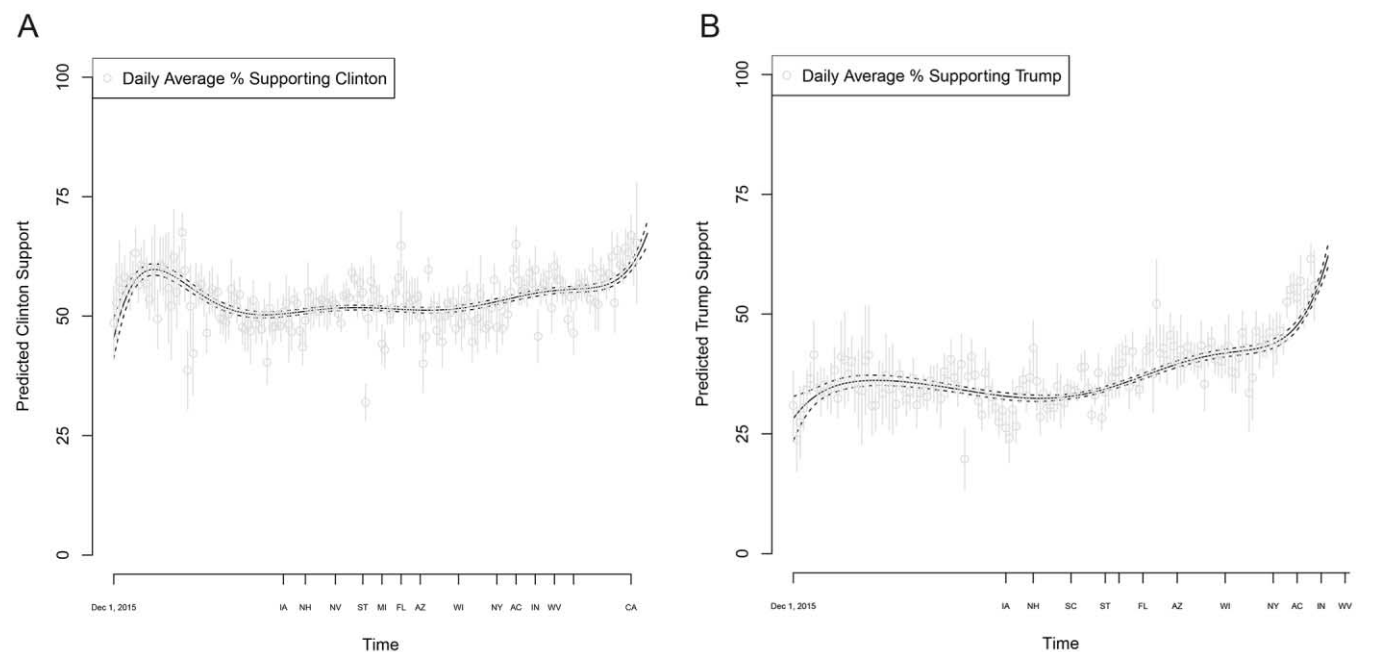


Figure 3. Daily support for Clinton and Trump, December 1, 2015, to June 13, 2016: daily samples weighted to be demographically identical based on race, gender, education, age, region, and strength of partisan identity.

were true in December 2015 should decrease over time, and (2) the estimated relationship between individual characteristics and candidate support should vary over time in response to campaign events if some voters are more likely to change than others. Alternatively, if our ability to predict support for the winning candidate does not deteriorate over time and the relationship between respondent characteristics and candidate preference is unchanged, these factors would suggest that the variation in primary election results is likely a consequence of demographic differences in the electorates of the primary elections being held rather than a consequence of individuals changing their minds.

To evaluate the extent to which responses vary over the course of the primary season we predict a baseline probability that a respondent supports a candidate based on demographic characteristics using data collected in December 2015—a full month prior to the Iowa caucus that was on February 1, 2016. Using the nearly 21,000 respondents interviewed in December 2015, we estimate respondent  $i$ 's candidate preference for the relevant eventual primary winner based on  $i$ 's self-indicated partisanship:

$$\Pr(\text{Support}_i = \text{"Trump" or "Clinton"}) = \alpha + \beta X_i + \epsilon_i,$$

where  $X_i$  is the full set of demographic factors and their interactions—including age, race, education, region, and gender. Because of the sample size, we allow for nonlinear effects by creating a separate indicator for each response category and we also interact every factor with every other factor. Controlling for demographics in such a nonparametric manner arguably captures respondents' social identities related to candidate preferences in nominating processes (Kinder and Dale-Riddle 2012). In addition to lacking consistently collected data on issue positions, controlling for such considerations raises endogeneity concerns because it is unclear whether those considerations would be affected by momentum (e.g., respondents updating their opinions and attitudes depending on who wins and loses; Lenz 2012). Even so, we obtain identical results when we include ideological self-identification (app. 5).

To determine whether the relationship changes once primary elections start to occur, we use the resulting coefficients  $\hat{\alpha}$  and  $\hat{\beta}$  to predict the results of a national one-day primary using the responses collected in each subsequent month of the primary campaign. We then compare the resulting monthly candidate support estimates in January, February, March, April, May, and June to the actual support of each individual in each month to determine if the responses are systematically different and whether the differences are larger for respondents who should be more responsive to election outcomes based on their demographics and prior research.

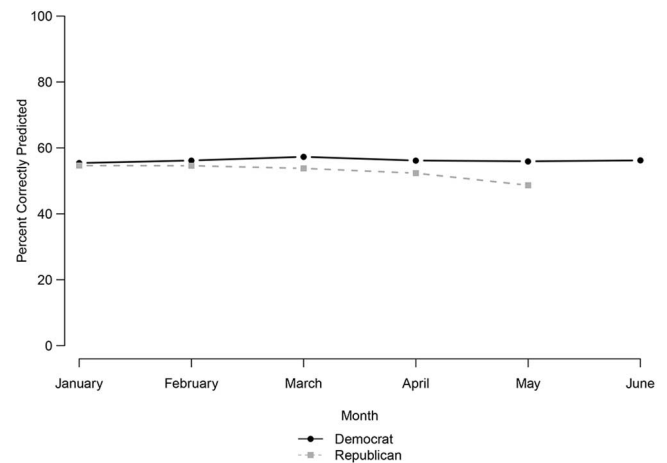


Figure 4. Prediction success from December demographic model

Figure 4 plots the percentage of correctly predicted cases over time. The results of analyzing self-identified Democrats and support for Clinton and Sanders over time reveal a pattern that is at odds with what we would expect if momentum has an important impact on responses: we can correctly classify a majority of responses in every month prior to any elections occurring, and our ability to predict responses does not decline in response to more elections occurring. Indeed, the overall stability of the relationship over time raises larger questions about whether the campaign managed to meaningfully affect any group of respondents.

Looking at the effects among self-identified Republicans reveals slightly larger changes over time, but these changes are by no means substantial. Moreover, the slight decline we observe in figure 4 is difficult to explain. While it is possible that momentum effects were larger in the Republican contest—either because of differences in the candidates involved or else because the self-identified Republican respondents were less committed to their most preferred candidate than Democrats—the effect could also be an artifact of the shrinking Republican field. To explore whether the decreasing predictive success is a result of candidates dropping out of the Republican contest, section 3 of the appendix reanalyzes the data focusing only on those respondents who supported either Trump, Cruz, or Rubio, and it shows that some of the between-party difference in figure 4 is due to differential changes in the choice set over time in the two contests; omitting the supporters of candidates who drop out of the Republican contest increases the predictive power of the baseline probability.<sup>12</sup>

12. The stability in predictive ability is not a consequence of focusing on all respondents rather than on selected subsets. Section 2 of the appendix shows that there is also very little change in the relationship between demographics and candidate preferences over time.



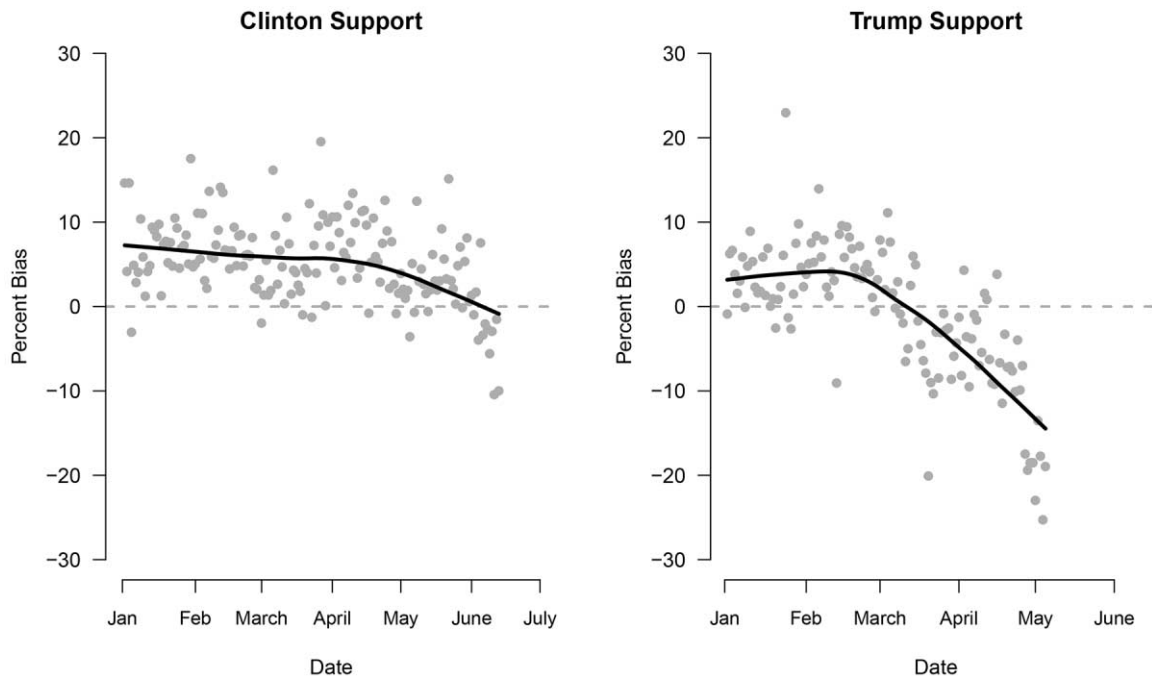


Figure 5. Daily bias in predicted candidate support: the dots denote the daily prediction bias and the lines summarize the smoothed trend

We can also disaggregate the errors by time and type to determine when the national one-day primary models over- and underpredict support for Trump and Clinton.<sup>13</sup> If the act of winning an election causes voters to move toward the winning candidate as momentum effects suggest, predictions made using the relationship between demographics and candidate preferences in December 2015 would underpredict the support for victorious candidates and overpredict the support for losing candidates. To explore this possibility, figure 5 disaggregates the monthly prediction error graphed in figure 4 to the amount of error occurring on each day by comparing the predicted level of support to the actual level of support for each day's respondents. Positive numbers indicate that the candidate is doing worse than the December baseline model would predict, and negative numbers indicate that the candidate is doing better than the December model predicts.

Figure 5 reveals some interesting changes in the ability of our baseline demographic model to predict candidate support over time, but the patterns are not obviously related to election results. The left panel reveals a slight, persistent, overprediction bias for Clinton that slowly declines—consistent with the fact that Clinton's highest level of support in

the polls was obtained prior to any primary elections occurring. Among Republicans, Trump's support in December is higher than his support in the early primary months, but starting in mid-March his support exceeds the support he was receiving in December. Somewhat troubling for notions of momentum is the fact that the changes in support for each candidate are not obviously responsive to changing levels of electoral success.<sup>14</sup>

#### IDENTIFYING THE IMPACT OF MOMENTUM

To better examine whether election outcomes shift opinion above and beyond existing trends requires disaggregating the temporal trends to isolate the impact of election contests from other potential confounds. Because a critical component of momentum is the ability of an election outcome to change responses in ways that would not have occurred otherwise, it is necessary to compare the effect of an election outcome relative to a counterfactual of what would have changed even in the absence of the election. For this reason, simply comparing responses before and after an event is insufficient because so doing ignores the consequences of preexisting time trends that may compromise and confound simple pre-post comparisons.

13. Because the Democratic contest was largely a two-candidate race for the period for which we have data, the effect of momentum on Sanders is the opposite of Clinton's (her victories are his losses and vice versa).

14. Section 12 of the appendix shows that the changes are uncorrelated with changes in the number of contests won in ways that would suggest a necessary relationship between the two.

To identify how changes in responses relate to specific primary events and outcomes accounting for preexisting time trends, we employ an interrupted time series (ITS) specification.<sup>15</sup> The idea behind an ITS is to model individual responses as a function of a time trend alongside intercept shifts for events that may cause an interruption in the trend. For us, the question is whether each of the primary events listed in table 1 meaningfully shifts a candidate's support above and beyond preexisting trends—a question we answer empirically by estimating the following specification for respondent  $i$ 's preference for candidate  $A$ :

$$\Pr_i(\text{Candidate}_A = 1) = \alpha + \beta f(\text{Time}_i) + \gamma \text{Interruption}_i + \eta K_i + \epsilon_i,$$

where  $f(\text{Time}_i)$  is a flexible function of time based on the day on which respondent  $i$  was interviewed (December 1, 2015, is day 1) to account for trends over the course of the primary election, and  $\text{Interruption}_i$  is an indicator variable denoting whether respondent  $i$  was interviewed before (0) or after (1) the primary event that potentially interrupts the time trend. For example, if we were interested in whether the Iowa caucus (day = 63) uniquely affected responses, respondents interviewed prior to day 63 would be coded a 0 for  $\text{Interruption}_i$ , and anyone interviewed after day 63 would be coded a 1. The changes in opinion that  $\beta$  captures reflect the impact of any and all nonelection events (e.g., debates, media coverage), and the coefficient  $\gamma$  provides an estimate of the shift in support that occurs the day after the primary, net of the effects of the specified overall time trend. We also include a fully interacted set of individual-level demographic covariates  $K$  in the model—race, age, education, and gender—to account for potential compositional differences in the samples being compared.<sup>16</sup>

We estimate the model separately for each primary event and use the complete set of data. The included time trend captures the impact of other primary elections that occur either before or after the event being modeled as the interruption. To address concerns with the size of the window we analyze, section 10 of the appendix shows that similar, if not weaker, results obtain when using a narrower bandwidth of 10 days before and 10 days after primary events.

15. In app. 6 we also offer an omnibus model incorporating time trends, demographics, and election indicators to address each factor's relative influence. The results are qualitatively similar to those obtained using the ITS specification: election outcomes do not have a substantively unique impact on voter attitudes.

16. Section 10 of the appendix also explores whether the primary events shift the longer-term trend by allowing for  $\text{Interruption}$  to interact with  $\text{Time}$ ; the results do not meaningfully change.

By operationalizing momentum as the average shift in candidate preferences  $\gamma$  that occurs given the impact of the time trend  $\beta$ , we identify the impact of the election result itself rather than the events leading up to the primary and the resulting trend in public opinion. One slight complication is that because several primaries are often held on the same day, we can identify the net effect only of all election events that occur on the same day.

Our ability to interpret  $\gamma$  as a causal effect of winning the election(s) relies on the assumption that individuals' responses on the day before and after a primary election are equivalent but for the experience of witnessing the election outcome. Controlling for observable demographic characteristics and weighting the daily samples to be demographically equivalent allows us to identify the impact beyond demographic differences, but the main threat is one of sample composition in terms of unobservable differences. If a candidate's supporters are more likely to respond to surveys because their candidate won, we may falsely attribute changes in responses with changes in the sample composition. Because we control for demographic characteristics, unobservable characteristics uncorrelated with observable characteristics would violate this assumption. While differences in enthusiasm may exist (Gelman et al. 2016), it is difficult to imagine what unobserved characteristics may affect survey participation yet simultaneously be unrelated to observable demographics.

To identify an election outcome's impact we must be able to estimate the counterfactual effect of what responses would be in the absence of an election event. For the regression specification, this involves estimating the impact of what would be expected based on over-time trends using a sixth-order polynomial of time for flexibility.

To begin, table 2 displays the estimated  $\hat{\gamma}$  shocks for every primary event in both the Republican and Democratic primaries. Each reported coefficient represents the trend-adjusted jump in support for Clinton and Trump. In the Democratic primary, 10 out of the 14 primary days produced shocks that are statistically distinguishable from zero; in the Republican primary, six out of the 11 primary events produced effects that are statistically distinguishable from zero.<sup>17</sup> (These results are presented visually over time for each contest in sec. 7 of the appendix.)

17. We are cautious in interpreting the significance results as conclusive because our approach involves multiple comparisons: we apply the same model to the same data and merely change which date serves as the cutpoint. While the thresholds are not arbitrary because they are the actual election dates, the standard 5% false positive rate is too generous given potential multiple comparisons. We could correct our  $p$ -values to

Table 2. Estimated Effect of Primary Events on Support for Clinton and Trump

Democrats			Republicans		
Event	$\hat{\gamma}$	SE( $\hat{\gamma}$ )	Event	$\hat{\gamma}$	SE( $\hat{\gamma}$ )
IA	-.175	.918	IA <sup>a</sup>	-4.027	1.1
NH <sup>a</sup>	4.821	.919	NH <sup>a</sup>	2.959	1.058
NV <sup>a</sup>	6.121	.786	SC	.808	.818
ST	-.436	.691	ST <sup>a</sup>	-1.841	.798
MI <sup>a</sup>	-5.018	.728	LA <sup>a</sup>	3.823	.898
FL <sup>a</sup>	-6.364	.857	FL	-.242	.972
AZ <sup>a</sup>	-6.978	.893	AZ	.478	1.121
WI	1.76	.925	WI <sup>a</sup>	-2.379	1.231
NY <sup>a</sup>	8.404	.922	NY	.625	1.395
AC <sup>a</sup>	7.458	.900	AC <sup>a</sup>	4.708	1.631
IN	1.367	.945	IN	2.914	2.023
WV <sup>a</sup>	-3.325	.984			
OR <sup>a</sup>	-8.509	.934			
CA <sup>a</sup>	10.005	1.666			

Note. ST = Super Tuesday; AC = Acela primary.

<sup>a</sup> Contests with effects that are statistically significant at  $p < .05$ .

The effects reported in table 2 suggest that Clinton's support was unchanged following her near tie with Sanders in the Iowa caucuses, her support rose by 5 points following her widely expected loss in the New Hampshire primary, her support rose by 6 points following a surprising win in the Nevada caucuses, and her support was unchanged following Super Tuesday. The largest loss in support occurred in response to her loss in Oregon (-8.5 points), and her largest gain followed her blowout victory in California (+10 points).

The results of table 2 reveal that the magnitude of momentum is not obviously related to when the election occurs in the primary calendar. If election outcomes convey information, we might expect the largest impact to occur for earlier elections when the candidates are less familiar. However, this is not the pattern we observe. There are many distinguishable events that occur near the end of the election calendar. It seems odd to think that the last few elections would be as informative as the initial set of elections given the cumulative amount of attention being given to the nomination contest over time.

It is also not the case that the magnitude of momentum shocks was larger for the Republican primaries that report-

edly caused candidates to drop out. Primary election events held immediately prior to a candidate dropping out (IA, NH, SC, NH, SC, ST, FL, IN) had an average absolute momentum effect of 2.13 points. Primaries after which no candidates dropped out actually had a slightly higher average effect of 2.40. Put differently, primary events in which the pool of candidates stayed the same actually had a slightly larger effect on Trump numbers than those that "caused" a candidate to drop out, but the magnitude of the difference is slight.

In addition to these hard-to-reconcile aspects about the relative magnitude of momentum effects we estimate, for momentum to be an important driver of nomination outcomes it must be the case that election results represent unique learning moments for potential voters. This has two implications. First, the direction and magnitude of the shock should respond to what happens in the primary. Insofar as momentum is a consequence of people updating their beliefs based on information they learn or infer from an election outcome, for example, we might suspect that larger victories and losses are more revealing in terms of hard-to-observe candidate qualities such as viability, organizational strength, and electoral support. Second, the shocks from elections ought to be substantively larger than opinion changes that nonelection days generate. If momentum is pivotal and consequential for shaping the outcome of a nomination contest, it follows not only that election outcomes should have a sizable influence on a candidate's level of support but that the impact is also greater than, or at least distinguishable from, other opinion-changing events that occur during the primary. If nonelection days produce similarly sized shifts, this would cast considerable doubt on the ability of election outcomes to uniquely shape candidate support. Momentum is consequential insofar as election outcome effects are differentiable from other events that we know can affect the support a candidate receives (Sides and Vavreck 2013).

Figure 6 plots the estimated election-correlated shocks ( $\hat{\gamma}$ ) reported in table 2 against the percentage of delegates that Trump and Clinton won in the primary elections that were held on that particular day and reveals that the estimated shift in public support following an election event is positively related to candidate performance, as expected.<sup>18</sup> On the Democratic side, the size of the shocks ( $\hat{\gamma}$ ) correlates with the percentage of delegates won at  $\rho = .30$  and at

address this concern, but we address the potential implications of this concern using placebo tests below. We would also note that some have argued that multiple-comparison adjustments are often unnecessary (Gelman, Hill, and Yajima 2012).

18. Other measures of electoral success—the percentage of votes won in the primary contests held on each day and the performance of candidates relative to poll-based expectations—produce similar conclusions. Indeed, placing any alternative measure on the  $x$ -axis would not change our conclusion. Regardless of how we organize the  $\hat{\gamma}$  shocks, they will still not be substantively meaningful when compared to the placebo range, as discussed below.

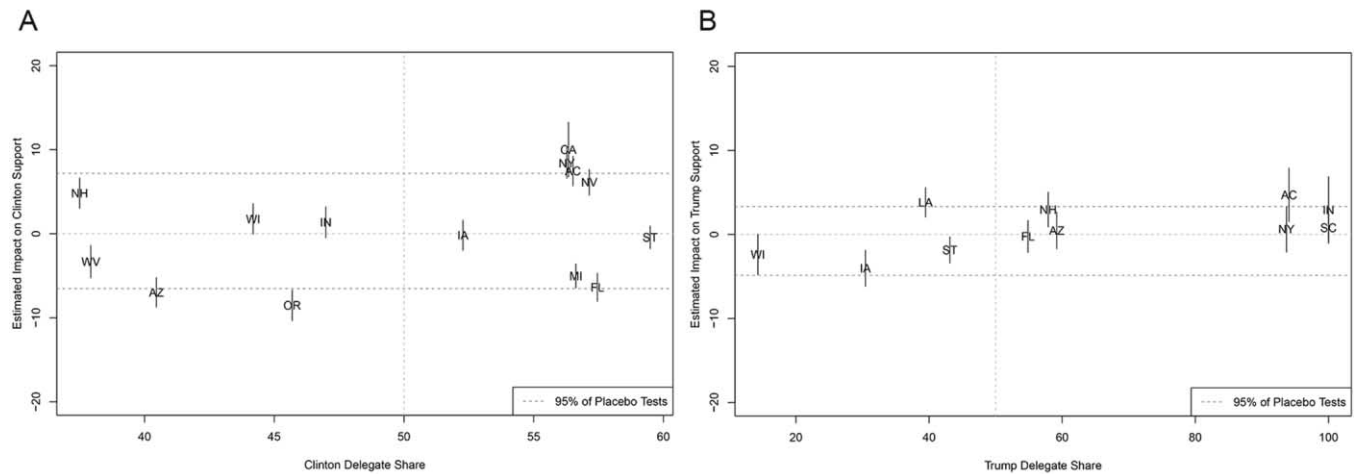


Figure 6. Estimated event effect and percentage of delegates won by primary event. A, Clinton primary result versus estimated momentum effect ( $\rho = .30$ ). B, Trump primary result versus estimated momentum effect ( $\rho = .59$ ). For each primary event the labeled point denotes the estimated impact of the primary event ( $\hat{\gamma}$ ) and 95% confidence interval against the percentage of delegates won in the elections held on that day. The dashed line denotes the range of 95% of the placebo estimates we generate for comparison.

$\rho = .59$  on the Republican side. On March 22, for example, Clinton won only 40% of the delegates in the Arizona, Utah, and Idaho contests, and, all else equal, her support among respondents interviewed after these contests dropped by an average of 7 percentage points. In contrast, on February 20, Clinton won 67% of the delegates in the Nevada caucus and her support increased 6 percentage points. Among Republicans, an even stronger positive association exists between jumps in support for Trump and the percentage of delegates won.<sup>19</sup>

These results are suggestive but not conclusive. Even if these momentum effects are distinguishable from zero and the magnitudes correlate with the percentage of delegates won in the contests being held, are the effects we identify significantly larger than those that occur on days without a primary election?

To determine whether the effects we identify for election events represent unique departures from other primary event effects, we placebo-test our estimates against the estimated effects from nonprimary election days. To do so, we rerun the ITS model for every day excluding primary election days

plus or minus two days. That is, we generate a distribution of placebo effects by running an interrupted time series model for every day that is not within two days of an election and we compare the resulting distribution of  $\hat{\gamma}$  against the estimates for primary events in table 2. If primaries and caucuses are uniquely important, the statistically significant changes to responses reported in table 2 should be substantively distinguishable from the distribution of placebo effects. If nonprimary days produce effects of similar size and magnitude to those we estimate for primary events, it becomes difficult to conclude that primary election outcomes are particularly important for understanding shifts in candidate support.

The results of the placebo tests are included in figure 6 as dashed lines denoting the empirical distribution containing 95% of the estimated placebo shocks. As is immediately clear, the estimated effects for primary events are nearly always indistinguishable from the distribution of estimated effects for nonprimary days. Because nonprimary events generate equally large estimated effects, the fact that the effects of momentum are indistinguishable from the shifts we detect on nonelection days is difficult to square with a conception of momentum whereby primary and caucus election outcomes uniquely influence the eventual outcome of an iterative primary processes.

Several primary events do indeed produce effects that are distinguishable from the estimated distribution of placebo effects. On the Democratic side, for example, the 8.5 percentage point drop in support for Clinton following Sanders's win in the Oregon primary is quite extreme compared to the placebo range, as are the boosts to Clinton's support following the California, New York, and "Acela" primaries.

19. While interesting, we hasten to add that there is little guidance as to what the expected correlation should be. It is not obvious whether larger changes should necessarily be associated with larger margins of victory or whether the act of winning is sufficient to produce an effect. While larger margins reveal more support, it is unclear how that corresponds to the information being conveyed: did Sanders's victory in his home state of Vermont convey more information than Clinton's narrow victory in Iowa? Such questions are difficult to answer, and we report the correlations without seeking to interpret them too deeply given our focus on identifying the first-order question of the extent to which election outcomes affect people's candidate preferences.

More generally, the timing of these effects suggests an interesting story about why these particular events may have produced such strong shocks; Clinton's Oregon loss came at a time when her support was particularly high, and this loss may have been "surprising." Unfortunately, the limited number of primaries that we observe constrains our ability to understand why some primaries produce effects and others do not. Explaining why some primaries have a larger effect on opinions than others requires variation in the number, type, and context of primary contests rather than variation in the number of respondents—variation that is difficult to account for all else equal.<sup>20</sup> Despite these exceptions, figure 6 does not support the concept of momentum as a unique driver of voters' attitudes toward the candidates.

It is possible that our inability to distinguish the impact of election days from nonelection days comes from including other momentum-generating days in the comparison because the placebo days include debates and other media frenzies focused on candidate actions, statements, or tweets that could shift opinions. However, the Google search volume trends related to the primaries graphed earlier in figure 1 suggest that the elections themselves were the main drivers of interest in the primaries. Moreover, the presence of placebo days that shift public opinion does not detract from our conclusion about the nature and importance of momentum; the trends in figure 3 reveal that respondents' willingness to support candidates can change over a nomination contest in response to revealed information (Sides and Vavreck 2013). Our results simply suggest that election outcomes are not necessarily central to this process.

### DIFFERENTIAL EFFECTS?

There appears to be little evidence to support the claim that election results uniquely shift voters' candidate preferences. However, the lack of effects we have found thus far may be a consequence of looking for an average effect rather than focusing on those who are presumably most responsive to the new information an election victory reveals. While an average effect would be important and impressive—and the effects of momentum are often talked about as if they are widely applicable by those covering the campaigns—it is perhaps more reasonable to expect that only some primary voters would respond (cf. Ceci and Kain 1982; Knight and Schiff 2010). To probe whether momentum affects some voters more than others and whether the lack of evidence for a meaningful

impact of momentum we find is a consequence of heterogeneous effects masking some influence on a smaller subset of voters, we replicate the analysis for a particular group of respondents who may be more responsive to outcomes: voters who have not yet had a chance to vote.<sup>21</sup>

If momentum effects come from voter learning—as would be the case if individuals use election results heuristically to make voting decisions—then these effects should be largest among those who have not voted yet. Compared to those who have already voted, people living in states with upcoming primaries have the largest incentive to consider new information because they are still able to cast a vote in the election contest (Knight and Schiff 2010; Morton and Williams 2000). Estimating and comparing the size of the momentum effects for those who have already voted relative to those who have yet to vote allows us to determine if voters' incentives to consider new information create differential effects.

To conduct this comparison we adjust the specification used to estimate the average effects of a primary event to allow the effect to vary by whether or not respondent  $i$ 's state has already voted. That is,  $\text{State.Not.Voted}_i$  denotes whether at the time of the interview respondent  $i$ 's state has not yet had the chance to vote (1) or has already voted (0), and  $\nu$  denotes the difference in momentum between those who have already had a chance to vote and those who are still forming preferences for candidates for the primary event (Interruption) of interest. The variable  $\nu$  should be significantly different from zero in the same direction as  $\gamma$  if individuals who have yet to vote respond to more election outcomes than those living in states that have already voted. All other aspects of the model are unchanged from earlier specifications:

$$\begin{aligned} \Pr_i(\text{Candidate}_A = 1) = & \alpha + \beta \text{Time}_i + \gamma \text{Interruption}_i \\ & + \nu \text{State.Not.Voted}_i \\ & \times \text{Interruption}_i + \eta K_i + \epsilon_i. \end{aligned}$$

We estimate the model separately for each primary event, changing the definition of  $\text{State.Not.Voted}_i$  to reflect the timing of each primary election event. To shed light on the substantive meaning of the coefficients, we also calculate the distribution of placebo values for each comparison by rerunning the specification after excluding primary election days and the two days before and after each election.

20. Pooling across presidential election contests does not necessarily increase our sample size for these purposes because it may also introduce variation in the candidates and electorate involved and we may worry about our ability to adequately control for potential confounding characteristics this variation creates.

21. In app. 8 we consider other areas in which differences in political interest and engagement are argued to exist by repeating the analysis for partisan strength (Mason 2015), education (Verba et al. 1995), and gender (Verba et al. 1997). These analyses all offer similar conclusions.



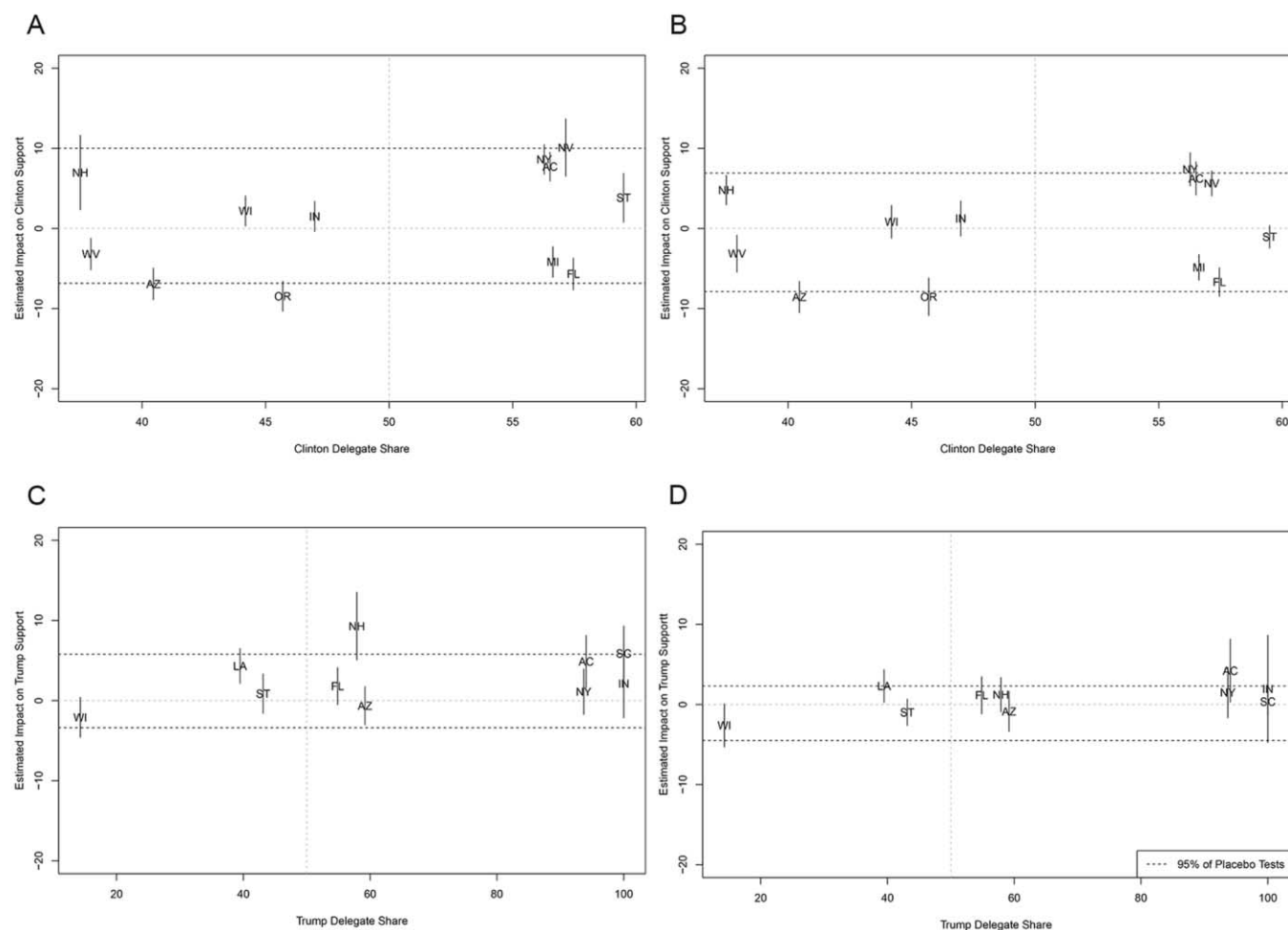


Figure 7. Estimated momentum effects by whether a state has voted. *A*, Clinton shocks, state has voted ( $\rho = .30$ ). *B*, Clinton shocks, state has not voted ( $\rho = .23$ ). *C*, Trump shocks, state has voted ( $\rho = .37$ ). *D*, Trump shocks, state has not voted ( $\rho = .62$ ).

Figure 7 graphs the estimated net momentum effects for those that have and have not yet voted as of each primary event by party. For clarity, we present the differential effects using the same format we use to report the estimated momentum effects in figure 6 by plotting the estimated effects against the percentage of delegates won in each primary election event.<sup>22</sup> We also plot 95% quantiles of placebo-generated effects for each subgroup using the dashed lines.

Figures 7A and 7B display the estimated effect of primary elections on Democrats living in states that have already voted and have yet to vote, respectively. The shocks for those who have voted are slightly larger compared to the shocks for those living in states that have yet to vote, and the correlation between the estimated shift and the percentage of delegates won is also slightly larger (.30 vs. .23). Both aspects appear opposed to predictions that momentum's impact should be

largest among those yet to vote—those who should be most responsive to whatever information an electoral victory may convey—but the differences are often statistically and substantively insignificant (the correlation between the estimated effects for those that have and have not voted is .97). Moreover, neither set of estimated effects is distinguishable from the distribution of estimated placebo results.

Similar results obtain in the Republican primary plotted in figures 7C and 7D. As was the case among Democrats, nearly every estimated effect is indistinguishable either between groups or relative to the distribution of placebo effects. The only exception occurs for the New Hampshire primary for self-identified Republicans whose states have already voted—in this case, those living in Iowa and New Hampshire. Surprisingly, the New Hampshire primary did not have an effect distinguishable from zero for those living outside Iowa and New Hampshire. While previous research suggests that New Hampshire sends a particularly strong message about candidate viability (Abramowitz 1989; Steger, Dowdle, and Adkins 2004), we find its largest influence among those

22. Appendix 8 reports the estimated interaction effects  $\hat{\nu}$  and  $\rho$ -values, as well as a figure showing the two groups' shocks plotted against one another.

who have already cast their ballots, which complicates notions of momentum related to opinion updating.

There is some evidence of greater learning among Republicans whose states have yet to vote: the correlation between election results and estimated effects is higher for these individuals (.61) than for individuals in states that have already voted (.37). But the effects for self-identified Republicans (and Republican “leaners”) living in states yet to vote are not larger than the estimated placebo range for the group, and the correlation between estimated impacts in figures 7C and 7D is a robust .58. The increased correlation of results and shocks for those yet to vote is suggestive, but the overall evidence does not indicate that election results were uniquely shaping preferences for Trump in this group.

The lack of meaningful differential effects suggests that the near-null results we find for momentum are not a consequence of averaging across respondents who are more and less likely to have an incentive to respond to the information that may be contained in an election outcome. There is very little evidence that those who have yet to vote are any more affected by an election than those who have already voted. Appendix 8 looks for evidence of differential effects among other groups that literature suggests may have weaker priors about whom to vote for or who may be more willing to update their opinions—for example, those with lower education, partisan “leaners,” and women—and reaches similar substantive conclusions.

## CONCLUSION

Media coverage of presidential primaries and elections is often obsessed with the notion of momentum. More than simply a journalistic crutch, however, the concept of momentum is important for understanding voter decision making and the impact that elections may have for galvanizing support for a candidate who has shown an ability to win. This matters because presidential nomination contests involve a sequence of elections in which candidates repeatedly compete in front of electorates that vary in size and composition. If voters’ opinions respond to electoral victories, then the election sequence itself may affect the nomination process’s result because election outcomes may depend on how well the candidate does in preceding contests and whether victories move public support in outcome-consequential ways (Morton and Williams 2000).<sup>23</sup> If momentum exists and voters’ preferences over the candidates change in response to who wins and loses, then the nomination outcome can depend on the sequence in which the elections are held.

Exploring momentum effects is also important for understanding voter decision making and the types of considerations that voters may or may not use when deciding whom to support. Independent of candidates’ actions and statements, the ability to win an election may affect voters’ opinions by demonstrating electoral viability, by creating a bandwagon effect that attracts voters, or by conveying other decision-consequential information.

We explore the impact of momentum from several angles to show that despite the presence of two outsider candidates, an extended nomination contest, and the ability to precisely identify small effects as a consequence of interviewing more than 1,600 respondents every day of the nomination contest, little evidence supports the idea that momentum has a causal effect on voters’ candidate preferences. Whether we look at aggregate effects to determine how much the relationship between voter characteristics and candidate preferences changes over the course of the campaign or we use an interrupted time series model to explore whether primary events affect voters’ preferences above and beyond existing trends, we find effects that are inconsistent with theoretical expectations about how opinions should vary in response to election outcomes.

While we find some evidence that could be construed as consistent with momentum—for example, models based on early data underpredict the winners’ performance over time and the interrupted time series estimates of the effects of election days are nearly always statistically distinguishable from zero and positively associated with election results—and that may explain the ubiquitous reference to momentum as an explanation for changing poll numbers across a nomination contest, digging deeper quickly reveals reasons to discount these effects as evidence of election outcomes. Not only are the effects of election events indistinguishable from the effects we estimate that occur on nonprimary days, but we also find no evidence that those who should be most receptive to new information according to theories of voter decision making vary in their response to election outcomes. To be clear, this is not to say that primary campaigns convey no useful candidate information. They do (Sides and Vavreck 2013). Rather, we find no evidence that election outcomes disproportionately influence people’s candidate preferences.

It could be the case that a highly saturated political media environment suppressed momentum effects in 2016. The campaign received persistent attention in media outlets covering politics. As such, any specific event may have been lost in the noise of constant campaign coverage (consider the general surge and decline relationship between media coverage and candidate support; Sides and Vavreck 2013). Electoral results could provide a much stronger signal in a less saturated media environment. But even so, the period for these potentially opportune conditions for notable momen-

23. This is independent of the way in which the sequence can matter because of the differential costs involved in campaigning in various states.

tum effects is small: only those primaries contested between the McGovern-Fraser reforms and the late 1990s' media environment expansion. Because it seems unlikely that the information environment will become less saturated in the near future, if the media environment attenuates momentum effects, then it will likely continue to do so.

Another possibility for why we find no momentum effects is that the momentum translates into participation rather than opinions. Allen and Parnes (2017), for example, argue that the Clinton campaign focused nearly exclusively on get out the vote efforts rather than persuasion, and this emphasis may have dampened the ability of campaign events to change voters' opinions. Little evidence suggests that Trump's campaign did anything other than messaging. Even so, not only is studying the impact of election outcomes on participation difficult given well-known biases in behavioral self-reports, but the question of whether election outcomes affect voters' opinions is an important first-order investigation for understanding the link between voters and elections regardless of whether momentum affects participation.

Despite holding tremendous importance for shaping voters' opinions given their unique status as events that attract considerable public attention, the many mechanisms by which election outcomes could affect public opinion, and the frequency with which momentum is routinely used to explain and interpret the outcomes of presidential nominating contests, we fail to find much evidence that election outcomes uniquely affect voters' opinions using more data than ever before possible. While perhaps disappointing for those wishing to use momentum to explain changing levels of public support, public opinion's relative resistance to election outcomes suggests that election sequencing may not have much influence on nomination contest outcomes as would be the case if voters' opinions responded to election victories and losses. While the election sequence clearly affects a nomination campaign's costs, it is not clear that nomination contest outcomes are simply a consequence of a given election sequence and how it structures voters' attitudes. Consequently, this suggests that "stacking" a nomination contest with an election sequence favoring one candidate would not appear to affect whether other candidates can maintain support among voters.

## REFERENCES

- Abramowitz, Alan I. 1989. "Viability, Electability, and Candidate Choice in a Presidential Primary Election: A Test of Competing Models." *Journal of Politics* 51 (4): 977–92.
- Aldrich, John H. 1980. "A Dynamic Model of Presidential Nomination Campaigns." *American Political Science Review* 74 (3): 651–69.
- Allen, Jonathan, and Amie Parnes. 2017. *Shattered*. New York: Crown.
- Ansolabehere, Stephen, and Shanto Iyengar. 1994. "Of Horseshoes and Horse Races: Experimental Studies of the Impact of Poll Results on Electoral Behavior." *Political Communication* 11 (4): 413–30.
- Azari, Julia, and Marc J. Hetherington. 2016. "Back to the Future? What the Politics of the Late Nineteenth Century Can Tell Us about the 2016 Election." *Annals of the American Academy of Political and Social Science* 667:92–109.
- Bartels, Larry M. 1988. *Presidential Primaries and the Dynamics of Public Choice*. Princeton, NJ: Princeton University Press.
- Bartels, Larry M. 2014. "Remembering to Forget: A Note on the Duration of Campaign Advertising Effects." *Political Communication* 31 (4): 532–44.
- Callander, Steven. 2007. "Bandwagons and Momentum in Sequential Voting." *Review of Economic Studies* 74 (3): 653–84.
- Ceci, Stephen J., and Edward L. Kain. 1982. "Jumping on the Bandwagon with the Underdog: The Impact of Attitude Polls on Polling Behavior." *Public Opinion Quarterly* 46 (2): 228–42.
- Cohen, Marty, David Karol, Hans Noel, and John Zaller. 2008. *The Party Decides: Presidential Nominations Before and After Reform*. Chicago: University of Chicago Press.
- Gelman, Andrew, Sharad Goel, Douglas Rivers, and David Rothschild. 2016. "The Mythical Swing Voter." *Quarterly Journal of Political Science* 11:103–30.
- Gelman, Andrew, Jennifer Hill, and Masanao Yajima. 2012. "Why We (Usually) Don't Have to Worry about Multiple Comparisons." *Journal of Research on Educational Effectiveness* 5 (2): 189–211.
- Gelman, Andrew, and Gary King. 1993. "Why Are American Presidential Election Campaign Polls So Variable When Votes Are So Predictable?" *British Journal of Political Science* 23 (4): 409–51.
- Gerber, Alan S., James G. Gimpel, Donald P. Green, and Daron R. Shaw. 2011. "How Large and Long-Lasting Are the Persuasive Effects of Televised Campaign Ads? Results from a Randomized Field Experiment." *American Political Science Review* 105 (1): 135–50.
- Gilens, Martin, Lynn Vavreck, and Martin Cohen. 2007. "The Mass Media and the Public's Assessments of Presidential Candidates, 1952–2000." *Journal of Politics* 69 (4): 1160–75.
- The Hill*. 2016. "Sanders Seizes Momentum Heading into California." *The Hill*, June 3.
- Hill, Seth J., James Lo, Lynn Vavreck, and John Zaller. 2013. "How Quickly We Forget: The Duration of Persuasion Effects from Mass Communication." *Political Communication* 30 (4): 521–47.
- Huffington Post*. 2016. "After Winning 7 Straight, Sanders Has the Momentum to Upset Clinton." *Huffington Post*, April 11.
- Kam, Cindy D., and Elizabeth J. Zechmeister. 2013. "Name Recognition and Candidate Support." *American Journal of Political Science* 57 (4): 971–86.
- Kennedy, Courtney, Mark Blumenthal, Scott Clement, et al. 2018. "An Evaluation of the 2016 Election Polls in the United States: AAPOR Task Force Report." *Public Opinion Quarterly* 82 (1): 1–33.
- Kenney, Patrick J., and Tom W. Rice. 1994. "The Psychology of Political Momentum." *Political Research Quarterly* 47 (4): 923–38.
- Kinder, Donald R., and Allison Dale-Riddle. 2012. *The End of Race?* New Haven, CT: Yale University Press.
- Knight, Brian, and Nathan Schiff. 2010. "Momentum and Social Learning in Presidential Primaries." *Journal of Political Economy* 118 (6): 1110–50.
- Lenz, Gabriel S. 2012. *Follow the Leader? How Voters Respond to Politicians' Policies and Performance*. Chicago: University of Chicago Press.
- Mason, Lilliana. 2015. "'I Disrespectfully Agree': The Differential Effects of Partisan Sorting on Social and Issue Polarization." *American Journal of Political Science* 59 (1): 128–45.
- McKelvey, Richard D., and Peter C. Ordeshook. 1985. "Elections with Limited Information: A Fulfilled Expectations Model Using Contemporaneous Poll and Endorsement Data as Information Sources." *Journal of Economic Theory* 36:55–85.

- McKelvey, Richard D., and Peter C. Ordeshook. 1986. "Information, Electoral Equilibria, and the Democratic Ideal." *Journal of Politics* 48:909–37.
- Morton, Rebecca B., and Kenneth C. Williams. 2000. *Learning by Voting*. Ann Arbor: University of Michigan Press.
- Murr, Andreas E. 2015. "The Wisdom of Crowds: Applying Condorcet's Jury Theorem to Forecasting US Presidential Elections." *International Journal of Forecasting* 31 (3): 916–29.
- Mutz, Diana C. 1997. "Mechanisms of Momentum: Does Thinking Make It So?" *Journal of Politics* 59 (1): 104–25.
- Nadeau, Richard, Edouard Cloutier, and J. H. Guay. 1993. "New Evidence about the Existence of a Bandwagon Effect in the Opinion Formation Process." *International Political Science Review* 14 (2): 203–13.
- Nagourney, Adam. 2007. "Early Primary Rush Upends '08 Campaign Plans." *New York Times*, March 12, sec. A.
- National Review*. 2016. "Cruz Delegates Waver as Trump Gains Momentum." *National Review*, May 1.
- New York Times*. 2016. "Bernie Sanders Pins Hopes for Momentum on Indiana." *New York Times*, May 2.
- Politico*. 2016. "How Clinton Plans to Stop Sanders' Momentum." *Politico*, February 8.
- Rickershauser, Jill, and John H. Aldrich. 2007. "'It's the Electability, Stupid'—or Maybe Not? Electability, Substance, and Strategic Voting in Presidential Primaries." *Electoral Studies* 26 (2): 371–80.
- Sides, John, and Lynn Vavreck. 2013. *The Gamble*. Princeton, NJ: Princeton University Press.
- Smidt, Corwin D. 2017. "Polarization and the Decline of the American Floating Voter." *American Journal of Political Science* 61 (2): 365–81.
- Steger, Wayne P., Andrew J. Dowdle, and Randall E. Adkins. 2004. "The New Hampshire Effect in Presidential Nominations." *Political Research Quarterly* 57 (3): 375–90.
- Stone, Walter J., Ronald B. Rapoport, and Alan I. Abramowitz. 1992. "Candidate Support in Presidential Nomination Campaigns: The Case of Iowa in 1984." *Journal of Politics* 54 (4): 1074–97.
- Stone, Walter J., Ronald B. Rapoport, and Lonna R. Atkeson. 1995. "A Simulation Model of Presidential Nomination Choice." *American Journal of Political Science* 39 (1): 135–61.
- Tartar, Andre. 2016. "Ranking the 2016 Presidential Primary Polls and Predictions." *Bloomberg*, June 29.
- Verba, Sidney, Nancy Burns, and Kay Lehman Schlozman. 1997. "Knowing and Caring about Politics: Gender and Political Engagement." *Journal of Politics* 59 (4): 1051–72.
- Verba, Sidney, Kay Lehman Schlozman, and Henry E. Brady. 1995. *Voice and Equality*. Cambridge, MA: Harvard University Press.
- Zaller, John, and Stanley Feldman. 1992. "A Simple Theory of the Survey Response: Answering Questions versus Revealing Preferences." *American Journal of Political Science* 36 (3): 579–616.