

Changing the Clock: The Role of Campaigns in the Timing of Vote Decision

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Abstract

Time of vote decision research has shaped our understanding of the nature and influence of campaigns. Traditionally, time of decision has been viewed as a function of individual-level characteristics, especially political attentiveness. We use an 11-wave panel survey to evaluate two ways that electoral context interacts with individual-level factors to affect time of decision in the 2008 U.S. presidential election. First, we find that less politically attentive respondents living in locations where campaigning was most intense made up their minds earlier than those living elsewhere, while there is no such difference among the politically attentive. Second, we find that early-deciding partisans settled on a preferred general election candidate as soon as a presumed party nominee was known, resulting in different times of decision for Democrats and Republicans. Rather than time of decision simply constraining campaigns, these results suggest campaigns structure the time of decision.

Political science offers numerous theories about the correlates of the final vote decision, but we know much less about the dynamics of the process by which voters reach that decision. As Thomas Holbrook (1996) observes, “A political campaign must be understood to be a process that generates a product, the election outcome, and like any other process, one cannot expect to understand the process by analyzing only the product” (153). One central aspect of those dynamics is the timing of the vote decision. Research on time of vote decision has a rich history in the study of democratic elections, playing a critical role in our understanding of the nature and influence of political campaigns. Indeed, the minimal effects paradigm of the early Columbia School studies was largely based on empirical analysis of timing of the vote decision (Lazarsfeld et al. 1944).

The theoretical and empirical foundations of this literature, however, are ripe for updating. Traditionally, time of decision has been viewed as a function of the individual-level attributes of voters, essentially treated as a “stable individual trait determined by one’s position in the social structure” (Chaffee and Rimal 1998, 271). Across a variety of elections and countries, early deciders are the highly engaged and informed partisans, while late deciders are the least interested and attentive segment of the electorate (e.g., Katz 1971; Whitney and Goldman 1985; Hayes and McAllister 1996; Norris et al 1999). Yet, given the growing recognition that campaign context shapes voter decision making (e.g., Kahn and Kenney 2002; Hillygus 2007; McClurg and Holbrook 2009; Grant et al 2010), we argue that time of decision should depend not only on the characteristics of the individual voter, but also the nature of the campaign environment.

Although previous research on time of decision has recognized the potential for electoral context to matter for time of decision (e.g., Gopoian and Hadjiharalambous 1994), the fine-

grained data about the dynamics of voter preferences necessary for thoroughly exploring such effects have not previously been available. In this paper, we use the 11-wave Associated Press Yahoo News Election Panel Study (APYN) to examine time of vote decision in the 2008 U.S. presidential election. Using an event history approach, we explore two different ways in which the campaign environment interacts with individual-level characteristics to affect time of decision. First, we examine the relationship between time of decision and campaign intensity, leveraging variation in campaign intensity across the U.S. states related to the incentives created by the Electoral College (Geer and Lau 2006). We find that the less politically attentive voters living in the battleground states, where campaign efforts were most prevalent, settle on a preferred candidate much earlier than those living in safe states, which saw very little campaigning. Second, we examine variation in the timing of the general election vote decision related to the dynamics of the nomination process, which unfolds over a series of sequential state-level elections in the United States. We find that early-deciding partisans settled on their preferred candidate only once the presumed nominee was known, resulting in different times of decision for voters from different parties.

Though comparable data are not available to replicate in other election years or countries, our results offer a corrective to the classic literature on time of decision and suggest broader implications for the role of campaigns in the electoral process. The findings highlight that time of decision does not simply “mediate” campaign effects (Fournier et al. 2001, 661), but rather seems to itself depend on the campaign. More generally, previous research lamented time of decision patterns because they implied electoral outcomes depended disproportionately on unengaged late deciders. In contrast, our analysis suggests that the information-rich environment of battleground states speeds the decision making of the least attentive during U.S. presidential

campaigns. As such, uninterested voters still making up their minds in the closing days of the campaign are more likely to reside in uncompetitive states. Given the critical role of battleground states in determining American election outcomes, these results suggest that fewer changes occurred among the less attentive who live in the places where such changes would have mattered most.

Explaining Time of Decision

Time of decision is one of the oldest topics in the voting behavior literature, dating to the early Columbia School studies of the 1940s and revisited in numerous subsequent analyses in North American and European elections.¹ Interest in this topic stems largely from the belief that timing of the vote decision constrains the possible influence of electoral campaigns. In the United States, research has consistently found that large shares of voters make up their minds well before the start of the general election campaign, suggesting campaign messages play little role in shaping that decision. Simply put, efforts to convince voters about which candidate to support are irrelevant for those whose minds are already made. This interpretation has not gone unchallenged (e.g., Finkel 1993), but most of the critiques attempt to reassess the role of campaigns—either by disputing the share of early deciders or broadening the set of campaign effects to include reinforcement of early decisions—without fundamentally challenging the basic assumption.

We offer a somewhat different perspective. Rather than time of decision constraining campaigns, we suggest the opposite is also true: Campaigns structure the time of decision. In

¹ For example: Lazarsfeld et al 1944; Berelson et al 1954; Katz 1971; O’Keefe et al 1976; Chaffee and Choe 1980; Whitney and Goldman 1985; Plumb 1986; Bowen 1994; Gopoiian and Hadjiharalambous 1994; Chaffee and Rimal 1996; Hayes and McAllister 1996; Norris et al 1999; Irwin and Van Holsteyn 2008; Nir and Druckman 2008; Kogen and Gottfried 2012.

this paper, we develop a theoretical argument about how campaigns influence time of decisions based primarily on their informational role. While the observational character of our data limits our ability to unequivocally identify the causal effect of campaigns on time of decision, we are nevertheless able to demonstrate patterns of decision-making across levels of campaign intensity and campaign events in the 2008 election that are consistent with our expectations.

The classic view emerging from the Columbia School research treats time of decision as an individual-level phenomenon. Its sources are thought to lie in the characteristics of individual decision-makers, most notably, their cognitive engagement with politics. Those who pay attention to and care about politics decide early; late deciders, in contrast, are those who feel “that nothing much was at stake and waited for happenstance or friends to make up their minds for them” (Lazarsfeld et al 1944, 55). This was the first of many pieces of scholarship that treated time of decision as nearly synonymous with political attentiveness. That is, across many elections and countries the early deciders are thought to be the most interested, attentive, and knowledgeable portion of the electorate while late deciders are uninterested, inattentive, and unpredictable (Berelson et al. 1954; Katz 1971; Whitney and Goldman 1985; Bowen 1994; Gopoiian and Hadjiharalambous 1994; Chaffee and Rimal 1996; Hayes and McAllister 1996; Petrocik 2009). Most recently, in an analysis of “late deciders” in elections from 1998-2004, Brox and Giammo (2009) conclude that their findings “conform to the picture of those who put off their decision about which candidate to support as being relatively uninformed, uninvolved, and apathetic when compared to those coming to a decision sooner”(340).

A small literature, however, challenges the notion that time of decision reflects a fixed attribute of voters, concluding instead that it reflects a variety of situational conditions in which the decision is being made (Chaffee and Rimal 1996). This literature has largely focused on how

the structural characteristics of election contests—the level of office in question, the presence of an incumbent or a third party candidate on the ballot—might lead voters who decided early in one election to decide later in another (O’Keefe et al. 1976; Whitney and Goldman 1985; Irwin and Van Holsteyn 2008). In each case the central concern is how features of the contest simplify or complicate the decisions voters must make. As complexity increases, decisions are made later.

Yet, the nature and dynamics of campaign information has received little attention in this debate over the importance of individual- and situational-level bases for the timing of decision.² Given the centrality of decision complexity and information availability in time of decision, we might expect variation in time of decision within a single election based on the dynamics of the campaign. It is widely assumed that voters will make up their minds earlier when they have an easier time fitting their decision to their political predispositions. It easily follows then that the politically attentive can make these connections with less difficulty and, therefore, more quickly all else equal. But a situational perspective emphasizing campaigns also follows this simple premise. Because campaigns convey a great deal of information, they should play an important role in shaping the complexity of choice. To the extent campaign information makes voters’ task easier (or more difficult) it will hasten (or delay) the timing of their decisions. We therefore expect that time of decision reflects an interaction of long-term characteristics—including political attentiveness and partisan predispositions—with short-term features of the campaign.

We examine the relationship between time of decision and campaign dynamics with two different sets of analyses. First, we examine the relationship between time of decision, campaign intensity, and political attentiveness. We exploit the geographic variation across states in

² Nir and Druckman (2008) provide a notable exception, demonstrating the balance of newspaper coverage in a Minnesota senatorial race was related to time of decision. McGregor (2012) shows that time of decision is related to the competitive circumstances of the campaign, with strategic voters making their vote decisions relatively late.

intensity of campaigning for the U.S. presidency (Shaw 2006). In the 2008 campaign, for instance, John McCain and Barack Obama spent more than a billion dollars, but 98% of the spending was in just 15 battleground states. Considerable research shows campaign competitiveness and intensity can shape voter decision making (e.g., Kahn and Kenny 2002; Hillygus 2007; McClurg and Holbrook 2009; Grant et al 2010; Bergbower 2014). We expect living in the intense information environment of battleground states where most campaign activities occur shapes not only the decision outcome, but also its timing. Campaign information should most influence the least sophisticated in the electorate because they are most in need of information and least equipped to resist any persuasive appeals they receive (Zaller 1992). However, the expectations for how they respond to intense campaigning are less clear.

Consider the Columbia School authors' two explanations for late decision-making among voters who are less interested in politics. In one diagnosis, the least politically attentive voters simply lack the motivation and information to make a decision, postponing any effort to do so until the final hour. As such, campaign information could provide the motivational and informational resources these voters lack, hastening their decision-making. Settling on a candidate means a voter not only makes an initial choice but also sticks with that choice. Once individuals form an opinion exposure to balanced competing messages tend to preserve rather than change opinion (Zaller 1992). American presidential campaigns offer balanced communications – with a nearly equivalent amount of messages supporting each candidate – that tend to preserve opinion. In other words, less interested voters in battleground states should be quicker to settle on a candidate than less interested voters in safe states because they are more exposed to the information that prompts and reinforces choice. On the other hand, Columbia School authors also argue that the least politically involved are more likely to have weakly

structured and inconsistent predispositions, which point them in competing directions and make the decision more difficult. In this case of ambivalence, more campaign information could further delay decisions (Nir and Druckman 2008).

Second, we examine how time of decision is related to dynamics over of the course of the campaign. In U.S. presidential elections, Election Day is the second Tuesday of November, with party conventions at the end of summer marking the point at which the party nominations are formalized and the general election campaign officially begins. However, the nomination process unfolds sequentially and separately for the two parties in a series of state-level primary contests, with campaigning for general election beginning as soon as the nomination is unofficially sealed up. This makes for a long campaign calendar over which voters can acquire the information to make their decision (Arceneaux 2006). We expect that at any point in time, the likelihood that undecided voters reach a decision depends on how events in the campaign help or cloud their ability to fit their predispositions to the decision. Given the distinctiveness of campaign dynamics in the nomination stage for each political party, here we consider how the time of decision of partisan identifiers relates to the timing of campaign events, offering insight into the extent of variation in decision making among the early deciders.

Measuring Time of Decision

In addition to the disagreement about the theoretical underpinnings of time of decision, there is ongoing debate regarding its measurement. Studies on the timing of voters' decisions typically take one of two approaches to operationalize this concept. Most commonly, post-election cross-sectional surveys simply ask respondents to recall when they made up their

minds.³ However, some have questioned the accuracy of the recall measure due to simple memory errors (e.g., Plumb 1986). Time of vote decision, in particular, seems difficult to measure via recall since people may come to their vote decision through a slow and cumulative process (Lodge et al 1989) rather than in a single, memorable moment.

As a result, some researchers prefer an observed measure that comes from repeated interviewing of the same individuals over time. This panel approach identifies time of decision as the point in time from which a respondent selects the same candidate across all subsequent interviews (Lazarsfeld et al 1944; Chaffee and Choe 1980; Chaffee and Rimal 1996; Mendelsohn and O’Keefe 1976; O’Keefe et al. 1976; Plumb 1986; Whitney and Goldman 1985). In other words, the first interview at which a respondent’s vote intention remains consistent with her vote intention in all further interviews. This approach is by no means perfect (Steinbrecher and Schoen 2013). For instance, it ignores possible changes between survey waves – observed consistency across waves could mask a switch (and switch back) in preference between waves. Likewise, someone who makes up her mind the day after the previous wave is necessarily categorized the same as someone who makes up her mind the day before the next wave.

Research has found discrepancies between the recall and observation measures (Chaffee and Rimal 1996; Fournier et al. 2004; Plumb 1986). For example, the American National Election Study (ANES) typically finds that 60% to 70% of voters report that they made up their minds before the fall campaign on the recall question (Kaufmann et al. 2008). However, examination of a handful of studies that used the panel method across various elections puts the number of early deciders closer to 80% (Katz 1971). There are also sizeable discrepancies at the

³ E.g., Bowen 1994; Campbell et al. 1960; Gopoian and Hadliharalambous 1994; Lewis-Beck et al 2008; Norris et al 1999; Nir 2005; Nir and Druckman 2008; Petrocik 2009.

individual-level (Plumb 1986; Chafee and Rimal 1996).⁴ While some have concluded that these discrepancies are necessarily evidence that the observational approach is better, Kogen and Gottfried (2012) point out that the two measures might simply tap different dimensions of the decision-making process. Unfortunately, it is impossible to determine whether the measures diverge due to error or to a more benign difference in the underlying concepts they operationalize.

While we cannot resolve that debate, we can improve upon the current panel approach by increasing the frequency of observation. Previous uses of the panel-method in U.S. elections have typically had only 2 or 3 pre-election interviews. These ‘short’ panels face a difficult tradeoff. On the one hand, the concerns noted above about missing transitions that occur between interviews seem especially problematic if the small number of waves is spread over a long period of time, such as in the 1980 ANES Panel that included five month and three month stretches between the three pre-election interviews. On the other hand, placing the interviews more closely together (and typically closer to Election Day) sacrifices the ability to observe decision-making that occurs earlier in the election year. Because these issues likely decline in severity as the number of interviews increases, we use the 2007-2008 Associated Press—Yahoo News Election Panel Study (APYN).⁵ The APYN Panel tracked the vote intentions and political

⁴ In an analysis of vote intention stability in the four-wave ANES 1980 Panel Study, Plumb (1986) finds that just 40% of respondents’ recalled time of decision matched the panel measure.

⁵ The study was a collaboration between the AP and Yahoo Inc., with support from Knowledge Networks. The KnowledgePanel® panel members are chosen via a probability-based sampling method and using published sampling frames that cover 96% of the U.S. population. Sampled non-internet households are provided a laptop computer or MSN TV unit and free internet service. Wave 1 was fielded on November 2, 2007 to 3,548 panelist at least 18 years old; 76.5 percent of those who were fielded the survey completed the interview. This represents a cumulative response rate (CUMRR1) of 11.2 percent, using the formula specified in Callegaro and DiSogra (2008), a multiplicative combination of the panel recruitment response rate

attitudes of American adults over the course of the 2008 election.⁶ The panel has two post-election and nine pre-election interviews, including six that contain a presidential trial heat between Barack Obama and John McCain. The number of interviews allows a more fine-grained look at time of decision than previously possible. With multiple interviews of the same respondents over the course of the year leading up to the election, these data offer a unique opportunity to examine the process by which voters make up their minds. To our knowledge, the 2008 dataset used in this analysis is the only one available with so many repeated measures of vote intention in a U.S. election. Indeed, until recently, panel surveys with more than a single pre-election interview remained rare in the study of elections, limiting opportunities to examine time of decision in as thorough a manner.⁷

Unfortunately, the lack of similarly-structured panel surveys from other election years or other countries limits our ability to generalize these findings. On the one hand, that may be troubling because the dynamics of the 2008 American presidential election were unique. It was an open contest, and previous research has noted that individuals are faster to make up their mind on average when there is an incumbent in the race (Chaffee and Choe 1980). Relatedly, it was a contested nomination battle for both parties, raising questions about how that might have consequences for time of decision if supporters of losing candidates were slower to make up

(AAPOR3), the household profile rate and the survey completion rate, excluding the household retention rate. Of Wave 1 respondents, 1870 completed at least one of the post-election surveys.

⁶ Panel attrition and conditioning are always a concern in panel survey designs. However, separate analyses finds few biases in this dataset (Kruse 2009; Deng et al. 2013). First, comparisons of the weighted distributions of political and demographic characteristics of the baseline and post-election samples find that changes in distributions are small and insignificant (Kruse 2009). Second, comparisons with fresh cross-sections alongside panelist interviews in the third, sixth, and ninth waves of the study show that most differences are statistically insignificant or conditional on demographics that we incorporate into the statistical models reported below (Deng et al. 2013).

⁷ Even the 1980 ANES panel included just two waves of data collection before the conventions.

their minds (Henderson, Hillygus, and Tompson 2010). On the other hand, our concern is less about the specific dynamics of this election cycle than on the more fundamental question about whether or not the campaign context shapes time of decision. Thus, given the previous assumptions about time of decision, it will be a notable contribution simply to find evidence that campaign context shaped time of decision, even if we cannot say if the magnitude of the effect might be smaller or larger in other electoral contexts.

Time of Decision in the APYN Panel

We operationalize time of decision as the point in time from which a respondent selects the same candidate across all subsequent interviews including the post-election report of vote choice, reported in table 1.⁸ The table reveals several interesting features of voter decision-making. First, like previous research, we find a very large share of voters deciding early and a smaller group deciding quite late. By our measure, nearly 58% of voters settled on a candidate by April 2008. By the end of the party conventions, this total rises to three quarters of all voters. In contrast, many fewer voters are deciding during the fall campaign. Only an additional 5.5% decide by wave 8 (early October). A similar share made up their minds by wave 9 (late October). During the final days of the campaign, the share rises to just over one in eight. Faced with a similar pattern of relatively few voters making up their minds during the post-convention phase, it is no wonder researchers have concluded that campaigns could play only a minimal role in voter decision-making. We see at least two problems with this interpretation, however. First, even if they are only a minority of voters, the 25% of voters who decide during the fall campaign constitute a noteworthy minority—certainly enough to shape the election

⁸ We use all waves of the APYN Panel that include a head-to-head trial heat matchup between Obama and McCain, restricting the analysis timeframe from April (Wave 4) forward.

outcome. In fact, these results highlight how individual pre-election polls tend to underestimate the share of voters who are ‘in play’ by the fall campaign. Media polls in September 2008 consistently found fewer than 10% calling themselves undecided, but in comparing the same individuals across surveys we find a much larger percentage unsettled in their candidate preference.⁹ Even if any given poll finds 10% undecided, as would a different poll on another day, these cross-sectional polls are not capturing the *same* 10% of the electorate. In other words, a single snapshot poll masks fluid preferences as voters’ decision-making unfolds. To be sure, most unsettled voters waver between favoring one candidate and undecided, rather than between opposing candidates. Nevertheless, this wavering reveals a lack of a firm decision. Second, and more fundamentally for our purposes, we argue in the remainder of this paper that time of decision in table 1 is not exogenous to campaigning; the patterns are produced in part because of the campaign. In the next sections, we test this theory by leveraging geographical variation in campaign intensity and temporal variation around campaign events.

Modeling Time of Decision as Duration

To examine time of decision, we use a duration model approach. Time of decision is fundamentally about time *until* a decision is made. Settling on a candidate marks a transition between two states as the prospective voter passes from pre-decision (what we will call undecided) to decision. There are two fundamental concerns for this kind of change. The first is what duration models typically refer to as *survival*: Duration until the event takes place. In our case this is a question of how long voters remain in the pool of the undecided having not yet settled on a candidate. The second is *risk*: The likelihood that the event occurs at any particular time. In our case this is the chance of exiting the pool of undecided voters at any particular

⁹ <http://www.pollster.com/polls/us/08-us-pres-ge-mvo.php?nr=1>

moment during the campaign. The latter concept is also commonly referred to as a *hazard*. A hazard is the conditional probability of an event occurring at a particular point in time given survival up to that point (that is, given that the event has not yet occurred).

We use a duration approach to model these hazards and, from them, the probability that voters will have decided by various points in the campaign calendar.¹⁰ This approach improves upon traditional methods in two important respects. The traditional approach involves simply breaking the campaign into a series of ordered temporal categories and modeling the category into which individuals' times of decision fall. Our first improvement is that we explicitly treat a substantive question about duration with a statistical model designed for just such a purpose. This allows us to estimate hazards over the course of the campaign and examine how they change across different points in the campaign. Our second improvement is that we allow the relationships between individual or campaign characteristics and the likelihood of deciding to vary across time. Rather than simply assuming a characteristic such as a voter's political interest has a simple constant effect on when she makes up her mind, we allow these relationships to evolve over the course of the campaign.

We estimate the probability of settling on a preferred candidate (the event) using a discrete-time model because the data are collected in discrete periods (Box-Steffensmeier and Jones 2004; Singer and Willett 2003).¹¹ The critical feature of discrete-time duration analysis for

¹⁰ The models are estimated only for those who reported voting. This keeps our work in line with the previous literature on time of decision, which focuses exclusively on voters. It also allows us to avoid conflating indecision with non-voting since including non-voters as right-censored cases in the duration model would blend the set of potential voters who were simply unable to make up their mind by Election Day and the set of chronic non-voters who were never at risk of deciding.

¹¹ What matters for our analysis is whether or not the respondent supports the candidate she eventually votes for (and does so in all subsequent interviews). Therefore, we model the occurrence of just one outcome—settling on a preferred candidate—compared to all other

this application is that after a voter first settles on a candidate he exits the risk pool.¹² Time is a key variable for this analysis because it captures the duration of indecision. We include time dummies in the model as a general and flexible way of accounting for duration dependence.¹³ In addition to time, the models include several other covariates. We operationalize political attentiveness, the individual-level concept most closely related to time of decision, with a five-point measure of *Political Interest* expressed in response to a question about how much interest the respondent has in following news about the campaign for president.¹⁴ As our measure of campaign intensity, we include an indicator for residence in a *Battleground* state.¹⁵ Our chief hypothesis is that the information environment works jointly with political interest to shape time of decision. Because the time indicators capture when voters are deciding, testing this hypothesis requires a series of triple interactions between political interest, residence in the battleground, and each time indicator. The coefficients on these interactions reveal whether and

possible states, including support for a major party candidate other than the one for whom the individual eventually casts a vote, support for a minor party candidate, or being undecided.

¹² The outcome variable indicating event occurrence at that particular wave is coded 0 until she settles on a candidate. It is coded 1 only in the wave when he settles on a candidate.

¹³ Unlike the cases discussed in Beck et al. (1998) and Carter and Signoria (2006), the nature of our data does not create problems with either data separation or loss of significant degrees of freedom (efficiency) from the use of time dummies. Nonetheless, we have also fitted the model with alternative representations of time, including a polynomial function with similar results.

¹⁴ We replicated the models using a measure of general political knowledge in place of political interest. The measure is the percent of factual questions about politics and government the respondent answered correctly. There are no substantive or statistical differences in the results. We report the results for political interest rather than political knowledge because the knowledge items were scattered across different survey waves, thereby increasing complexity due to missing data and raising potential questions about the influence of the campaign on responses. In contrast, the political interest measure was asked in the baseline wave. Results using knowledge are available in the online appendix.

¹⁵ Battleground states include Florida, Indiana, Michigan, Nevada, New Hampshire, New Mexico, North Carolina, Pennsylvania, Ohio, and Virginia based on classification of campaign expenditures by the *New York Times*. Results are robust to other measures of battleground status.

when decision-making differs jointly across interest and the information environment. We also include all subsidiary two-way interactions.

Party identification is included as dummies for *Republican* identification and *Independent* identification (including leaners), with Democrat as the excluded category. Importantly, both political interest and party identification are taken from the initial measure in the baseline survey from November 2007, helping to alleviate concerns about endogeneity with the campaign.

Finally, standard controls for gender (*Female*), race (*White*), *Age*, *Education*, and *Income* are included in the models.

Results

Before showing the results from the full model, we start by presenting a simple model for all voters without interactions. These results are shown in the first columns of table 2.¹⁶ The baseline comparison for the time indicators is the April interview, so the time coefficients are estimates of the difference between the log-odds of settling on a candidate at each interview after April and the log-odds of settling on a candidate at the April interview. The coefficients for political interest and battleground residence represent the difference in the log-odds of having reached a decision across values of the variable in question, with positive signs indicating greater likelihood of settling on a candidate. The key assumption of this simple model is that the effect of political interest (and battleground residence) on the log-odds of deciding is constant across all interview waves – that is, the more politically interested voters who remain in the pool of

¹⁶ Table 2 displays the coefficients and standard errors for time indicators, battleground indicator, the measure of political interest, and their various interactions only. For the full set of estimates including additional controls that appear in these models see Table A1 in the online appendix.

undecided at any time are more likely to make up their minds, and this difference is constant across each time period.

This simple model can be seen graphically in figure 1.¹⁷ The solid line translates the logit coefficients into hazards holding all other variables at mean values. The hazard rate is highest at the April interview, but it begins to climb during October as the pool of undecided voters becomes increasingly likely to make up their minds. Recall that the hazard rate refers to the probability of settling on a candidate at time t given that the voter has not settled on a candidate before time t . Thus, the share of voters who settle at a particular time (what we might call the *unconditioned probability* of deciding at time t) is a product of the hazard rate at time t and the size of the risk set (i.e. the pool of voters who remained undecided at the previous interview). For example, among those voters who remained in the undecided pool until late October (roughly one in five), a large share of them (about 34% [with a 90% confidence interval from 28% to 40%]) settled on a candidate then. The combination of a large hazard and a small risk set resulted in 5.5% of *all* voters deciding in late October.

We complement the hazard figure with a graph depicting the *cumulative probability* of settling on a candidate, that is, the probability a voter made her decision at any point up to that interview. For example, the cumulative probability of 0.77 in September indicates a voter has a roughly three in four chance of settling on a candidate at any time up to and including that date. The slope of the line between any two waves will be greatest when both the risk set and the hazard rate are large. Looking at the figure below, we see, for instance, that the probability of coming to a decision by early October is 0.83 and rises to 0.89 by the end of the month. The risk set at the

¹⁷ For presentational clarity, the graphs omit confidence intervals. Statistical significance can be seen in the results tables, and we report the 90% confidence intervals associated with reported hazard estimates in brackets within the text.

late October interview is relatively small because most people have already made up their minds, but as noted above the hazard rate at this point in time is relatively high. The voters who have yet to settle on candidate are more likely to do so by the late October interview than they were by any of the other interviews held during the summer or fall.

Of course, the estimates for the time coefficients in this simple model assume a constant trend across levels of political interest and across information environment. We initially relax this assumption by incorporating interactions between time and political interest. The results appear in the second column of table 2 and as the pair of dashed lines in figure 1. Looking at the results by political interest confirms the conclusions of previous research that those more engaged in politics make up their minds earlier than the less engaged. The probability that a politically-interested voter has made up her mind by April is 0.66 [0.61, 0.70] , while it is only 0.44 [0.36, 0.51] for the politically uninterested, a statistically significant difference. The difference in the hazard associated with level of interest then shrinks for those who remain undecided after April. This means that interest matters a great deal for whether a voter is already decided by April, but for those voters who remain undecided after this point interest makes no difference in the timing of decisions. The similarity in hazards after April mean that the less interested voters are not ‘catching up’ with the highly interested voters until the very end of the campaign. In the right panel of Figure 1, the trends in the cumulative probability in having decided by each interview for two levels of interest show this pattern. At each point voters who are more engaged with politics are more likely to have already made up their mind. Thus, even though interest does not distinguish hazards after April, the initial difference generates a persistent gap in the likelihood of having decided until the less interested voters finally catch up

in the final days before the election. Clearly, averaging across levels of interest when estimating the trend, as in our first simple model, ignores important differences.

These results fit with the classic view that treats time of decision as a function of political interest. However, we expect variation in time of decision based on the intensity of the campaign information flow, measured by residence in a battleground state.¹⁸ Just as averaging across levels of political interest when estimating time trends is too simplistic in our first model, averaging across battleground context within levels of political interest is problematic in our second model if the time trends vary with the joint distribution of interest and environment. To test this expectation, we need an additional set of three-way interactions between interest, battleground residence, and each time indicator. The coefficients for these interaction terms (shown in model 3 of table 2) indicate the difference in the log-odds of settling on a candidate associated with political interest is related to both time and campaign geography. We show this in terms of hazard probabilities in figure 2. In April, there are significant differences in time of decision by political interest, but not battleground state. From this point forward, however, there are significant differences in the timing of decision among undecided voters based on this campaign context. In safe states, the pattern is similar to that shown in figure 1—political interest does not appear to matter in decision-making of voters who remain undecided after the April interview. The estimated differences from June through the final pre-election interview are small and statistically indistinguishable from zero. A different pattern emerges in the battleground states. Here the initial relationship between interest and the probability of deciding is flipped among those voters who remain undecided by June. It is now the least politically-

¹⁸ Battleground status is of course a crude measure of campaign intensity. In today's media environment, exposure to the campaign is dictated more by interest than ever before (Prior 2007). At minimum, we can assume respondents in battleground states are more likely to accidentally encounter campaign information (Shaw 2006; Panagopoulos 2009).

interested undecided voters who are substantially more likely to make up their mind (0.43 [0.20, 0.68]) than are the highly interested undecided voters (0.07 [0.03, 0.14]), a difference of 0.36 that is statistically significant at the 0.10 level.

Interestingly, the difference is not simply the result of less interested undecided voters in battleground states making up their minds before similar safe state voters do, but also because highly-interested undecided voters in battleground states are less likely to make up their minds during the summer than similar voters in safe states. Overall, the battleground appears to have the effect of speeding up decision-making among less interested voters—a pattern most clearly seen in the right panel of figure 2. The early difference in the hazard due to interest has a persistent impact on the likelihood of making a decision only for these safe state voters.

The difference initially emerges in June, quite early in the general election campaign. There are two related explanations for the timing of this difference. First, this is exactly when the campaigns began to invest in the battleground efforts. On television advertising alone, Obama spent \$4 million in June, \$33 million in July, and \$32 million in August, and McCain spent \$3.4 million in June, \$21 million in July, and \$19 million in August. It is the nature of presidential campaigns today that the candidates begin their efforts well before the once traditional post-convention kick-off. Second, the effect of campaigning on time of decision must not be understood as a momentary impact but an ongoing process. Early deciders are not simply expressing a choice in June while later deciders do not; they are *maintaining* that choice across later interviews. Thus, the difference in June reflects more than a difference in thinking across battleground contexts at that specific moment. It reflects differences in the likelihood of repeating the previous candidate choice when asked again in August, September, October, and so

on. Decisions among the less interested are sustained throughout the summer and fall in the highly competitive battleground even as they waver or fade elsewhere.

In sum, our results confirm the findings of early researchers that the politically interested respondents make up their minds earlier—no doubt because it is easier for them to match their predispositions to the candidate choice set—but they also suggest that the timing of the vote decision among the least interested voters depends on their level of exposure to campaign information. In other words, time of vote decision seems to depend both on the information environment and individual-level characteristics.¹⁹ Although we cannot identify the specific mechanism by which battleground states make a difference—whether because of advertising expenditures (Shaw 2006), GOTV activity (Masket 2009), or increased motivation to pay attention to politics (Gimpel et al. 2007)—the findings add to the growing body of research documenting how campaigns shape voter decision making.

Given that time of decision is often taken as a starting point for evaluating the competency and persuadability of the electorate, the importance of this finding should not be overlooked. The Columbia School authors lamented that elections could turn on last minute

¹⁹ If less politically interested individuals are more prone to measurement error, we might be concerned that the survey process rather than differences in decision-making account for the observed differences. However, there are at least three reasons to doubt this hypothesis. First, such error should not be unidirectional. If observed responses are not accurate measures of true vote intention, then response patterns could exhibit the appearance of change when decisions are actually stable or the appearance of stability when decisions are in flux. Second, even if respondents with different levels of interest are differentially susceptible to error, it is not clear it would differ across states. Moreover, any reasonable explanations for variation across states would still likely reflect a “campaign effect.” Finally, as a robustness check we retested our models while including various proxies for measurement error from survey satisficing (Krosnick 1991): duration in minutes to complete wave 1, an indicator for being in the bottom ten percent in duration to completion of interview (i.e. the quickest completers), an indicator for taking more than an hour to complete the survey, and the length of time (in days) from when the survey was first made available for access to when respondents accessed it. In no case did the statistical or substantive results change from those presented.

deciders who are only loosely connected to politics and more likely to choose haphazardly based on what they last heard rather than reasoning from long held predispositions. In contrast, our results suggest that the intense campaign environment in a battleground state helps to speed up decision-making for the less interested. As a consequence, the late deciders should be less likely to swing the election outcome because they live disproportionately in uncompetitive states. Overall in 2008, 14% of voters made up their minds in the final weeks of the campaign, but fewer than one in four of them lived in a closely contested battleground. Or, to come at it another way, because the battleground shifted decision making to an earlier point, only 11% of battleground voters decided in the last two weeks and fewer than half of these had below average levels of political interest—which amounts to less than 1.5% of the electorate. Enough to turn close elections, to be sure, but hardly the massive wave of disinterested and uninformed last-minute decisions feared. We next turn to another test of the interaction between individual characteristics and electoral context, this time focused on exploring variation in time of decision among the early deciders.

Variation among Early Deciders

Although the APYN Panel interviews began in December 2007, we began the timeline of our previous analysis at the April 2008 interview because it was the first wave to include a question about a head-to-head matchup between Obama and McCain. The cost of doing so is that we miss the dynamics of decision-making that occur before April—a period of the election year that tends to feature substantial shifts in trial heat polling between the two eventual nominees (Erikson and Wlezien 2012). Most voters had made up their minds by this point, but we know little about the timing of decision making among these early deciders. In fact, it is not unusual

for recall questions, in particular, to simply lump together early deciders into a single response category.²⁰ Yet, we might expect significant variation in the time of decision even among the early deciders making up their minds before the campaign. After all, research on decision making in primaries have emphasized that it is less predictable and more susceptible to influence by campaign information (Popkin 1991). And to the extent that campaign information matters in the primary, it is focused on the extent of competition within and across the parties. The nomination stage looks very different on opposite sides of the aisle in the 2008 election, which we expect to be reflected in differences in time of decision by party identification. John McCain was the presumed Republican nominee by February, whereas the hard-fought Democratic nomination was competitive between Barack Obama and Hillary Clinton until the very last primary in June. As such, Republicans should be able to settle on their preferred candidate sooner than Democrats. Admittedly, finding that time of decision varies for Democrats and Republicans depending on the timing of the party nomination process might not seem like a particularly insightful campaign effect, but it is surely relevant to understanding the dynamics of voter decision making. For one, it can shed light on how partisans differentially responded to the dynamics of the nomination process in this election cycle. For example, did the divisive Democratic primary mean that Democrats were slower to rally around their party nominee than Republicans? More generally, identifying even this level of variation in time of decision can shed light on how a voter is expected to process and respond to subsequent campaign information and events (Taber and Lodge 2006). Most importantly, it simply highlights that the

²⁰ For example, CBS News offers the following response options about time of decision: “On Election Day”, “A few days before” “In the week before” “In the month before” “Sometime before that”. Not surprisingly, 62% choose the last category.

time of decision is related to campaign dynamics, rather than the characteristics of the individual alone.

To make use of the three pre-election interviews in APYN that precede April we have to make a decision about how to measure general election vote intention during the primary phase of the campaign. How should we define “time of decision” for a Romney supporter who switched to McCain as soon as he was the presumed nominee? Do we count her as having settled on McCain later in the primary season or should we consider her an early decider because she always supported a Republican? For the sake of comprehensiveness, we offer two alternatives that allow us to highlight important conceptual variants on time of decision.

In the first approach, we capture the timing at which an individual settled on the specific *candidate*. To do this, in each of the first four waves we use respondents’ preference for which candidate they would like to win the primary election as a measure of which candidate they would like to win the general election, then in later waves we rely on the head-to-head question between the nominees.²¹ This allows us to simulate a scenario in which voters at any given time point are choosing among all individual candidates in the race, a field which eventually narrows to two major party candidates by early June. This has the advantage of allowing us to see how the timing of decisions responds to primary outcomes as a contextual factor. In the second approach, we measure general election vote intention during the first three waves of the APYN with a generic (party) ballot question. This approach treats time of decision as the moment from which a voter settles on a party rather than a specific nominee. We use these two measures as we

²¹ Respondents were first asked in which (if either) party’s primary they intended to vote and then asked which candidate among those running in that primary they intended to support.

examine variation in time of decision by partisanship among the early deciders.²² Table 3 shows the time of decision using each of the measures.

Analysis of both measures follows the approach used above, but here we interact partisanship with time.²³ Figure 3 translates the estimates from both models into hazards – the left side for model 4 and the right side for model 5. Beginning with candidate preference (the left side), there is a small but statistically significant difference by party in the probability of having settled on either Obama or McCain a year before the election. The probability is 0.11 for Democrats and 0.06 for Republicans. A difference similar in magnitude but in the opposite direction appears between partisans who remain undecided in January 2008, which by this measure of decision time constitutes a large majority of voters. The most prominent feature of this figure, however, is the pair of spikes in April and June. We see that Democrats and Republicans were at greatest risk of settling on a preferred candidate at different times, no doubt reflecting the differences in the resolution of the nomination process on each side. McCain became the presumed nominee in early February after Romney dropped out of the race, but Obama did not clinch the Democratic nomination until June.²⁴

Variation in the timing and size of the rally effect speaks to the way partisans connected their nomination and general election preferences. First, it appears that Democrats were a bit slower to make up their minds than Republicans *during the primary season*, but they had caught up to

²² Each approach has disadvantages. The first has the disadvantage of treating two distinct types of decisions – primary vote intention and general election vote intention – in the same way. The second treats support for a generic partisan candidate as equivalent to support of an actual candidate, missing any dynamics in how individuals line up behind party nominees. Is it the same thing to consider a voter decided even if they hesitate to get behind the eventual nominee? We believe these limitations are outweighed by the opportunity these early waves offer in providing some understanding about how decisions emerge.

²³ The full set of estimates from these models appears in online appendix table A2.

²⁴ Although McCain did not formally reach a majority of delegates until March 4, he was called the “presumptive” nominee after Romney dropped out (Helman and Issenberg 2008).

Republicans by the fall. After June, the hazard rates for the two parties are roughly equal except at wave seven, which means that, among voters who had yet to decide, the probability of settling on a candidate was the same for both parties.

The right side of figure 3 (and the second column of table 4) shows the results when using the generic ballot questions in our measure of time of decision. Despite the large conceptual difference in the measure, there is a subtle similarity in the observed pattern. With so many partisans having settled on their party of choice a year before the election, there are few undecided partisans deciding after the candidates secure the nominations. Even so, a muted partisan difference remains. Among voters who have yet to make up their minds by the third interview (when both nominations were still in play), Republicans were more likely to make up their mind. This suggests that Republicans were more willing to rally behind their party no matter the nominee, while Democrats waited until they knew the name of their party's nominee before deciding.

Using either measure, we also see that Republicans have a higher hazard in early September. This interview was fielded immediately following the Republican National Convention and McCain's selection of Sarah Palin as his running mate, but before the collapse of financial markets in mid-September. The difference in hazards indicates undecided Republicans more galvanized to get behind a candidate and stick with him than undecided Democrats and independents, consistent with the notion that conventions can activate latent partisanship in the vote decision.²⁵ This pattern also suggests that convention bumps are due not simply to volatile

²⁵ An alternative might be that Republicans and Democrats have fundamental personality differences that might influence their likelihood of settling on the party nominee (Hetherington and Weiler 2009). This hypothesis seems unlikely for two reasons: First, our models control for two measures of dogmatism--strength of partisanship and ideological extremism. We have also interacted these measures with party and results remain unchanged. Second, the partisan

voters temporarily changing, but rather from previously uncommitted partisans “coming home” to their party nominee (Hillygus and Jackman 2003). Moreover, in 2008 specifically, pollsters found that the Republican ticket had a larger convention bounce than the Democratic one and these results indicate that was at least partly attributable to undecided Democrats being slower to rally behind Obama than undecided Republicans were to rally behind McCain.²⁶ The more fundamental point is just that this variation among early deciding partisans highlights how time of decision likely reflects an interaction of individual factors and the information environment.

Of course, these results cannot be interpreted without also recognizing the unique characteristics of the 2008 primary season. The fact that neither party’s primary involved an incumbent president or vice president for the first time since 1952 marks the race as exceptional and likely had consequences for time of decision. Indeed, the uniqueness of 2008 may be extended to the general election which not only featured no incumbent president (or vice president), but also occurred in the midst of two wars and the largest economic collapse in over a generation. It is unclear how these factors may have affected the timing of decisions; although there may be reason to believe a faltering economy eases decision-making (Popkin 1991), others argue that the lack of an incumbent increases the difficulty in assigning blame (Chaffee and Choe 1980). With that said – and recognizing the difficulty in assessing how patterns might differ under other contexts – the differences revealed here are striking and speak to the malleability of decision-making in compelling ways. By demonstrating that the campaign matters for timing of decisions – even based upon an examination of a single election cycle with

difference is consistently one in which Republicans decide sooner than Democrats; they also show a second spike after the conventions.

²⁶ <http://www.gallup.com/poll/110107/republicans-enthusiasm-jumps-after-convention.aspx>

its own idiosyncrasies – the classic view of time of decision as arising apart from the campaign comes into serious doubt.

Discussion

American presidential campaigning typically reaches its most intense moments in the final weeks before the election. Yet, few voters are making their decisions at this time. What drives when voters settle on a candidate, and does this timing mitigate the role of campaign influence? These questions are not new; indeed, time of decision is among the oldest topics in the field. For seven decades, however, this line of inquiry has focused on the characteristics of voters that divide them into camps of early and late deciders. We have argued that campaign dynamics--variation across geography and timing of campaign events-- interact with individual traits to produce decisions at different times for different voters.

We have provided two pieces of empirical evidence supporting our theoretical expectations. One, while we find that the most attentive voters are more likely to make up their minds earlier – as considerable research has done before us – we also demonstrated that the least politically attentive voters in battleground states effectively catch up to them during the summer. Thus, it is not less attentive voters as a whole who delay decision-making, rather it is the less attentive voters who are also less exposed to campaign information. In contrast, campaign intensity has little effect on the most attentive voters. Two, although previous research has focused on the finding that the majority of voters settle on a candidate preference by the party conventions, we show considerable variability in early decision making. Most notably, partisans are rallying behind their party's nominee as soon as the candidate is identified, which produced asymmetries in the time of decision between Democrats and Republicans in 2008. Additionally,

among partisans not deciding during the primary phase, Republican identifiers were more likely to settle on a preferred candidate following the party conventions, contributing to the larger convention bump for the Republican ticket.

While we must be careful not to overstate the evidence with regards to campaign effects – time of decision reflects many different underlying processes and patterns – these findings nonetheless have important implications for understanding the dynamics of voter decision making over the course of presidential campaigns. Both sets of results point to the importance for considering the role of campaigns in voter decision making before the customary post-convention kickoff to fall electioneering in American campaigns. Events in the campaign calendar and the intensity of campaign activity that occur before the conventions appear to shape voter decision making. More broadly, these findings add to the growing body of research that finds differences in the way voters make up their minds in information-rich battleground states compared to safe states (e.g., Panagopolous 2008 McClurg and Holbrook 2009).

This is a result with significant implications. Previous research took a rather bleak view of American democracy based on time of decision patterns, concluding that election outcomes must hinge on the whims of the least attentive segment of the electorate making last-second choices (Berelson et al 1944). In contrast, our results build on a growing body of research that offers a more nuanced picture of time of decision making as it relates to political attentiveness and sophistication (McGregor 2012; Lavine et al 2012; Hillygus and Shields 2008; Irwin and Holsteyn 2008). Our results suggest that campaigns can help the least attentive voters make up their minds as quickly as the most attentive, so that the consequences of last minute decision making among the unsophisticated is more likely to occur where those voters are least likely to be decisive.

Works Cited

- Beck, Nathaniel, John N. Katz, and Richard Tucker. 1998. "Taking Time Seriously: Time-Series-Cross-Section Analysis with a Binary Dependent Variable." *American Journal of Political Science* 42(4): 1260-88.
- Berelson, Bernard, Paul Lazarsfeld, and William McPhee. 1954. *Voting: A Study of Opinion Formation in a Presidential Campaign*. Chicago: University of Chicago Press
- Bergbower, M. L. 2014. "Campaign Intensity and Voting Correctly in Senate Elections." *Journal of Elections, Public Opinion & Parties*, 24(1), 90-114.
- Bowen, Lawrence. 1994. "Time of Voting Decision and Use of Political Advertising: The Slade Gorton-Brock Adams Senatorial Campaign." *Journalism Quarterly* 71(3): 665-75.
- Box-Steffensmeier, Janet M. and Bradford S. Jones. 2004. *Event History Modeling: A Guide for Social Scientists*. New York: Cambridge University Press.
- Brox, Brian J. and Joseph D. Giammo. 2009. "Late Deciders in U.S. Presidential Elections." *American Review of Politics* 30 (Winter): 333-55.
- Campbell, Angus, Philip E. Converse, Warren E. Miller and Donald E. Stokes. 1960. *The American Voter*. New York: John Wiley and Sons.
- Callegaro, Mario and Charles DiSorga. 2008. "Computing Response Metrics for Online Panels." *Public Opinion Quarterly* 72(5): 1008-32.
- Carter, David and Signoria, Curt. 2009. "Back to the Future: Modeling Time Dependence in Binary Data." Working paper, University of Rochester.
- Chaffee, Steven H. and Sun Yuel Choe. 1980. "Time of Decision and Media Use in the Ford-Carter Campaign." *Public Opinion Quarterly* 44(1): 53-69.
- Chaffee, Steven H. and Rajiv Nath Rimal. 1996. "Time of Vote Decision and Openness to Persuasion." In Diana C. Mutz, Paul M. Sniderman, and Richard A. Brody (Eds.) *Political Persuasion and Attitude Change*. Ann Arbor: University of Michigan Press.
- Deng, Y., Hillygus, D. S., Reiter, J. P., Si, Y., and Zheng, S. 2013. "Handling attrition in longitudinal studies: The case for refreshment samples," *Statistical Science* 28: 238-256.
- Erikson, Robert S. and Christopher Wlezien. 2012. *The Timeline of Presidential Campaigns*. Chicago: University of Chicago Press.
- Finkel, Steven. 1993. "Reexamining the 'Minimal Effects' model in Recent Presidential Elections." *Journal of Politics* 55(1): 1-21.
- Fournier, Patrick, Richard Nadeau, Andre Blais, Elisabeth Gidengil, and Neil Nevitte. 2001. "Validation of Time of Voting Decision Recall." *Public Opinion Quarterly* 65(1): 95-107.
- Fournier, Patrick, Richard Nadeau, Andre Blais, Elisabeth Gidengil, and Neil Nevitte. 2001. "Time of Voting Decision and Susceptibility to Campaign Effects." *Electoral Studies* 23(4): 661-681.
- Geer, J., & Lau, R. R. (2006). Filling in the blanks: A new method for estimating campaign effects. *British Journal of Political Science*, 36(2), 269.

- Gopoian, J. David and Sissie Hadjiharalambous. 1994. "Late Deciding Voters in Presidential Elections." *Political Behavior* 16(1): 55–78.
- Grant, J.T., S. T. Mockabee, and J.Q. Monson. 2010. "Campaign Effects on the Accessibility of Party Identification." *Political Research Quarterly*, 63(4), 811
- Hayes, Bernadette C. and Ian McAllister. 1996. "Marketing Politics to Voters: Late Deciders in the 1992 British Election." *European Journal of Marketing*. 30(10): 127-139.
- Helman, Scott and Sasha Issenberg. 2008. "McCain Courts Conservatives after Romney Quits Candidacy." *Boston Globe* February 8.
- Hetherington, Marc J. and Jonathan Weiler. 2009. *Authoritarianism and Polarization in America*. Cambridge: Cambridge University Press.
- Hillygus, D. S. (2007). The Dynamics of Voter Decision Making Among Minor-Party Supporters: The 2000 Presidential Election in the United States. *British Journal of Political Science*, 37(2), 225.
- Hillygus, D. Sunshine and Todd G. Shields. 2008. *The Persuadable Voter: Wedge Issues in Presidential Campaigns*. Princeton: Princeton University Press.
- Holbrook, Thomas M. 1996. *Do Campaigns Matter?* Thousand Oaks: Sage.
- Irwin, Galen A. and Joop J. M. Van Holsteyn. 2008. "What Are They Waiting For? Strategic Information for Late Deciding Voters." *International Journal of Public Opinion Research* 20(4): 483-493.
- Johnston, Richard, Michael G. Hagen, and Kathleen Hall Jamieson. 2004. *The 2000 Presidential Election and the Foundations of Party Politics*. New York: Cambridge University Press.
- Kahn, Kim Fridkin and Patrick Kenney. *The Spectacle of U.S. Senate Campaigns*. Princeton: Princeton University Press.
- Katz, Elihu. 1971. "Platforms and Windows: Broadcasting's Role in Election Campaigns." *Journalism Quarterly* 48(2): 304-14.
- Kaufmann, Karen M., John R. Petrocik, and Daron R. Shaw. 2008. *Unconventional Wisdom: Facts and Myths about American Voters*. New York: Oxford University Press.
- Kogen, Lauren and Jeffrey A. Gottfried. 2012. "I Knew It All Along! Evaluating Time of Decision Measures in the 2008 U.S. Presidential Campaign." *Political Behavior* 34(4): 719-36.
- Krosnick, Jon A. 1991. "Response Strategies for Coping with the Cognitive Demands of Attitude Measures in Surveys." *Applied Cognitive Psychology* 5(3): 213-236.
- Kruse, Yelena, Mario Callegaro, J. Michael Dennis, Stefan Subias, Mike Lawrence, Charles DiSogra, and Trevor Tompson. 2009. "Panel conditioning and attrition in the AP-Yahoo! News Election Panel Study." Presented 2009 AAPOR, Hollywood, FL.
- Lazarsfeld, Paul F. Bernard Berelson, and Hazel Gaudet. 1944. *The People's Choice: How the Voter Makes Up His Mind in a Presidential Campaign*. New York: Columbia Univ Press.
- Lewis-Beck, Michael S., William G. Jacoby, Helmut Norpoth, Herbert F. Weisberg. 2008. *The American Voter Revisited*. Ann Arbor: University of Michigan Press.

- Lodge, Milton, Kathleen McGraw, and Patrick Stroh. 1989. "An Impression-Driven Model of Candidate Evaluation." *American Political Science Review* 83(2): 399-419.
- McClurg, S. D., & Holbrook, T. M. (2009). "Living in a Battleground Presidential Campaigns and Fundamental Predictors of Vote Choice." *Political Research Quarterly*, 62(3), 495-506.
- McGregor, R. M. 2012. "Voter Sincerity and the Time-of-Voting-Decision." *Electoral Studies*, 31(4), 715-725.
- Mendelsohn, Harold and Garrett J. O'Keefe. 1976. *The People Choose a President*. New York: Praeger.
- Nir, Lilach. 2005. "Ambivalent Social Networks and their Consequences for Participation." *International Journal of Public Opinion Research* 17(4): 422-42.
- Nir, Lilach and James Druckman. 2008. "Campaign Mixed-Message Flows and Timing of Vote Decision." *International Journal of Public Opinion Research* 20(3): 326-346.
- Norris, Pippa, John Curtice, David Sanders, Maggie Scammell, and Holli Semetko. 1999. *On Message: Communicating the Campaign*. London: Sage Publications.
- O'Keefe, Garrett J., Harold Mendelsohn, and Jenny Liu. 1976. "Voter Decision Making 1972 and 1974." *Public Opinion Quarterly* 40(3): 320-30.
- Panagopolous, Costas. 2008. "Campaign Dynamics in Battleground and Nonbattleground States." *Public Opinion Quarterly* 73 (1): 119-130.
- Petrocik, John Richard. 2009. "Measuring Party Support: Leaners Are Not Independents." *Electoral Studies* 28(4): 562-72.
- Plumb, Elizabeth. 1986. "Validation of Voter Recall: Time of Electoral Decision Making". *Political Behavior* 8(4): 302-12.
- Popkin, Samuel L. 1991. *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. Chicago: University of Chicago Press.
- Prior, Markus. 2007. *Post-Broadcast Democracy: How Media Choice Increases Inequality in Political Involvement and Polarizes Elections*. New York: Cambridge University Press.
- Shaw, Daron. 2006. *The Race to 270*. Chicago: University of Chicago Press.
- Singer, Judith D. and John B. Willett. 2003. *Applied Longitudinal Analysis: Modeling Change and Event Occurrence*. New York: Oxford University Press.
- Steinbrecher, M., and H. Schoen. 2013. "Not all campaign panels are created equal: Exploring how the number and timing of panel waves affect findings concerning the time of voting decision." *Electoral Studies*, 32(4), 892-899.
- Taber, Charles S., and Milton Lodge. 2006. Motivated Skepticism in the Evaluation of Political Beliefs. *American Journal of Political Science* 50 (3): 755-69.
- Whitney, D. Charles and Steven B. Goldman. 1985. "Media Use and Time of Vote Decision: A Study of the 1980 Presidential Election." *Communication Research* 12(4): 511-29.
- Zaller, John. 1992. *The Nature and Origins of Mass Opinion*. New York: Cambridge University Press.

Table 1: Percent Who Settle on a Candidate at Each Wave

April	57.7
June	6.9
Late August	6.7
Early September	4.0
Early October	5.5
Late October	5.5
Post-election	13.6

Note: Cells contain percent of voters in the AP Study who began maintaining a stable candidate preference from that interview across all subsequent interviews including self-reported vote.

Table 2: Time of Decision by Political Interest During General Election Phase

	Model 1	Model 2	Model 3
Constant	-1.25** (0.29)	-1.64** (0.32)	-1.62** (0.34)
June	-1.86** (0.14)	-0.48 (0.51)	-0.85 (0.58)
August	-1.67** (0.15)	-0.73 (0.53)	-0.88 (0.59)
September	-2.01** (0.17)	-1.83** (0.66)	-2.05** (0.78)
Early October	-1.37** (0.16)	-0.70 (0.55)	-0.89 (0.62)
Late October	-0.99** (0.17)	-0.52 (0.54)	-0.86 (0.61)
Political Interest	0.11** (0.05)	0.23** (0.06)	0.22** (0.07)
Battleground State	0.06 (0.10)	0.06 (0.10)	-0.01 (0.58)
Political Interest*June		-0.39** (0.14)	-0.26 (0.16)
Political Interest*August		-0.26* (0.14)	-0.18 (0.16)
Political Interest*September		-0.05 (0.17)	0.01 (0.21)
Political Interest*Early October		-0.19 (0.15)	-0.15 (0.17)
Political Interest*Late October		-0.13 (0.15)	-0.06 (0.17)
Battleground*June			1.63 (1.15)
Battleground*August			0.69 (1.26)
Battleground*September			0.78 (1.46)
Battleground*Early October			0.79 (1.36)
Battleground*Late October			1.59 (1.40)
Battleground*Political Interest			0.04 (0.16)
Battleground*Political Interest*June			-0.59* (0.32)
Battleground*Political Interest*August			-0.34 (0.35)
Battleground*Political Interest*September			-0.21 (0.39)
Battleground*Political Interest*Early October			-0.19 (0.37)
Battleground*Political Interest*Late October			-0.37 (0.38)
AIC	3059.6	3060.1	3071.8
N	1123		

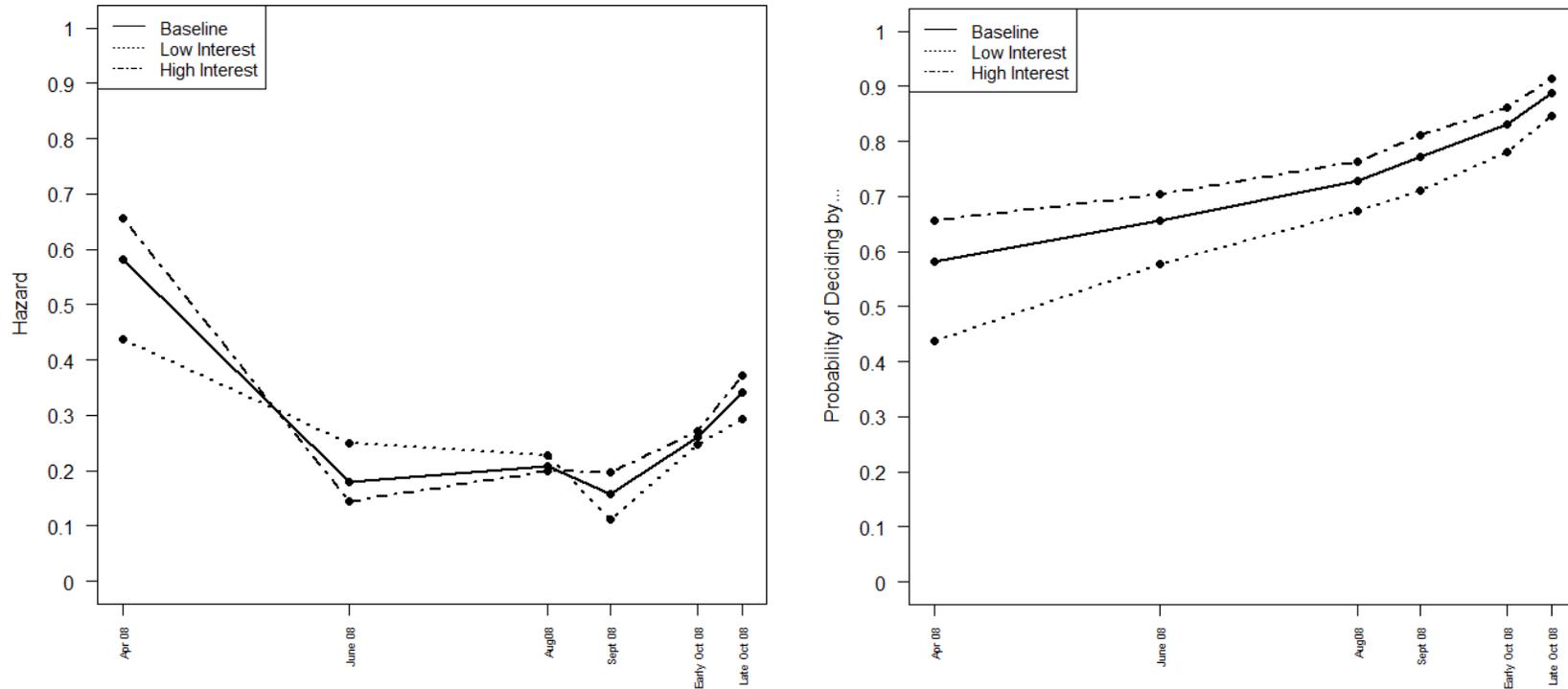
Note: Cells contain coefficients from discrete time duration models for deciding on a candidate among voters. The sample size is the number of voters. Controls for education, race, income, age, partisanship, and gender were also included. Standard errors are clustered by individual and appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively. Full set of estimates are available in online appendix table A1.

Table 3: Percent Who Settle at Each Wave

	Trial Heat Only	Primary Candidate Preference + Trial Heat	Generic Ballot + Trial Heat
November 2007	---	8.3	41.0
December 2007	---	2.9	3.2
January 2008	---	6.0	3.9
April 2008	57.7	27.1	8.1
June 2008	6.9	19.6	7.2
Late August 2008	6.7	6.8	6.9
Early September 2008	4.0	4.1	4.1
Early October 2008	5.5	5.6	5.7
Late October 2008	5.5	5.6	5.7
Post-election 2008	13.6	13.9	14.1
N	1,123	1,103	1,085

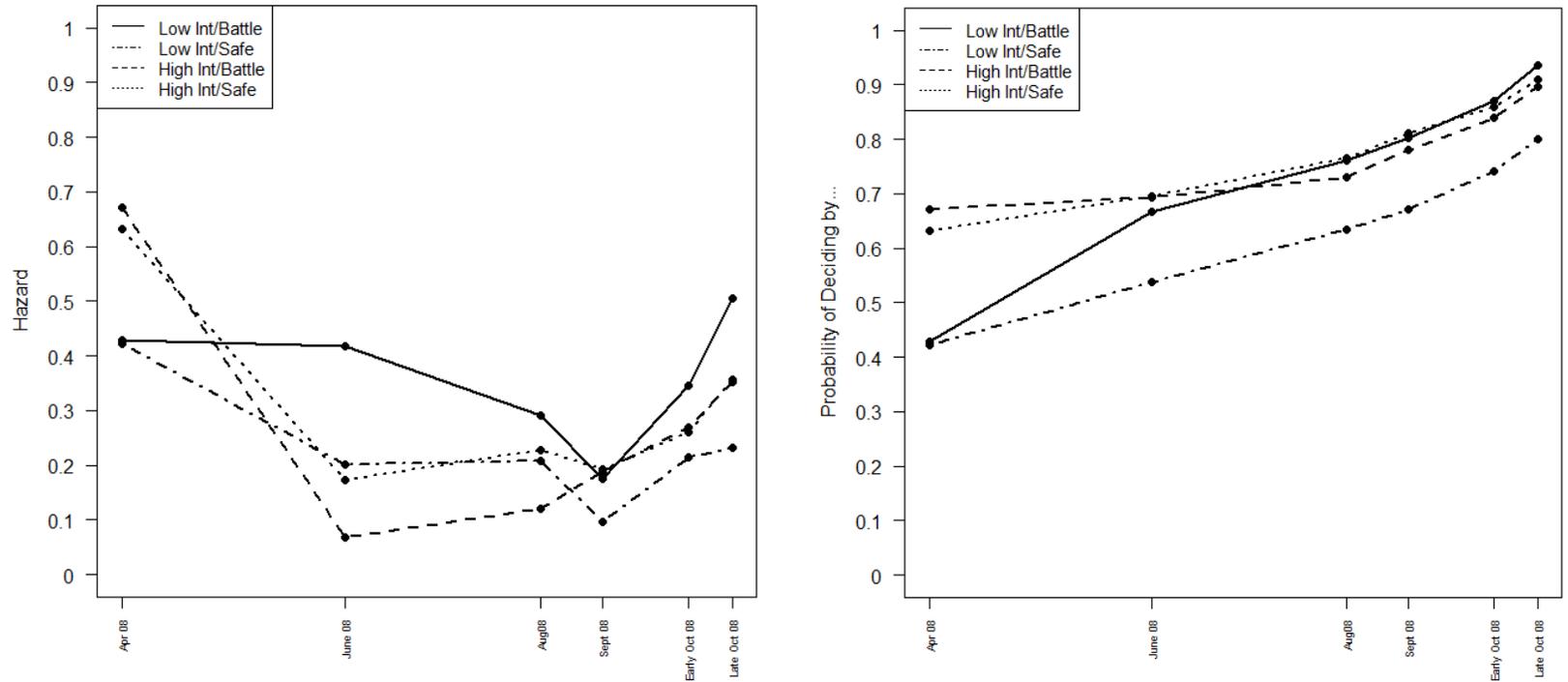
Note: Reported are percent of voters who had stable vote preference from that interview through Election Day.

Figure 1: Estimated Hazard and Cumulative Probability for Settling on a Candidate, by Political Interest



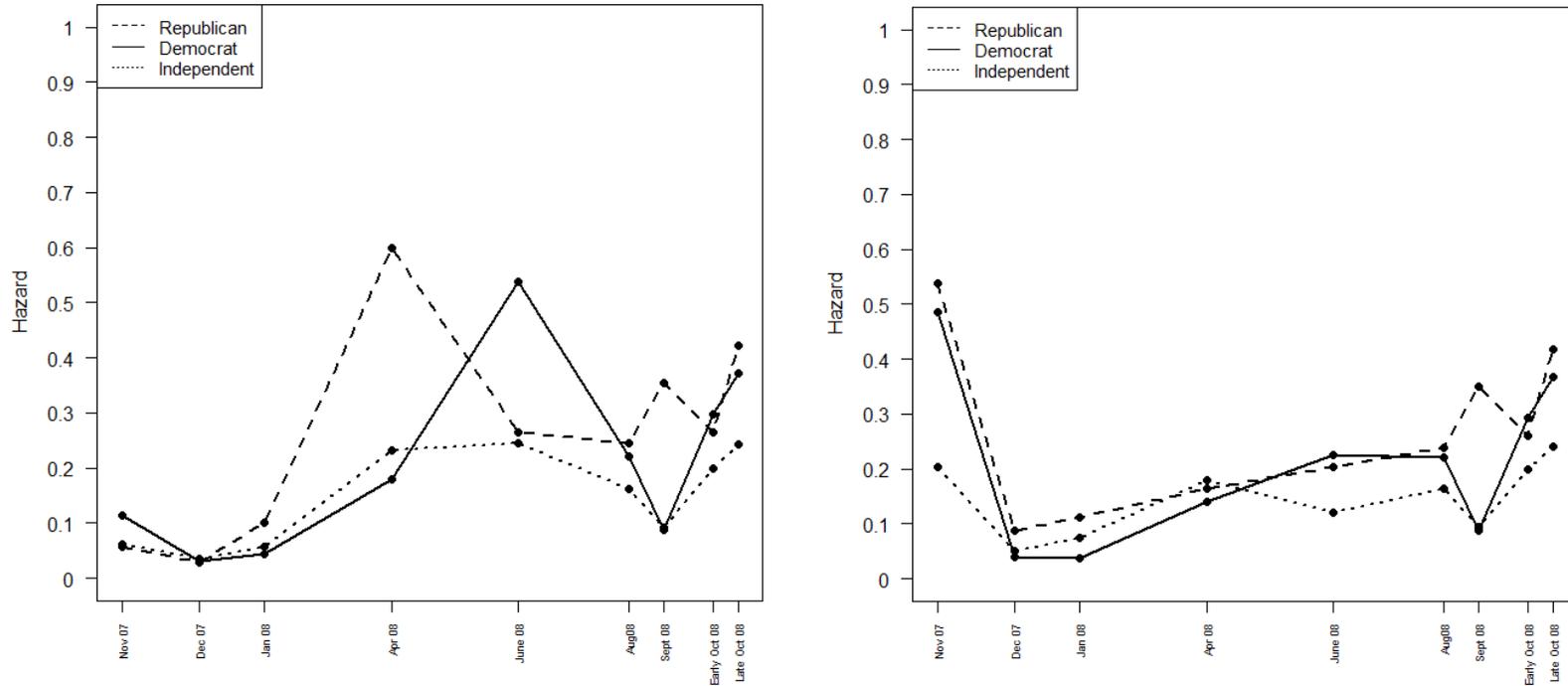
Note: Estimates based on models 1 and 2 in table 2. Left panel displays estimated hazards (probability of deciding on a candidate at time t given voter has not yet settled on a candidate). Right panel displays cumulative probability of having settled on a candidate by each interview.

Figure 2: Estimated Hazard and Cumulative Probability for Settling on a Candidate by Interest and Battleground Residence



Note: Estimates based on results for model 3 in table 2. Left panel displays estimated hazards (probability of deciding on a candidate at time t given voter had not yet settled on a candidate). Right panel displays cumulative probability of having settled on a candidate by each interview.

Figure 3: Estimated Hazard for Time of Decision, by Party



Note: Estimates based on results for models 4 and 5 in table 3. Left panel displays estimated hazards when measuring time of decision as onset of consistent candidate preference until Election Day using primary candidates during the first four interviews. The right panel displays estimated hazards when measuring time of decision as the onset of consistent candidate preference until Election Day using party ballot preference during the first three interviews.

Supplemental Material: Appendix

Table A1: Time of Decision by Political Interest During General Election Phase

	Model 1	Model 2	Model 3
Constant	-1.25** (0.29)	-1.64** (0.32)	-1.62** (0.34)
June	-1.86** (0.14)	-0.48 (0.51)	-0.85 (0.58)
August	-1.67** (0.15)	-0.73 (0.53)	-0.88 (0.59)
September	-2.01** (0.17)	-1.83** (0.66)	-2.05** (0.78)
Early October	-1.37** (0.16)	-0.70 (0.55)	-0.89 (0.62)
Late October	-0.99** (0.17)	-0.52 (0.54)	-0.86 (0.61)
Republican	0.36** (0.12)	0.36** (0.11)	0.36** (0.12)
Independent	-0.56** (0.11)	-0.56** (0.11)	-0.57** (0.11)
Political Interest	0.11** (0.05)	0.23** (0.06)	0.22** (0.07)
Battleground State	0.06 (0.10)	0.06 (0.10)	-0.01 (0.58)
Black	0.82** (0.20)	0.81** (0.20)	0.81** (0.20)
Female	0.05 (0.09)	0.05 (0.09)	0.04 (0.09)
Education (4 Points)	0.13** (0.05)	0.13** (0.05)	0.13** (0.05)
Age (Years)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)
Political Interest*June		-0.39** (0.14)	-0.26 (0.16)
Political Interest*August		-0.26* (0.14)	-0.18 (0.16)
Political Interest*September		-0.05 (0.17)	0.01 (0.21)
Political Interest*Early October		-0.19 (0.15)	-0.15 (0.17)
Political Interest*Late October		-0.13 (0.15)	-0.06 (0.17)

Battleground*June				1.63 (1.15)
Battleground*August				0.69 (1.26)
Battleground*September				0.78 (1.46)
Battleground*Early October				0.79 (1.36)
Battleground*Late October				1.59 (1.40)
Battleground*Political Interest				0.04 (0.16)
Battleground*Political Interest*June				-0.59* (0.32)
Battleground*Political Interest*August				-0.34 (0.35)
Battleground*Political Interest*September				-0.21 (0.39)
Battleground*Political Interest*Early October				-0.19 (0.37)
Battleground*Political Interest*Late October				-0.37 (0.38)
AIC	3059.6	3060.1		3071.8
N		1123		

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate and 1 in the first wave from which the voter repeatedly chooses the same candidate through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

Table A2: Time of Decision by Party Entire Year

	Model 4	Model 5
Constant	-3.58** (0.29)	-1.58** (0.26)
December 2007	-1.42** (0.34)	-3.16** (0.40)
January 2008	-1.03** (0.31)	-3.28** (0.43)
April 2008	0.53** (0.22)	-1.77** (0.25)
June 2008	2.21** (0.21)	-1.19** (0.23)
August 2008	0.78** (0.27)	-1.22** (0.25)
September 2008	-0.35 (0.43)	-2.36** (0.41)
Early October 2008	1.18** (0.30)	-0.83** (0.27)
Late October 2008	1.51** (0.31)	-0.49* (0.29)
Republican	-0.76** (0.28)	0.21 (0.15)
Independent	-0.69** (0.27)	-1.31** (0.17)
Political Interest	0.10** (0.04)	0.12** (0.05)
Battleground State	0.00 (0.09)	0.06 (0.09)
Black	1.05** (0.19)	0.73** (0.18)
Female	0.04 (0.08)	0.03 (0.08)
Education (4 Points)	0.15** (0.05)	0.12** (0.04)
Age (Years)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.05** (0.02)	0.05** (0.02)
Republican*December 2007	-0.65 (0.54)	0.66 (0.50)
Republican*January 2008	1.63** (0.43)	1.03** (0.52)
Republican*April 2008	2.68** (0.34)	-0.03 (0.36)
Republican*June 2008	-0.42 (0.37)	-0.33 (0.35)
Republican*August 2008	0.89** (0.44)	-0.11 (0.37)

Republican*September 2008	2.55** (0.55)	1.58** (0.49)
Republican*Early October 2008	0.58 (0.51)	-0.39 (0.45)
Republican*Late October 2008	0.98* (0.52)	0.00 (0.46)
Independent*December 2007	0.82 (0.50)	1.56** (0.50)
Independent*January 2008	0.95** (0.44)	2.11** (0.51)
Independent*April 2008	1.00** (0.33)	1.61** (0.33)
Independent*June 2008	-0.60* (0.33)	0.55 (0.34)
Independent*August 2008	0.31 (0.40)	0.93** (0.35)
Independent*September 2008	0.79 (0.56)	1.43** (0.51)
Independent*Early October 2008	0.15 (0.43)	0.79** (0.37)
Independent*Late October 2008	0.08 (0.44)	0.70* (0.39)
AIC	4302.9	4014.7
N	1103	1085

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate (or party) among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate (or party) and 1 in the first wave from which the voter repeatedly chooses the same candidate (or party) through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

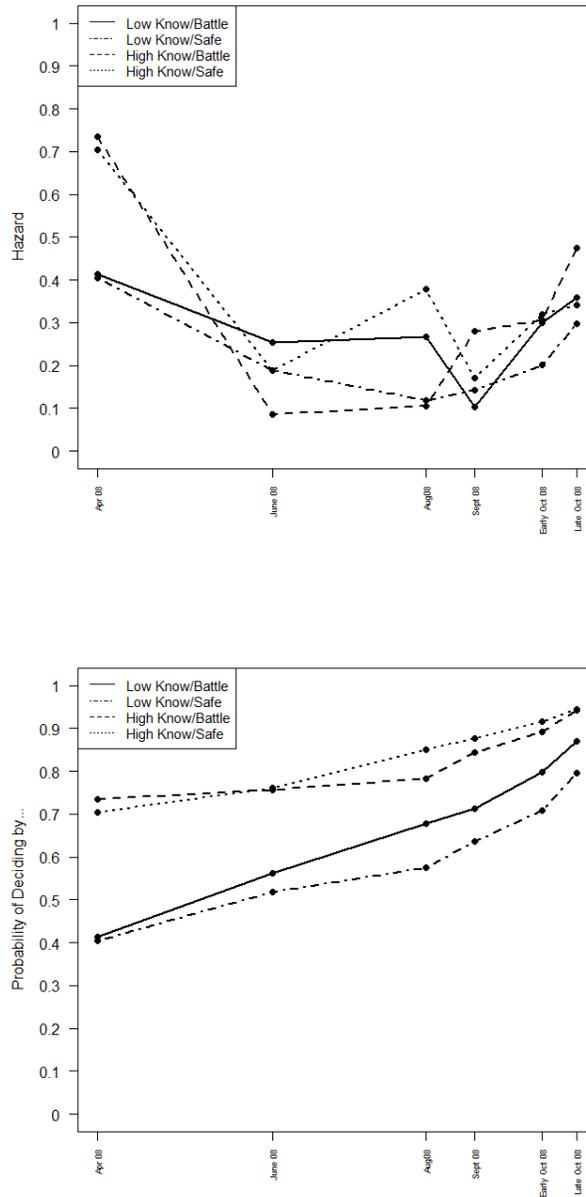
Table A3: Time of Decision by Political Knowledge During General Election Phase

	Model 6	Model 7	Model 8
Constant	-1.36** (0.27)	-1.92** (0.31)	-1.92** (0.34)
June	-1.82** (0.14)	-0.03 (0.41)	-0.32 (0.47)
August	-1.64** (0.15)	-1.10** (0.53)	-1.81** (0.63)
September	-1.97** (0.17)	-1.05* (0.63)	-0.81 (0.59)
Early October	-1.33** (0.16)	-0.42 (0.51)	-0.64 (0.59)
Late October	-0.94** (0.17)	0.15 (0.51)	0.15 (0.59)
Republican	0.34** (0.12)	0.34** (0.12)	0.34** (0.11)
Independent	-0.62** (0.11)	-0.62** (0.11)	-0.63** (0.11)
Political Knowledge	0.01** (0.00)	0.02** (0.00)	0.02** (0.00)
Battleground State	0.03 (0.10)	0.04 (0.10)	-0.04 (0.51)
Black	0.96** (0.21)	0.97** (0.21)	0.96** (0.21)
Female	0.10 (0.09)	0.10 (0.09)	0.10 (0.09)
Education (4 Points)	0.05 (0.05)	0.05 (0.05)	0.05 (0.05)
Age (Years)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.04* (0.02)	0.03* (0.02)	0.03 (0.02)
Political Knowledge*June		-0.03** (0.01)	-0.02 (0.01)
Political Knowledge*August		0.01 (0.01)	0.00 (0.01)
Political Knowledge*September		-0.01 (0.01)	-0.02* (0.01)
Political Knowledge*Early October		-0.01* (0.01)	-0.01 (0.01)
Political Knowledge*Late October		-0.02** (0.01)	-0.02** (0.01)

Battleground*June			1.20 (0.92)
Battleground*August			2.65** (1.19)
Battleground*September			-1.16 (1.47)
Battleground*Early October			0.89 (1.18)
Battleground*Late October			0.12 (1.14)
Battleground*Political Knowledge			0.00 (0.01)
Battleground*Political Knowledge*June			-0.02* (0.01)
Battleground*Political Knowledge*August			-0.05** (0.02)
Battleground*Political Knowledge*September			0.02 (0.02)
Battleground*Political Knowledge*Early October			-0.01 (0.02)
Battleground*Political Knowledge*Late October			0.00 (0.02)
AIC	3033.6	3023.9	3027.4
N		1123	

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate and 1 in the first wave from which the voter repeatedly chooses the same candidate through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

Figure A1: Estimated Hazard and Cumulative Probability for Settling on a Candidate by Knowledge and Battleground Residence (General Election Phase)



Note: Estimates based on results for model 8 displayed in table A3. The left panel displays estimated hazards (the probability of deciding on a candidate at time t given the voter has not yet settled on a candidate). The right panel displays the cumulative probability of having settled on a candidate by each interview. The timing of decisions among less interested voters in safe states lags behind less interested voters in battleground states and highly interested voters in all states.

Supplemental Material: Online Appendix

Table A1: Time of Decision by Political Interest During General Election Phase

	Model 1	Model 2	Model 3
Constant	-1.25** (0.29)	-1.64** (0.32)	-1.62** (0.34)
June	-1.86** (0.14)	-0.48 (0.51)	-0.85 (0.58)
August	-1.67** (0.15)	-0.73 (0.53)	-0.88 (0.59)
September	-2.01** (0.17)	-1.83** (0.66)	-2.05** (0.78)
Early October	-1.37** (0.16)	-0.70 (0.55)	-0.89 (0.62)
Late October	-0.99** (0.17)	-0.52 (0.54)	-0.86 (0.61)
Republican	0.36** (0.12)	0.36** (0.11)	0.36** (0.12)
Independent	-0.56** (0.11)	-0.56** (0.11)	-0.57** (0.11)
Political Interest	0.11** (0.05)	0.23** (0.06)	0.22** (0.07)
Battleground State	0.06 (0.10)	0.06 (0.10)	-0.01 (0.58)
Black	0.82** (0.20)	0.81** (0.20)	0.81** (0.20)
Female	0.05 (0.09)	0.05 (0.09)	0.04 (0.09)
Education (4 Points)	0.13** (0.05)	0.13** (0.05)	0.13** (0.05)
Age (Years)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)
Political Interest*June		-0.39** (0.14)	-0.26 (0.16)
Political Interest*August		-0.26* (0.14)	-0.18 (0.16)
Political Interest*September		-0.05 (0.17)	0.01 (0.21)
Political Interest*Early October		-0.19 (0.15)	-0.15 (0.17)

Political Interest*Late October		-0.13 (0.15)	-0.06 (0.17)
Battleground*June			1.63 (1.15)
Battleground*August			0.69 (1.26)
Battleground*September			0.78 (1.46)
Battleground*Early October			0.79 (1.36)
Battleground*Late October			1.59 (1.40)
Battleground*Political Interest			0.04 (0.16)
Battleground*Political Interest*June			-0.59* (0.32)
Battleground*Political Interest*August			-0.34 (0.35)
Battleground*Political Interest*September			-0.21 (0.39)
Battleground*Political Interest*Early October			-0.19 (0.37)
Battleground*Political Interest*Late October			-0.37 (0.38)
AIC	3059.6	3060.1	3071.8
N		1123	

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate and 1 in the first wave from which the voter repeatedly chooses the same candidate through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

Table A2: Time of Decision by Party Entire Year

	Model 4	Model 5
Constant	-3.58** (0.29)	-1.58** (0.26)
December 2007	-1.42** (0.34)	-3.16** (0.40)
January 2008	-1.03** (0.31)	-3.28** (0.43)
April 2008	0.53** (0.22)	-1.77** (0.25)
June 2008	2.21** (0.21)	-1.19** (0.23)
August 2008	0.78** (0.27)	-1.22** (0.25)
September 2008	-0.35 (0.43)	-2.36** (0.41)
Early October 2008	1.18** (0.30)	-0.83** (0.27)
Late October 2008	1.51** (0.31)	-0.49* (0.29)
Republican	-0.76** (0.28)	0.21 (0.15)
Independent	-0.69** (0.27)	-1.31** (0.17)
Political Interest	0.10** (0.04)	0.12** (0.05)
Battleground State	0.00 (0.09)	0.06 (0.09)
Black	1.05** (0.19)	0.73** (0.18)
Female	0.04 (0.08)	0.03 (0.08)
Education (4 Points)	0.15** (0.05)	0.12** (0.04)
Age (Years)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.05** (0.02)	0.05** (0.02)
Republican*December 2007	-0.65 (0.54)	0.66 (0.50)
Republican*January 2008	1.63** (0.43)	1.03** (0.52)
Republican*April 2008	2.68** (0.34)	-0.03 (0.36)
Republican*June 2008	-0.42 (0.37)	-0.33 (0.35)
Republican*August 2008	0.89**	-0.11

	(0.44)	(0.37)
Republican*September 2008	2.55**	1.58**
	(0.55)	(0.49)
Republican*Early October 2008	0.58	-0.39
	(0.51)	(0.45)
Republican*Late October 2008	0.98*	0.00
	(0.52)	(0.46)
Independent*December 2007	0.82	1.56**
	(0.50)	(0.50)
Independent*January 2008	0.95**	2.11**
	(0.44)	(0.51)
Independent*April 2008	1.00**	1.61**
	(0.33)	(0.33)
Independent*June 2008	-0.60*	0.55
	(0.33)	(0.34)
Independent*August 2008	0.31	0.93**
	(0.40)	(0.35)
Independent*September 2008	0.79	1.43**
	(0.56)	(0.51)
Independent*Early October 2008	0.15	0.79**
	(0.43)	(0.37)
Independent*Late October 2008	0.08	0.70*
	(0.44)	(0.39)
AIC	4302.9	4014.7
N	1103	1085

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate (or party) among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate (or party) and 1 in the first wave from which the voter repeatedly chooses the same candidate (or party) through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

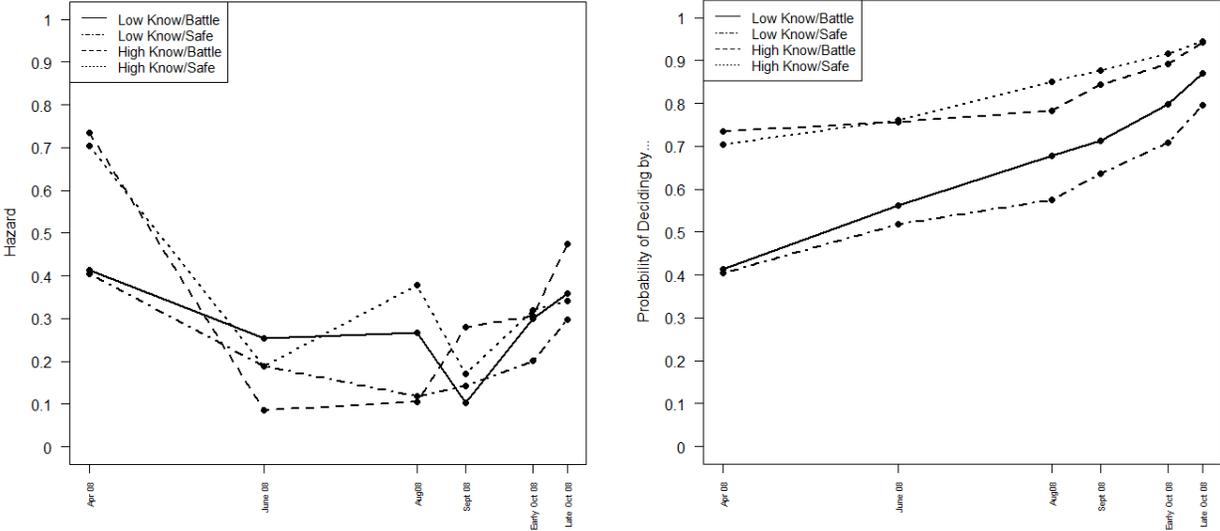
Table A3: Time of Decision by Political Knowledge During General Election Phase

	Model 6	Model 7	Model 8
Constant	-1.36** (0.27)	-1.92** (0.31)	-1.92** (0.34)
June	-1.82** (0.14)	-0.03 (0.41)	-0.32 (0.47)
August	-1.64** (0.15)	-1.10** (0.53)	-1.81** (0.63)
September	-1.97** (0.17)	-1.05* (0.63)	-0.81 (0.59)
Early October	-1.33** (0.16)	-0.42 (0.51)	-0.64 (0.59)
Late October	-0.94** (0.17)	0.15 (0.51)	0.15 (0.59)
Republican	0.34** (0.12)	0.34** (0.12)	0.34** (0.11)
Independent	-0.62** (0.11)	-0.62** (0.11)	-0.63** (0.11)
Political Knowledge	0.01** (0.00)	0.02** (0.00)	0.02** (0.00)
Battleground State	0.03 (0.10)	0.04 (0.10)	-0.04 (0.51)
Black	0.96** (0.21)	0.97** (0.21)	0.96** (0.21)
Female	0.10 (0.09)	0.10 (0.09)	0.10 (0.09)
Education (4 Points)	0.05 (0.05)	0.05 (0.05)	0.05 (0.05)
Age (Years)	0.01** (0.00)	0.01** (0.00)	0.01** (0.00)
Income (9 Points)	0.04* (0.02)	0.03* (0.02)	0.03 (0.02)
Political Knowledge*June		-0.03** (0.01)	-0.02 (0.01)
Political Knowledge*August		0.01 (0.01)	0.00 (0.01)
Political Knowledge*September		-0.01 (0.01)	-0.02* (0.01)
Political Knowledge*Early October		-0.01* (0.01)	-0.01 (0.01)
Political Knowledge*Late October		-0.02**	-0.02**

		(0.01)	(0.01)
Battleground*June			1.20 (0.92)
Battleground*August			2.65** (1.19)
Battleground*September			-1.16 (1.47)
Battleground*Early October			0.89 (1.18)
Battleground*Late October			0.12 (1.14)
Battleground*Political Knowledge			0.00 (0.01)
Battleground*Political Knowledge*June			-0.02* (0.01)
Battleground*Political Knowledge*August			-0.05** (0.02)
Battleground*Political Knowledge*September			0.02 (0.02)
Battleground*Political Knowledge*Early October			-0.01 (0.02)
Battleground*Political Knowledge*Late October			0.00 (0.02)
AIC	3033.6	3023.9	3027.4
N		1123	

Note: Cells contain coefficients from discrete time duration models for deciding on a candidate among voters. The outcome variable is coded zero at each interview wave before the voter has settled on a candidate and 1 in the first wave from which the voter repeatedly chooses the same candidate through all subsequent waves. Voters exit the data set after settling on a candidate. The sample size is the number of voters. Clustered standard errors (by individual) appear in parentheses. ** and * indicate statistical significance at the 0.05 and 0.10 levels respectively.

Figure A1: Estimated Hazard and Cumulative Probability for Settling on a Candidate by Knowledge and Battleground Residence (General Election Phase)



Note: Estimates based on results for model 8 displayed in table A3. The left panel displays estimated hazards (the probability of deciding on a candidate at time t given the voter has not yet settled on a candidate). The right panel displays the cumulative probability of having settled on a candidate by each interview. The timing of decisions among less interested voters in safe states lags behind less interested voters in battleground states and highly interested voters in all states.