

# US Senate campaigns, negative advertising, and voter mobilization in the 1998 midterm election

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## Abstract

The most prominent theories of electoral participation focus on the individual-level characteristics of citizens as the primary determinants of voter turnout. However, seeking to re-incorporate “politics” into the study of electoral participation, scholars have increasingly turned their attention toward the stimulus provided by political campaigns. A major point of emphasis within this research has been whether negative campaigns mobilize or demobilize citizens. Findings thus far have been mixed. We further this line of inquiry by conducting a broad-based study of the impact of state-level campaigns on individual voter turnout. Merging media market-level measures of television campaign advertising in US Senate elections with individual-level data from the 1998 National Election Study and the Voter Supplement File of the November 1998 Current Population Survey, we find strong support for a mobilization effect. We further demonstrate that the mobilization effect of these advertising campaigns results almost entirely from the volume of negative ads aired. Our results help to clarify the role of campaigns in general, and negative campaigning in particular, in bringing voters to the polls.

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**Keywords:** Negative advertising; Voter mobilization; Voter turnout

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## 1. Introduction

Citizen participation in elections remains one of the most intensively studied areas of American politics. This stems from two basic factors: (1) scholars believe that voter turnout is important to the functioning of representative democracy, and (2) rich stores of data are available for its empirical investigation. Within this

vast literature, the examination of voter mobilization via electoral campaigns has a longstanding history (e.g., Gosnell, 1927). However, drawing on individual-level survey data, the most prominent theories of electoral participation have emphasized citizen characteristics rather than electoral context. Somewhat ironically, a second stream of research, emerging over the past twenty-five years, has had to reintroduce “politics” to the study of voter turnout by incorporating the campaign context within which potential voters find themselves. In this study, we contribute to this second stream by examining individual voter turnout in the

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1998 midterm election. Specifically, we merge contextual measures of US Senate campaigns with individual-level data from the 1998 National Election Study (NES) and the Voter Supplement File of the November 1998 Current Population Survey (CPS). Not surprisingly, we find that high-stimulus Senate contests got out the vote in this midterm.

In regard to the study of campaign influences on voter turnout, arguably the most lively debate of recent years examines whether negative campaigns mobilize or demobilize citizens. Given the concerns of academics and campaign reform advocates about both the increasing negativity of political campaigns and declining levels of electoral participation, the possible linkage between the two has resonated with a wide audience. Suggesting that negative campaigns demobilize potential voters, the work of Ansolabehere et al. (1994) (see also Ansolabehere and Iyengar, 1995) laid the foundation and received a good deal of attention. Furthermore, Ansolabehere and Iyengar (1995) argue that negative campaigns, characterized by so-called “mud-slinging,” primarily demobilize certain segments of the electorate—most notably, Independents (see also Kahn and Kenney, 1999; Lau and Pomper, 2001, 2004). In contrast, several studies conclude that negative campaigns actually activate and mobilize voters (e.g., Finkel and Geer, 1998; Freedman and Goldstein, 1999; Goldstein and Freedman, 2002; see additional cites below). Most recently, Clinton and Lapinski (2004) uncover virtually no evidence of either mobilization or demobilization in response to negative campaign ads. Our analysis of the 1998 Senate contests allows us to weigh in on this controversy. A rich new database that contains the universe of Senate campaign advertisements aired on broadcast and cable television stations in the nation’s 75 largest media markets facilitates our efforts. Supporting the revisionist camp in this controversy, our results indicate that negative advertising *increases* the likelihood of citizens turning out to vote.

## 2. Overview of the literature: the context of the study

### 2.1. Campaign mobilization and voter turnout

Focusing on citizen characteristics has taken scholars a good distance in explaining voter turnout (e.g. Campbell et al., 1960; Wolfinger and Rosenstone, 1980; Rosenstone and Hansen, 1993; Verba et al.,

1995). However, studies that emphasize individual-level characteristics are hard-pressed to explain why the level of turnout shifts dramatically from election to election, or why some citizens vote in one election, but sit out another. Recognizing this, scholars have begun to revisit the role of campaigns in getting out the vote.

Many of the most prominent studies providing evidence that campaign context influences turnout have proceeded at the aggregate or macro level (Dawson and Zinser, 1976; Gilliam, 1985; Patterson and Caldeira, 1983; Cox and Munger, 1989; Hill and Leighley, 1993; Jackson, 1996a, 1997; see Jackson, 2003 for a review). These studies find that a high-stimulus campaign environment, as indicated by greater levels of campaign spending, close contests, and party competitiveness, appears to be important for bringing out voters.<sup>1</sup>

Several efforts also examine the importance of campaigns for mobilizing voters at the individual level (e.g., Conway, 1981; Copeland, 1983; Caldeira et al., 1985; Boyd, 1986, 1989; Abramowitz and Segal, 1992; Leighley and Nagler, 1992; Jackson, 1993, 1996b, 2000, 2002), but the evidence from these efforts is sketchier, possibly due to the difficulty in detecting campaign effects more generally (Zaller, 2002). Rosenstone and Hansen (1993) provide the most wide-ranging support at the individual level, both theoretical and empirical, for political activation in response to competitive electoral contests. However, the subject of *how* campaigns mobilize citizens receives little more than cursory attention in their study.<sup>2</sup>

Previous research has correctly redirected attention to campaigns and the strategic behavior of candidates as factors that might influence voter mobilization. However, it conceptualizes campaigns and

<sup>1</sup> Caldeira and Patterson (1982), Tucker (1986), and Hogan (1999) reach similar conclusions in investigations of the influences on district turnout in state legislative contests.

<sup>2</sup> In an era of so-called candidate-centered campaigns (e.g., Wattenberg, 1991), it makes sense that a good deal of literature would focus on such factors as candidate spending levels and the competitiveness of electoral contests. However, lines of recent research also revisit the role of political parties as agents of mobilization. Several efforts focus on the ideological setting of the state party system as an important, yet oft-neglected factor in studies of citizen mobilization (e.g., Hill and Leighley, 1993, 1994, 1996; Jackson et al., 1998; Brown et al., 1999). Others focus on the importance of either partisan or non-partisan contacts at the micro level (e.g., Kramer, 1970; Caldeira et al., 1990; Huckfeldt and Sprague, 1992; Wielhouwer and Lockerbie, 1994; Gerber and Green, 2000a,b; Wielhouwer, 2001; Banducci and Karp, 2001; Niven, 2001, 2002).

measures the stimuli that they present to the electorate in a rather blunt fashion. The most common approach has been to use dummy variables to account simply for whether specific electoral offices were on the ballot (e.g., was it a presidential election year, was a gubernatorial contest present, and so forth), often combined with measures of the level of spending and/or the closeness of election outcomes.<sup>3</sup> In so doing, these studies attempt to capture the general magnitude or volume of the campaign stimuli aimed at an (undifferentiated) electorate. However, such measures are indirect indicators at best. These investigations do not look inside the “black box” of what campaigns are actually doing with their resources and whether they are expending them in ways that are likely to activate voters. Furthermore, they ignore the tone of campaign messages and implicitly assume away any variation in how different groups of people might respond differentially to campaign messages.

## 2.2. Negative campaigning and voter turnout

One vein of turnout research that has begun to consider a more nuanced view of campaign information flows and, to a lesser extent, of differential responsiveness across the electorate is research into the relationship between negative campaigning and turnout. The underlying concern of many of these researchers is that attack advertising and so-called “mud-slinging” may depress turnout, especially among certain types of citizens.

Within political science, the argument that negative campaigns demobilize potential voters is primarily associated with [Ansolabehere et al. \(1994\)](#) (see also

[Ansolabehere and Iyengar, 1995](#)). Despite a good deal of counter-evidence, [Ansolabehere et al. \(1999\)](#) remain steadfast in their claims. They draw much of their evidence from a series of experiments in which participants were exposed to television news broadcasts that contained a variety of campaign ads, including negative ones. Subjects were then asked about their turnout intentions. [Ansolabehere et al. \(1994\)](#) (see also [Ansolabehere and Iyengar, 1995](#)) also present aggregate models of 1992 state turnout to support their claims. They argue that, controlling for other factors, Senate campaigns that were negative in tone tended to depress turnout that year.<sup>4</sup> Obviously, their results raise important concerns about the long-term health of democratic politics in an era when many campaigns resort to attacks on their opponents.

Several examinations of negativity and voter turnout also assess whether negative campaigns demonstrate greater influence on certain types of citizens. [Ansolabehere and Iyengar \(1995\)](#) (see also [Lau and Pomper, 2001, 2004](#)) suggest that the demobilization effect of negative ads is especially pronounced among Independents—citizens whom they argue are more likely to be open to persuasion by campaign messages. Similarly, [Kahn and Kenney \(1999\)](#) conclude that the demobilizing effect of “mud-slinging” is more consequential for Independents, those less-interested in politics, and those less knowledgeable about politics. Other efforts, however, do not uncover differential effects across different segments of the electorate (e.g., [Finkel and Geer, 1998](#); [Freedman and Goldstein, 1999](#); [Goldstein and Freedman, 2002](#)) and raise doubts about those presented by Kahn and Kenney ([Jackson and Sides, 2006](#)).

In contrast, several scholars find that negative campaigns are associated with heightened voting probabilities and higher levels of turnout—what might be labeled a negativity-mobilization hypothesis (as contrasted with the negativity-demobilization hypothesis) (see [Bartels, 1996](#); [Finkel and Geer, 1998](#); [Freedman and Goldstein, 1999](#); [Kahn and Kenney, 1999](#); [Lau et al., 1999](#); [Wattenberg and Brians, 1999](#); [Lau and Pomper, 2001](#); [Goldstein and Freedman, 2002](#); [Wattenberg, 2002](#), especially chapter 7). These scholars generally conclude that, rather than turning potential voters

<sup>3</sup> At least two interpretations exist for the meaning of measures of the closeness of election outcomes. According to [Downs \(1957\)](#), voters receive greater benefit from voting in a close contest (more specifically, they discount perceived benefits by a smaller factor). Although not without problems (see [Green and Shapiro, 1994](#), especially chapter 4), rational choice theories argue more broadly that lowering the costs and/or raising the benefits of voting tend to produce citizens who are more likely to cast a ballot. Alternatively, [Cox and Munger \(1989\)](#) argue that candidates and other political elites respond to a close contest by raising and spending more money and putting additional effort into getting out the vote. In turn, citizens respond to these elite-driven flows of information and stimuli. From this perspective, measures of closeness (including measures based on actual election day outcome) operate as surrogates that capture elite effort and activity.

<sup>4</sup> However, it seems unlikely that the tone of a Senate campaign (whether negative, neutral, or positive) would demonstrate dramatic influence on overall turnout in a presidential election year. Midterm election years provide better opportunities for observing the effects of non-presidential campaigns.

away, negative campaigns motivate and, subsequently, activate citizens to go to the polls.<sup>5</sup>

Advocates offer a number of compelling arguments supporting the mobilization hypothesis (for an overview, see Finkel and Geer, 1998). First, campaign advertising provides political information to a citizenry notorious for its low store. Beyond simply lowering the costs of acquiring information (Downs, 1957), campaigns often highlight and clarify the differences between candidates (Carsey, 2000), thereby giving many people a reason to vote. As Alvarez (1997) suggests, the flow of information in the political environment has implications for voter uncertainty (see also Franklin, 1991; Ragsdale and Rusk, 1995). Advertising facilitates political learning (Freedman et al., 2004), and a truism of American politics is that more knowledgeable voters are more likely to participate (see also Brians and Wattenberg, 1996; Wattenberg and Brians, 1999).

Second, negative information could be especially pivotal to participation because citizens may weigh it more heavily than positive information when they evaluate candidates. According to Garramone et al. (1990, p. 301):

By facilitating candidate image differentiation and attitude polarization, negative political advertising may aid voters in feeling more confident about their voting decisions and may intensify their involvement in political races.

Similarly, Sigelman and Kugler (2003, p. 146) speculate that it may take “a loud barrage of brutal attacks to break through the public’s wall of inattention, for anything less than that is likely to pass through largely unnoticed.”

Third, negative campaigns generally, and negative advertisements specifically, may produce stronger emotional and affective responses than do positive ones. According to Finkel and Geer (1998, p. 577), such reactions could elevate citizens’ turnout by “arousing their enthusiasm” for preferred candidates or by increasing

the degree to which they care about the outcome of an election.

In sum, some scholars argue for a demobilizing effect resulting from negative campaigns, felt most strongly by political Independents, others argue in favor of a mobilizing effect, and still others find evidence of neither. Our read of this literature leads us to conclude that the theoretical arguments and empirical evidence in support of the negativity-mobilization hypothesis appear to be stronger than those in support of the original negativity-demobilization hypothesis. However, the most obvious conclusion is that further research is needed.

### 3. Overview of the study

The preceding review points to several gaps and unresolved debates in the scholarly literature regarding the effect of campaigns on voter turnout. Analyses of individual-level turnout have yet to produce definitive results, and few studies incorporate measures of campaign stimuli beyond the presence of an election, the closeness of its outcome, and the amount of money that candidates spent. Among those studies that do go further and consider the tone of campaigns, assessed in terms of positivity-negativity, the results are mixed. As elaborated below, we suspect that these mixed findings may stem in part from limitations in their measurement of campaign tone.

In this study, we merge contextual measures on Senate campaigns with two sources of survey data: (1) the 1998 National Election Study (NES) and (2) the Voter Supplement File of the November 1998 Current Population Survey (CPS). Relative to the CPS, the major advantage of the NES is its rich store of variables on respondent political attitudes; the CPS data contain no attitudinal measures. Relative to the NES, the major advantages of the CPS are its much larger sample size, which increases the power of statistical analysis (see Zaller, 2002), and the fact that its respondents are sampled from many more locales across the United States. We focus on an off-year election because a mid-term provides a better environment in which to assess the mobilizing influence of state-level campaigns; the presidential campaign provides an over-riding mobilizing stimulus in an on-year (Jackson, 1997). We focus specifically on 1998 because it is the first midterm election for which detailed data on Senate campaign television advertising are available, as described below. Furthermore, when it comes to consideration of the influence of such advertising on turnout, Senate

<sup>5</sup> Lau and Pomper (2001) suggest that the stimulus effect of negativity may reverse itself when campaigns become almost completely negative in tone. However, the hypothetical demobilizing effect that they illustrate in their Fig. 3 occurs entirely outside the range of their observed data, and they uncover no such effect in their updated analysis (Lau and Pomper, 2004). Finally, following Lau and Pomper’s approach, we tested models that introduce the quadratic term for our total ads measure and our negative ads measure and found no evidence of the curvilinear relationship that they report in their earlier effort.

campaigns are obvious objects of study; relative to US House races, for example, they tend to rely more heavily on this medium to reach potential voters. Television advertising is the largest and most important component of direct campaign communications with the electorate in most Senate races.

In our NES models, the dependent variable is a dichotomous measure of Senate turnout, and in our CPS models, the dependent variable is a dichotomous measure of general turnout. Our analyses retain only those respondents living in states that had a US Senate race. Since our dependent variables are dichotomous, we estimate binary logit models.<sup>6</sup>

### 3.1. Measuring US Senate campaign context

Our baseline models consider two measures of US Senate campaign context: *Senate margin* and *Senate expenditures*. The margin variable reflects the percentage point margin of victory of the winning candidate, with larger values accompanying more lop-sided contests. The expenditures variable is the natural log of the total expenditures per capita of the general election candidates.<sup>7</sup> The margin variable serves as a general proxy for the competitiveness of the election, and the expenditures variable is the measure that researchers typically use to gauge the level of the candidates' campaign activities. Consistent with existing research, our expectations are that the margin variable should demonstrate a negative influence on voting likelihood, and the expenditures variable a positive one, controlling for other factors. That is, close, high-profile races should mobilize voters.

Several limitations accompany the traditional reliance on campaign expenditures as a gauge of mobilizing stimuli (see Freedman and Goldstein, 1999; Goldstein and Freedman, 2002; Goldstein and Ridout, 2004). Perhaps most obviously, they are, at best, an indirect indicator of the level of campaign activities and communication efforts that might activate voters. We do not know what proportion of funds was spent

on salaries, on polling, on commercials, and so forth. Second, expenditures figures do not take into account the fact that the purchasing power of a dollar varies geographically—one advertising dollar goes further in Nebraska than in New York. Third, there may be marked variation in campaign intensity *within* a state. For example, residents of Spokane and other parts of eastern Washington likely witness a different campaign than do residents of Seattle. The expenditures figures do not accommodate this within-state variation. Finally, in recent election cycles, spending by candidates' own campaigns is not the only type of spending that takes place in many statewide elections. An exclusive focus on candidate expenditures misses independent and political party expenditures. Thus, for various reasons, the spending measures are less than ideal in studies of campaign mobilization.

As noted above, previous studies have relied on the coding of secondary sources (such as newspaper accounts), have experimentally manipulated campaign themes and television advertisements in a laboratory setting, have interviewed campaign managers after the election, and/or have turned to samples of television advertisements deposited at campaign media archives (examples of each approach are cited above). Goldstein and Ridout (2004) critique these approaches for relying on what are, at best, indirect measures of campaign stimuli; perhaps their major limitation is an inability to reliably capture *campaign* tone and intensity.

For example, Finkel and Geer (1998) criticize Ansolabehere et al.'s (1994) (see also Ansolabehere and Iyengar, 1995) analysis of the 1992 Senate campaigns (for another critique, see Wattenberg and Brians, 1999) because their measure of campaign negativity (tone) is based on newspaper accounts.<sup>8</sup> Such an approach necessarily conflates variation in actual campaign tone with variation in the press coverage of campaigns. Finkel and Geer argue that “tests of the effects of advertising on ‘real world’ turnout rate *must be conducted with content analysis of the advertisements themselves*” (Finkel and Geer, 1998, p. 575; emphasis in the original). Furthermore, measures based on the proportion of news coverage that is negative also fail to capture how intensely the campaign was fought.<sup>9</sup> Finkel and Geer (1998) employ measures based on a content analysis of the actual ads produced by candidates, as do Kahn

<sup>6</sup> Considering the two-stage nature of electoral participation—(1) registration followed by (2) turnout among the registered—we also assessed models of turnout among the registered sub-sample. Given their timing, campaign stimuli likely exert most of their influence at the second stage—i.e., on the turnout of the registered (see Jackson, 1996b, 2002). The same basic set of findings and substantive story emerge whether we present full sample or registered sub-sample models.

<sup>7</sup> Taking the natural log of per capita expenditures reflects the expected diminishing marginal influence on voter mobilization from greater levels of expenditures.

<sup>8</sup> Lau and Pomper (2001, 2004) also measure campaign tone using newspaper accounts.

<sup>9</sup> Lau and Pomper (2001, 2004) try to control for this by multiplying their tone measure by candidate expenditures.



and Kenney (1999). While this strategy gets more directly at the messages that candidates send through their advertising, these measures do not account for where or how frequently a particular ad was aired (or for whether it was aired at all).

Recently, a new and extremely rich data source on campaign television advertisements, which addresses these various limitations, has been made available to the research community. The Campaign Media Analysis Group (CMAG), a commercial firm that specializes in providing detailed satellite tracking information to campaigns in real time, has provided to Professor Kenneth Goldstein, now at the University of Wisconsin and current director of the University of Wisconsin Advertising Project (WiscAds), a wealth of data on television campaign advertising in recent elections in the nation's largest media markets (*Wisconsin Advertising Project, 2002*). Under Goldstein's direction, these data have been (and continue to be) systematically coded, archived, and made available to the research community.<sup>10</sup> Each case in the data set represents the airing of one ad, and the data contain information about the date and the time of an ad's airing, the television station and program on which it was broadcast, and a coding of its content.<sup>11</sup> For the 1998 midterm election, the archived data contain information on the universe of US Senate ads aired in the nation's 75 largest media markets. These 1998 data are currently housed at the Brennan Center for Justice.<sup>12</sup>

CMAG creates a storyboard for each unique ad. The storyboard contains transcripts of all audio and a still capture of every fourth second of video. For

the 1998 data, students at Arizona State University coded all storyboards under Goldstein's direction. The coders documented an advertisement's tone, purpose, and campaign theme(s), among other things. As a part of their protocol, coders were asked whether, in their judgment, the primary purpose of the ad was to *promote* a specific candidate, to *attack* a candidate, or to *contrast* the candidates. Specifically, the coding protocol provided the following instructions (*Krasno and Seltz, 2000, p. 193*):

In your judgement, is the primary purpose of the ad to **promote** a specific candidate ("In his distinguished career, Senator Jones has brought millions of dollars home. We need Senator Jones."), to **attack** a candidate ("In his long years in Washington, Senator Jones has raised your taxes over and over. We can't afford 6 more years of Jones."), or to **contrast** the candidates ("While Senator Jones has been raising your taxes, Representative Smith has been cutting them.")?

Following *Goldstein and Freedman (2002)*, we classify the promotion ads as *positive* and both the contrast and attack ads as *negative*.<sup>13</sup>

Many things about these data are noteworthy. They provide to researchers for the first time reliable and valid information on the *universe* of ads that were *actually aired* in a large number of media markets, as well as the number of times that each ad was aired. The archive includes not only campaign ads paid for by candidates' campaign organizations, but also independent expenditures ads and political party-sponsored ads. Also, since the data contain the media market in which each spot aired, as *Ridout et al. (2002)* note, one can effectively determine the number of ads (and which specific ones) aired in the viewing location of most respondents in a national survey.

For our contextual advertising measures, we first consider the total number of ads aired during the general election in a respondent's media market (paid for by either the Senate candidates running in the state in which

<sup>10</sup> For overviews of these data and of the archival efforts that are making them available to the academic community, see *Freedman and Goldstein (1999)*, *Goldstein and Freedman (2000, 2002)*, *Krasno and Seltz (2000)*, *Ridout et al. (2002)*, <http://www.polisci.wisc.edu/tvadvertising>, and <http://www.buyingtime.org>.

<sup>11</sup> Several of the references in footnote nine provide additional details on the satellite tracking technology that has made these data available. Briefly, the system monitors the transmissions of the national networks (ABC, CBS, NBC, and Fox) and of 25 national cable networks (CNN, ESPN, TBS, etc.). For 1998, the system also monitored advertising in the country's top 75 media markets. The system's software recognizes the electronic seams between programming and advertising. When the system does not recognize the unique sound pattern of a particular commercial spot, the storyboard (the full audio and every four seconds of video) is captured and downloaded. Analysts then code the advertisements into particular categories—by candidate or sponsor for political clients—and tag them with unique digital fingerprints. Thereafter, the system automatically recognizes and logs a particular commercial wherever and whenever it airs.

<sup>12</sup> There are a total of 210 DMAs across the United States. However, these 75 markets contain more than 80% of the American electorate.

<sup>13</sup> To provide a check, we considered models in which we retained separate count variables for contrast ads and attack ads. Although the coefficient estimate operating on each measure is positive in the NES model, the one operating on contrast ads is not statistically significant. Attack ads appear to provide the more important mobilizing force in the NES model; however, it should be noted that the coefficient estimates do not differ significantly ( $p < 0.05$ ). In the CPS model, both coefficients are statistically significant; furthermore, the influence of contrast ads is greater. Since the overall story remains the same, we have collapsed the contrast and attack ad categories into the single negative ad classification.

the respondent resides or other parties supporting the candidates).<sup>14</sup> We then construct similar measures that isolate the number of positive ads and the number of negative ads. The actual measures that we employ are the natural log of each of our ad count measures—taking the natural log accommodates the expected diminishing marginal effect of each additional campaign ad that is aired.<sup>15</sup> First, we expect that, on balance, a large number of television advertisements broadcast in his or her media market will increase a citizen's voting likelihood. Second, a differentiation of positive and negative ads enables us to revisit the controversy regarding whether negative campaigns de-mobilize or mobilize.<sup>16</sup> Given the tide of the recent evidence, we expect to find that a larger number of negative ads is associated with enhanced voting likelihood, other things being equal.

Ours is not the first effort to consider this archive of advertising data in a study of individual-level electoral participation. Goldstein and Freedman (2002) (see also Martin, 2002) examine the influence of the tone of presidential campaign advertising on the turnout of 1996 NES respondents. Earlier, they had examined the relationship between advertising tone in the 1997 Virginia gubernatorial race and the turnout of a sample

of Virginia respondents from that year (see Freedman and Goldstein, 1999); however, their exclusive focus on Virginia provided contextual variation across only four media markets, and, obviously, considered only one electoral contest. We provide the first broad-based effort using this data archive to gauge whether and how US Senate campaigns mobilize voters.

### 3.2. Control variables

The 1998 NES and the 1998 November CPS each enable us to estimate relatively well-specified models of individual turnout. In our NES models, we introduce the following socio-demographic control variables: *education, income, age, age squared, married, female, unemployed, Hispanic, African-American, homeowner, residential stability, churchgoer, and newspaper reader*.<sup>17</sup> We also introduce the following measures on political attitudes: *strength of partisanship, internal efficacy, external efficacy, and campaign interest*. Finally, we control for the registration closing date (*registration closing date*) in a respondent's state of residence.

As indicated above, the CPS data do not contain measures of political attitudes; however, they do enable us to consider a respondent's socio-demographic characteristics. Given the large sample size of the CPS and the degrees of statistical freedom that it affords, for many socio-demographic characteristics, we adopted the strategy of creating a series of dichotomous variables based on the categories available in the CPS: (a) education (*less than high school degree, high school, some college, college, advanced degree*), (b) income (*1st income quartile, 2nd income quartile, 3rd income quartile, 4th income quartile*), (c) marital status (*married*), (d) sex (*female*), (e) home ownership status (*homeowner*), (f) residential stability (*<1 year resident, 1–2 year resident, 3–4 year resident, and 5+ year resident*), (g) employment status (*employed, unemployed, retired or disabled, and not in labor force*), (h) ethnicity (*Hispanic*), and (i) race (*white, African-American, American Indian, and Asian-American*).<sup>18</sup> Age (*age*) is a continuous variable that reflects the respondent's age in years. Again, we control for the registration closing date (*registration closing date*) in a respondent's state of residence.

Finally, in both analyses, we control for the potential confounding effects of a concurrent gubernatorial

<sup>14</sup> To clarify, respondent A and respondent B may reside in the same media market, but in different states. Similarly, respondent C and respondent D may reside in the same state, but in different media markets. Our ad count measures for each respondent are based on only those ads run in the respondent's specific DMA for the Senate race in the state in which that respondent resides. Furthermore, we tally only those ads that were aired after the date of the primary election in the state. We relied on the county code geographic locator variable in the 1998 NES and in the November 1998 CPS to match respondents to their designated market area (DMA).

<sup>15</sup> We also considered alternative treatments of advertising count and tone variables. For example, we estimated models that specified a proportion of negative ads variable in conjunction with a total ad count measure. The findings based on this specification reinforce the general story that we outline below.

<sup>16</sup> Freedman and Goldstein (1999) (see also Goldstein and Freedman, 2002) emphasize the possibility of statistical interaction between measures on the number of television campaign advertisements and a measure of the television viewing habits of respondents. The basic logic is straightforward: if someone does not watch television, he or she will not be exposed directly to television ads. Unfortunately, the 1998 NES does not contain a detailed battery of questions on respondents' television viewing habits. It does contain questions on the number of times in the past week that a respondent watched local and national television news. However, based on respondents' answers to these questions, we found that a scale of television news viewing neither conditions the turnout influence of our ad count variables nor exerts a direct influence on turnout. The unavailability to us of more precise and detailed measures on television viewing habits should result in a conservative bias in terms of our ability to uncover turnout effects for our ad count variables, making it less likely that we will discover significant effects.

<sup>17</sup> The quadratic term *age squared* accommodates the expected curvilinear relationship between age and turnout.

<sup>18</sup> Although it would be possible to incorporate single variables ranging from low to high to capture such factors as education, income, and residential stability, specifying a dichotomous variable for each category of respondents enables us to avoid imposing the restriction that each "one-unit" shift has an identical effect.

campaign. First, we include a measure, *gubernatorial race*, that is a dichotomous variable indicating the presence (or absence) of a gubernatorial contest. We include two additional measures—*gubernatorial margin* and *gubernatorial expenditures*—that are constructed in the same manner as their Senate counterparts. For states that did not have a gubernatorial election, *gubernatorial margin* and *gubernatorial expenditures* are set equal to zero.<sup>19</sup> Unfortunately, the 1998 campaign advertising data archive contains no information on gubernatorial ads. Appendix A provides additional details on the control variables. All models employ the sampling weights provided in the NES and CPS and estimate robust standard errors.<sup>20</sup>

## 4. Models of electoral participation

### 4.1. NES results

Table 1 presents logit models of Senate turnout for the NES sample. Model 1A is an NES baseline model, which includes margin and expenditures measures for both Senate and gubernatorial elections; as such, it conforms to the typical treatment in this body of literature. Models 1B and 1C introduce measures on Senate campaign advertising in respondents' media market. Before turning to the results for the campaign variables, we present a brief overview of the results for the control variables. Most of these variables operate as expected. In model 1A, education has a marginally significant, positive influence on voting likelihood, and age exerts a powerful, positive influence across the models, with its significant quadratic term (*age squared*) indicative of a curvilinear relationship.<sup>21</sup> We also find that churchgoing is associated with a powerful, positive influence, and residential stability with a marginally significant one, controlling for other factors. These results

reinforce that social-connectedness and community roots matter for political participation (see Putnam, 2000). Other things being equal, both African-Americans and Hispanics appear to be associated with lower levels of turnout. Not surprisingly, attitudinal variables are quite potent. Strength of partisanship and campaign interest are highly significant predictors of turnout, and external efficacy also emerges as a positive influence, albeit a more modest one. Finally, as gauged via closing date, restrictive registration requirements in a state appear to attenuate electoral participation.

Of greater interest for this study are the results for the campaign variables. The highly significant, positive coefficient estimate operating on *Senate expenditures* in model 1A indicates that a high-spending, high-stimulus Senate campaign elevates the likelihood that citizens in a state will vote in the Senate election. Controlling for *Senate expenditures* (and other variables as well), *Senate margin* does not exert a significant influence; in fact, its positive coefficient is counter to theoretical expectations. Surprisingly, model 1A does not provide statistical support for the conclusion that gubernatorial campaigns elevate Senate turnout; however, as discussed below, other models do provide evidence of gubernatorial influence.<sup>22</sup>

Models 1B and 1C introduce our Senate ad count measures.<sup>23</sup> We retain the measure of Senate closeness as a control, but, given the high correlation between the overall level of Senate expenditures and our advertising measures, and the consequent multicollinearity in a multi-variate model, we drop the expenditures measure from these specifications.<sup>24</sup> The significant, positive coefficient operating on *Senate total ads* indicates that a high volume of Senate advertising in a media market mobilizes citizens living in that market, other things being equal. More interestingly, model 1C introduces the separate count measures for positive and

<sup>19</sup> See Cox and Munger (1989) for an example of an identical strategy.

<sup>20</sup> We also estimated robust standard errors that account for the clustering of observations at both the state and the state-media market levels. These models generally resulted in stronger levels of statistical significance for our measures of campaign ads and no change in our substantive conclusions. Based on robust standard errors that do not account for clustering, our reported results reflect more conservative standard error estimates (at least within the context of these data and models).

<sup>21</sup> The marginal significance of education in model 1A is perhaps a bit surprising; furthermore, its influence becomes insignificant in models 1B and 1C. However, one must keep in mind the ceteris paribus nature of the influence of any single variable in a multi-variate framework. For example, education exerts a powerful indirect influence on turnout that operates through campaign interest.

<sup>22</sup> On first blush, one might question whether a high-stimulus gubernatorial campaign should elevate voting likelihood in a Senate contest. Obviously, we would expect gubernatorial influence to be more powerful on voting in the gubernatorial contest. However, the major hurdle to voting for any major office is getting a citizen to the polls in the first place. We expect that most voters who are mobilized primarily by a gubernatorial contest would cast a vote in the Senate election once in the voting booth.

<sup>23</sup> Models 1B and 1C include respondents from 23 different state/media market contexts. For example, two respondents who reside in the same media market, but in different states, experience different state/media market contexts.

<sup>24</sup> This no doubt results from a high proportion of expenditures going to the purchase of TV ads. We further justify our decision to drop the expenditures variable by noting that the campaign advertisement variables are better, more direct measures of campaign stimuli.



negative ads. The results are unequivocal; whereas a larger volume of negative ads activates voters, positive ads demonstrate no mobilizing influence. These results based on our NES sample provide strong support for the revisionist claim that negative campaigning gets out the vote.<sup>25</sup>

Figs. 1 and 2 provide a substantive interpretation of the impact of Senate campaign advertising on voter turnout. These figures report respondents' predicted probability of turning out to vote at various levels of advertising, along with 95% confidence intervals.<sup>26</sup> Fig. 1 shows that the predicted probability of voting in a Senate election moves from about 0.41 for respondents located in a media market that has a relatively low volume of Senate campaign advertising up to about 0.72 for respondents located in a media market with a relatively high volume. This increase of 31 percentage points represents a substantively impressive effect.

<sup>25</sup> To provide a check, we assessed whether voter interest in campaigns, voter consumption of news information from TV, or voter consumption of newspapers conditions the impact of either total advertising or negative advertising. We found no evidence of conditional effects regarding the influence of interest or TV news viewing. We did uncover evidence suggesting that the impact of campaign advertising on turnout is lower for those reporting higher levels of newspaper readership. Of course, this conditional relationship could also be interpreted as a diminished impact of newspaper readership on the turnout of those exposed to a greater number of ads. Either way, this finding suggests an information substitution effect consistent with the findings reported by Freedman et al. (2004). Fuller treatment of this issue is beyond the scope of this paper, but one point of concern is the known propensity of respondents to dramatically overstate their consumption of TV and newspaper news (see Zaller, 2002 for a discussion).

<sup>26</sup> Specifically, we computed these predicted probabilities by allowing the relevant campaign advertising variable to vary from its minimum to its maximum observed value while setting all other variables in the models reported in Table 1 to their observed means (see Table A.2 in the Appendix). We calculated these means, minimums, and maximums based only on those observations included in the analysis. The natural log of the number of total ads ranges from 5.0 to 9.3. This corresponds to a range of about 150 to more than 10,000 ads. For positive ads, the observed range (for the logged variable) is 4.9 to 8.1. For negative ads, the observed range (for the logged variable) is 0 to 8.8. Note that in calculating the predicted effect of positive (negative) ads, we held the negative (positive) ads variable constant at its observed mean as well. We calculated the predicted probabilities and confidence intervals using the procedures outlined by Long and Freese (2001). The y-axis scales for the four figures differ to facilitate interpretation—a compressed range would not allow us to plot the full 95% confidence interval for Fig. 1; expanding the range makes it more difficult to distinguish the curves and confidence intervals, particularly in Figs. 3 and 4. To aid the reader in making comparisons, we have labeled the range 0.3 to 0.7 on each figure.

Fig. 2 demonstrates graphically what our statistical results in Table 1 show—that the turnout stimulus of Senate campaign advertising is driven almost entirely by negative ads. The predicted probability of voting in a Senate election remains largely unchanged across the range of *positive* campaign advertising, hovering steadily around 0.57.<sup>27</sup> In contrast, the estimated effect of negative advertising illustrated in Fig. 2 parallels the reported effect of total ads in Fig. 1 and, in fact, is somewhat stronger. Setting the number of negative ads to its lowest observed value results in a predicted probability of voting of only about 0.27. That predicted probability increases to about 0.79 when the number of negative ads is set at its highest value.

Figs. 1 and 2 reinforce the conclusions reached above: a greater volume of campaign advertising in a 1998 Senate contest stimulated voter turnout. However, that effect appears to be the product of negative campaign advertising, as positive campaign advertising has no measurable impact. Figs. 1 and 2 also make clear that the influence on turnout of campaign advertising—and of negative advertising specifically—is substantively important.

As outlined above, a subsidiary debate in the existing literature on negative campaigning and electoral participation revolves around the question of whether the turnout of certain types of citizens is especially responsive to negative campaigns. Ansolabehere and Iyengar's (1995) early evidence indicated that Independents were more likely to be demobilized. Subsequent evidence has been mixed, with some studies supporting this part of their conclusions (e.g., Kahn and Kenney, 1999; Lau and Pomper, 2001), and others not (e.g., Finkel and Geer, 1998; Freedman and Goldstein, 1999; Goldstein and Freedman, 2002; Jackson and Sides, 2006). Within the context of our models, Ansolabehere and Iyengar's argument would receive support if, relative to partisans, Independents responded differentially to negative advertising—more specifically, the positive relationship between our negative ads count variable and turnout should be attenuated for Independents. We assessed this possibility via a multiplicative interaction between *strength of partisanship* and *Senate negative ads*, but uncovered no evidence of a conditional relationship.

Finally, models 1B and 1C also indicate that hard-fought, high-stimulus gubernatorial campaigns increase Senate turnout. Gubernatorial expenditures

<sup>27</sup> The slight negative slope observed in Fig. 2 for positive ads does not approach statistical significance.

Table 1  
Logit models of Senate turnout (1998 National Election Study)

Independent variable	A	B	C
<i>Individual-level controls</i>			
Education	0.098* (1.86)	0.060 (0.97)	0.061 (1.00)
Income	0.023 (1.16)	0.047* (1.83)	0.045* (1.73)
Age	0.165** (4.19)	0.138** (2.90)	0.140** (2.94)
Age squared	−0.0013** (−3.50)	−0.0010* (−2.20)	−0.0011* (−2.22)
Married	−0.193 (−0.84)	−0.200 (−0.73)	−0.261 (−0.93)
Female	−0.084 (−0.39)	−0.095 (−0.37)	−0.113 (−0.44)
Unemployed	−0.636 (−1.22)	−0.663 (−1.01)	−0.758 (−1.14)
Hispanic	−0.357 (−0.98)	−0.771* (−1.90)	−0.866* (−2.21)
African-American	−0.674* (−2.02)	−0.801* (−2.15)	−0.591 (−1.51)
Homeowner	0.121 (0.39)	−0.010 (−0.03)	0.037 (0.11)
Residential stability	0.147 (1.61)	0.206* (1.85)	0.196* (1.74)
Churchgoer	0.317** (4.57)	0.335** (3.93)	0.342** (4.01)
Newspaper reader	0.036 (0.88)	0.023 (0.46)	0.022 (0.44)
Strength of partisanship	0.442** (3.86)	0.556** (3.99)	0.547** (3.91)
Internal efficacy	0.151 (1.63)	0.099 (0.93)	0.134 (1.25)
External efficacy	0.086* (1.68)	0.115* (1.76)	0.108 (1.64)
Campaign interest	1.16** (6.64)	1.12** (5.41)	1.16** (5.53)
<i>Political context</i>			
Registration closing date	−0.019* (−1.79)	−0.022 (−1.52)	−0.031* (−1.99)
Senate margin	0.018 (1.60)	0.011 (0.78)	0.039* (1.96)
Senate expenditures	0.867** (3.68)	—	—
Senate total ads (# logged)	—	0.297* (1.84)	—
Senate positive ads (# logged)	—	—	−0.100 (−0.45)
Senate negative ads (# logged)	—	—	0.259** (2.74)
Gubernatorial race	−0.855 (−0.45)	−4.62* (−1.76)	−7.39** (−2.61)
Gubernatorial margin	−0.010 (−0.66)	−0.032 (−1.40)	−0.045* (−1.88)
Gubernatorial expenditures	0.174 (0.73)	0.669* (1.85)	1.05** (2.68)
(constant)	−15.87** (−6.38)	−10.86** (−5.24)	−9.82** (−4.93)
Wald chi-square (d.f.)	177.1** (23)	123.8** (23)	133.2** (24)
Number of observations	760	550	550

Notes: Dependent variable is turnout among those NES respondents living in states that had a US Senate race. Models B and C retain only those respondents living in one of the 75 largest designated market areas (DMAs) and who had a Senate race in their state. Z-values in parentheses are based on robust standard errors; \* $p < 0.05$  (1-tailed); \*\* $p < 0.01$  (1-tailed). All models incorporate the NES weights.

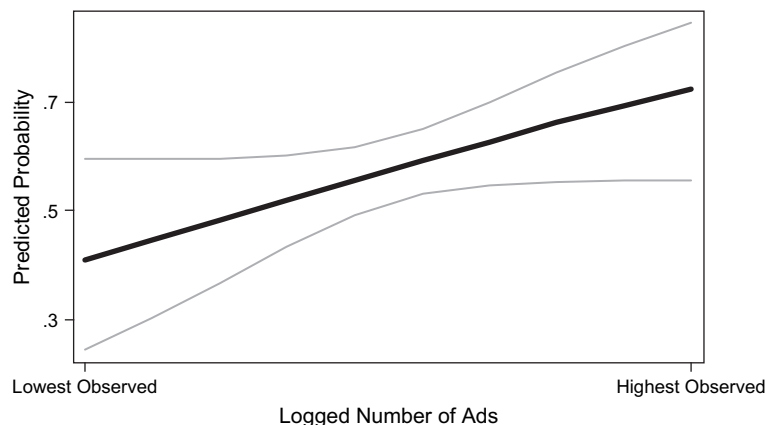


Fig. 1. Predicted effect of the total ad count on the probability of voting (NES). Figure based on logit model results reported in Table 1. Gray bands represent 95% confidence interval.

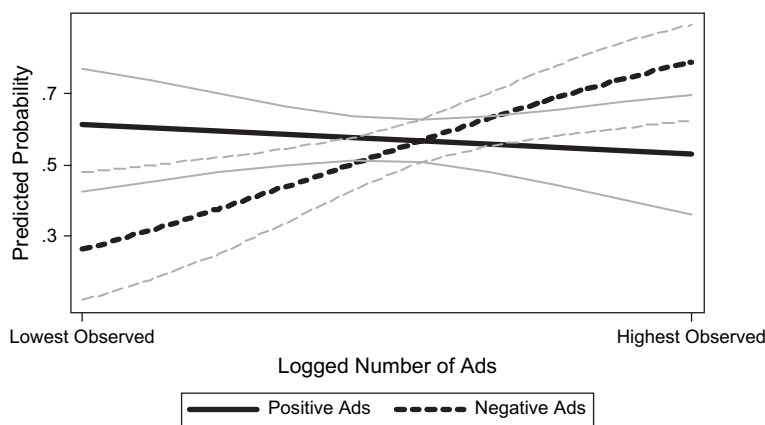


Fig. 2. Predicted effect of positive and negative ad counts on the probability of voting (NES). Figure based on logit model results reported in Table 1. Gray bands represent 95% confidence interval.

demonstrate a significant, positive influence on Senate voting likelihood, and, although not statistically significant, the negative coefficient operating on *gubernatorial margin* suggests that closer gubernatorial contests are associated with greater Senate participation.<sup>28</sup>

#### 4.2. CPS results

Table 2 presents logit models of general turnout for the CPS sample. Again, the control variables operate largely as one would expect. Those with greater levels of education and income are much more likely to vote, controlling for other factors. Older respondents (until very late in the life-span), married folks, homeowners, stable residents (in terms of mobility), and women are also significantly more likely to turn out. In terms of race and ethnicity, whereas Asian-Americans are associated with attenuated participation relative to that of Anglos, Hispanics and African-Americans are associated with greater voting likelihood, other things being equal. The CPS estimates also indicate that those respondents residing in states with a registration closing date closer to election day are more likely to vote.

Model 2A introduces the margin and expenditures measures for both Senate and gubernatorial elections. The results again provide strong support for the conclusion that high-stimulus, hard-fought state-level races get out the vote. Respondents living in states that had high-spending, close contests are markedly more likely to turn out. Model 2B retains the Senate closeness measure, but substitutes the total ads count variable for the expenditures variable as the more direct measure of Senate campaign stimuli.<sup>29</sup> As with that of the NES model (1B), the coefficient estimate indicates that a large volume of Senate campaign advertising in a media market increases the voting probability of citizens. Of even greater interest, regarding the differential mobilizing role of positive and negative ads, the story that emerged in the NES model (1C) resurfaces in model 2C. The number of positive ads demonstrates no influence on respondents' voting likelihood; however, the number of negative ads demonstrates a powerful, positive influence. Those citizens living in a media market where Senate candidates fought a heated battle on the airwaves are more likely to vote, other things being equal.

Figs. 3 and 4 illustrate the substantive importance of the advertising effects uncovered in Table 2.<sup>30</sup> Although not as steep as those estimated for the NES models, the slopes of interest in Figs. 3 and 4 support the same basic conclusions reached above based on the

<sup>28</sup> Considered in isolation, the negative coefficients operating on the gubernatorial race dummy are not meaningful. The actual influence of a gubernatorial race is contingent as well on the coefficients operating on gubernatorial margin and gubernatorial expenditures. For example, the estimated effect of a gubernatorial contest in model 1C is:  $[(-5.82) + (-0.037)(\text{gubernatorial margin}) + (0.824)(\text{gubernatorial expenditures})]\text{gubernatorial race}$ . For greater detail on this modeling strategy, see Cox and Munger (1989).

<sup>29</sup> Models 2B and 2C include respondents who reside in 61 different state/media market contexts.

<sup>30</sup> We constructed Figs. 3 and 4 relying on the same approach used to construct Figs. 1 and 2.

Table 2  
Logit models of turnout (1998 Current Population Survey Voter Supplement)

Independent variable	A	B	C
<i>Individual-level controls</i>			
High school	0.643** (17.29)	0.599** (12.35)	0.599** (12.34)
Some college	1.26** (31.29)	1.23** (23.64)	1.22** (23.57)
College	1.67** (35.74)	1.61** (27.35)	1.61** (27.36)
Advanced degree	1.99** (33.99)	1.96** (27.07)	1.96** (27.08)
2nd income quartile	0.224** (6.13)	0.236** (4.92)	0.239** (4.97)
3rd income quartile	0.306** (8.09)	0.302** (6.08)	0.305** (6.14)
4th income quartile	0.439** (10.59)	0.414** (7.74)	0.416** (7.76)
Age	0.073** (18.29)	0.072** (14.28)	0.072** (14.31)
Age squared	−0.00040** (9.82)	−0.00039** (−7.60)	−0.00039** (−7.61)
Married	0.258** (9.90)	0.274** (8.46)	0.273** (8.42)
Female	0.062** (2.67)	0.073** (2.51)	0.073** (2.52)
Homeowner	0.220** (7.18)	0.227** (6.00)	0.227** (6.01)
1–2 year resident	0.333** (7.58)	0.284** (5.25)	0.287** (5.31)
3–4 year resident	0.672** (15.18)	0.683** (12.53)	0.687** (12.60)
5+ year resident	0.945** (24.60)	0.957** (20.24)	0.964** (20.39)
Unemployed	0.098 (1.26)	0.072 (0.74)	0.067 (0.69)
Retired or disabled	0.064 (1.61)	0.113* (2.17)	0.108* (2.02)
Not in labor force	−0.082* (−1.97)	−0.047 (−0.92)	−0.043 (−0.85)
Hispanic	0.115* (2.18)	0.136** (2.32)	0.155** (2.66)
African-American	0.451** (11.03)	0.516** (10.51)	0.530** (10.79)
American Indian	−0.041 (−0.36)	−0.068 (−0.42)	−0.067 (−0.41)
Asian-American	−0.748** (−10.36)	−0.991** (−11.35)	−1.00** (−11.47)
<i>Political context</i>			
Registration closing date	−0.010** (−6.68)	−0.0057** (−2.48)	−0.008** (−3.44)
Senate margin	−0.0019* (−1.78)	0.001 (0.61)	0.007** (2.97)
Senate expenditures	0.069** (3.21)	—	—
Senate total ads (# logged)	—	0.107** (6.08)	—
Senate positive ads (# logged)	—	—	−0.020 (−0.92)
Senate negative ads (# logged)	—	—	0.063** (7.11)
Gubernatorial race	−0.533** (−2.49)	−0.402 (−1.38)	−0.518* (−1.80)
Gubernatorial margin	−0.0041** (−3.19)	−0.00059 (−0.32)	−0.0024 (−1.34)
Gubernatorial expenditures	0.083** (3.08)	0.051 (1.36)	0.070 (1.87)*
(constant)	−4.92** (−22.74)	−5.28** (−25.36)	−4.76** (−23.74)
Wald chi-square (d.f.)	6302.1** (28)	4041.5** (28)	4073.0** (29)
Number of observations	47,935	28,362	28,362

Notes: Dependent variable is turnout among those CPS adult citizen respondents living in a state that had a US Senate race. Reference categories are less than high school degree, 1st income quartile, employed, white, and less than one year of residential stability. Models B and C retain only those respondents living in one of the 75 largest designated market areas (DMAs) and who had a Senate race in their state. Z-values in parentheses are based on robust standard errors; \* $p < 0.05$  (1-tailed); \*\* $p < 0.01$  (1-tailed). All models incorporate the CPS weights.

NES analysis. Considering our results based on both the NES and the CPS data, we have clear evidence that Senate campaign advertising—and negative advertising more specifically—stimulates voters to go to the polls on election day.

## 5. Conclusion

One of the most prominent questions in recent research on American political behavior is whether campaigns—and negative campaigns in particular—

mobilize or demobilize citizens. In this study, we combine the best available measures of US Senate campaign advertising with two widely used sources of individual-level data on voter turnout and revisit several debates in the existing literature. Our evidence provides strong support for the mobilization hypothesis. The findings from models that rely on the typical measures of campaign mobilizing stimuli (i.e., expenditures and closeness of contests) indicate that citizens living in states with high-profile, hard-fought statewide contests are more likely to vote. However, our more theoretically



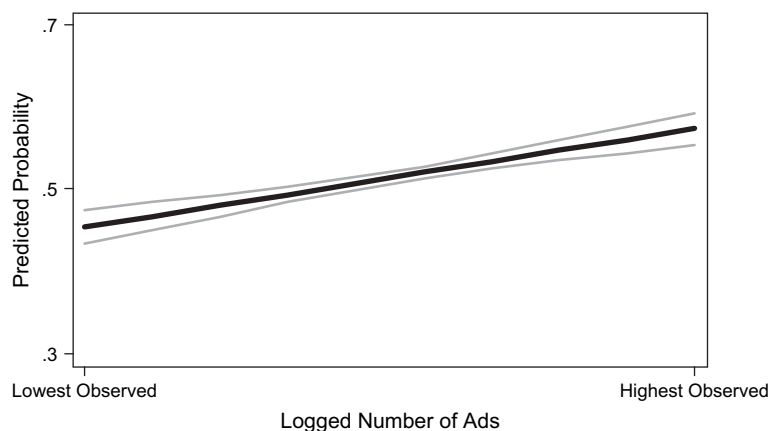


Fig. 3. Predicted effect of total ad count on the probability of voting (CPS). Figure based on logit model results reported in Table 2. Gray bands represent 95% confidence interval.

interesting results emerge from models that consider the influence of Senate television campaign advertising. Although the general conclusion that citizens living in an area of a high volume of Senate advertising are more likely to turn out to vote is correct as far as it goes, it also submerges a great deal. Different types of ads demonstrate differential mobilizing influence. Specifically, our results indicate that negative ads exert a powerful, positive influence on turnout, but that positive ads demonstrate negligible influence. Our evidence from US Senate campaigns supports the revisionist conclusion that negative campaigns get out the vote—the original negativity-demobilization hypothesis receives no support.

Our findings also lead us to reconsider normative issues. Although the typical refrain of reformers is to call for an end to negative and attack advertising, our results give us some pause as to whether to join the chorus. Especially if one believes that electoral campaigns should engage the citizenry and facilitate the most basic form of political participation among its members—i.e., voting in an election—negative campaigning, and negative advertising more specifically, appears to fulfill (some) “positive” functions in a representative democracy. Indeed, in terms of mobilizing voters and increasing turnout, it appears that an effective campaign is one that points out weaknesses in the opponent’s program and qualifications for office.

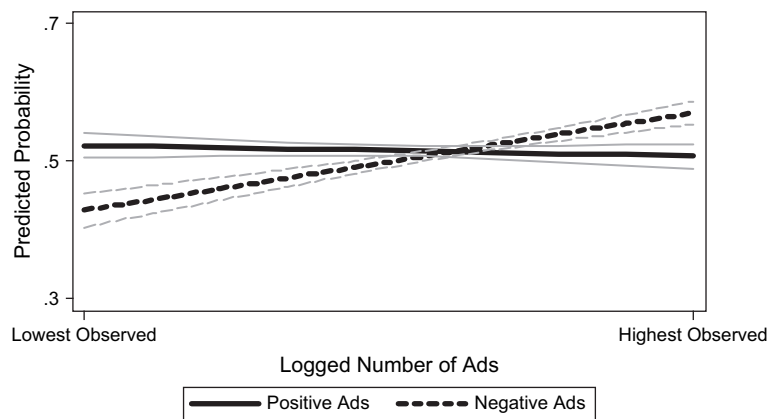


Fig. 4. Predicted effect of positive and negative ad counts on the probability of voting (CPS). Figure based on logit model results reported in Table 2. Gray bands represent 95% confidence interval.

## Acknowledgments

An earlier version of this paper was presented at the 2004 Southern Political Science Association meeting. We thank Shunta Matsumota for research assistance and Geoffrey Layman, Richard Winters, and anonymous reviewers for helpful comments. Our campaign advertising data were obtained from a joint project of the Brennan Center for Justice at New York University School of Law and Professor Kenneth Goldstein of the University of Wisconsin-Madison, and include media tracking data from the Campaign Media Analysis Group in Washington, DC. The Brennan-Center-Wisconsin project was sponsored by a grant from The Pew Charitable Trusts. The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Brennan Center, Professor Goldstein, or The Pew Charitable Trusts.

## Appendix A

The variables are described in Table A.1, and Table A.2 presents the statistics on ad count variables.

Table A.1  
Variable descriptions

Variable name	Description (underlying variable)
<b>A. NES variables</b>	
<i>Socio-demographics</i>	
Education	Highest grade completed (0–17) (v980574)
Income	24-point scale of family income (v980652)
Age	Age in years (v980572)
Married	Dichotomous variable (v980573)
Female	Dichotomous variable (v980672)
Unemployed	Dichotomous variable (v980579)
Hispanic	Dichotomous variable (v980659)
African-American	Dichotomous variable (v980673)
Homeowner	Dichotomous variable (v980663)
Residential stability	Square root of number of years in current house (v980662)
Churchgoer	5-point scale of church attendance (v980541, v980543)
Newspaper reader	Number of days read a newspaper in past week (v980202)
<i>Political attitudes</i>	
Strength of partisanship	4-point scale (v980339)
Internal efficacy	5-point scale (v980523)
External efficacy	10-point additive scale (v980524, v980525)
Campaign interest	3-point scale (v980201)

Table A.1 (continued)

Variable name	Description (underlying variable)
<b>B. CPS variables</b>	
<i>Education</i>	
Less than high school degree	Dichotomous variable (PEEDUCA)
High school	Dichotomous variable (PEEDUCA)
Some college	Dichotomous variable (PEEDUCA)
College	Dichotomous variable (PEEDUCA)
Advanced degree	Dichotomous variable (PEEDUCA)
<i>Income</i>	
1st income quartile	Dichotomous variable (HUFAMINC)
2nd income quartile	Dichotomous variable (HUFAMINC)
3rd income quartile	Dichotomous variable (HUFAMINC)
4th income quartile	Dichotomous variable (HUFAMINC)
<i>Residential stability</i>	
<1 year resident	Dichotomous variable (PES8)
1–2 year resident	Dichotomous variable (PES8)
3–4 year resident	Dichotomous variable (PES8)
5+ year resident	Dichotomous variable (PES8)
<i>Employment status</i>	
Employed	Dichotomous variable (PEMLR)
Unemployed	Dichotomous variable (PEMLR)
Retired or disabled	Dichotomous variable (PEMLR)
Not in labor force	Dichotomous variable (PEMLR)
<i>Ethnicity and race</i>	
Hispanic	Dichotomous variable (PRHSPNON)
White	Dichotomous variable (PERACE)
African-American	Dichotomous variable (PERACE)
American Indian	Dichotomous variable (PERACE)
Asian-American	Dichotomous variable (PERACE)
<i>Other socio-demographics</i>	
Age	Age in years (PEAGE)
Married	Dichotomous variable (PEMARITL)
Female	Dichotomous variable (PESEX)
Homeowner	Dichotomous variable (HETENURE)
<b>C. Political context variables</b>	
Registration closing date	Number of days before election day
Senate margin	Percentage point margin of victory of winning candidate
Senate expenditures	ln(total expenditures of general election candidates/state voting age population in thousands)
Senate total ads (# logged)	ln(total number of Senate ads in respondent's DMA + 1)
Senate positive ads (# logged)	ln(number of Senate promote ads in respondent's DMA + 1)
Senate negative ads (# logged)	ln(number of Senate attack and contrast ads in respondent's DMA + 1)
Gubernatorial race	Dichotomous variable
Gubernatorial margin	Percentage point margin of victory of winning candidate
Gubernatorial expenditures	ln(total expenditures of general election candidates/state voting age population in thousands)

Table A.2  
Descriptive Statistics on Ad Count Variables

Variable name	N	Mean	Std. Dev.	Minimum	Maximum
<i>A. NES models</i>					
Senate total ads (#)	550	2,547.6	2,975.6	143	11,110
Senate positive ads (#)	550	971.4	919.0	128	3,435
Senate negative ads (#)	550	1,461.6	1,917.9	0	6,725
Senate total ads (# logged) <sup>a</sup>	550	7.16	1.25	4.97	9.32
Senate positive ads (# logged) <sup>a</sup>	550	6.48	.90	4.86	8.14
Senate negative ads (# logged) <sup>a</sup>	550	5.10	3.25	0	8.81
<i>B. CPS models</i>					
Senate total ads (#)	28,362	2,689.5	3,009.0	143	11,110
Senate positive ads (#)	28,362	1,043.1	909.6	128	3,435
Senate negative ads (#)	28,362	1,525.3	1,926.0	0	6,725
Senate total ads (# logged) <sup>a</sup>	28,362	7.28	1.19	4.97	9.32
Senate positive ads (# logged) <sup>a</sup>	28,362	6.59	.87	4.86	8.14
Senate negative ads (# logged) <sup>a</sup>	28,362	5.48	3.01	0	8.81

<sup>a</sup> We added one to the underlying count before taking its natural log.

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