Do Televised Presidential Ads Increase Voter Turnout? Evidence from a Natural Experiment

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The geographic idiosyncrasies of states and media markets set the stage for a natural experiment in which residents of a given state may be exposed to widely varying quantities of presidential television advertising. We use this natural experiment to estimate the effects of TV ads on voter turnout. Analysis of voting rates in media markets reveals that the volume of advertising purchased by the presidential campaigns during the final weeks of the 2000 election had negligible effects on voter turnout. Classifying presidential advertisements according to whether their tone is positive or negative, we find no evidence to suggest that attack ads promote or diminish turnout. Our findings stand in sharp contrast with recent survey-based studies that report strong turnout effects.

Television ads are a staple of modern political campaigns. Where advertisers can afford them and political circumstances dictate, TV commercials are usually the tactic of first choice, the most visible sign of activity and the most expensive aspect of campaigns (Fritz and Morris 1992; Goldenberg and Traugott 1984; Morris and Gamache 1994). Candidates, parties, and groups combined to spend at least $1.6 billion on TV ads in 2004 (Memmot and Drinkard 2004). Exactly what this money buys is a subject of some debate among observers (e.g., Jamieson 1996).

In this essay we examine one potential effect of television advertising, its impact on voter turnout. There is a substantial literature on this subject, much of it centered on Ansolabehere and Iyengar's (1997) controversial thesis that negative ads depress voting (Lau et al. 1999). Until recently, less attention has been paid to the more general question of whether advertising, irrespective of tone, stimulates voting. Finkel and Geer's (1998) regression analysis of the 1960–92 NES Cumulative File, recently updated by Geer (2006), showed strong effects of "media exposure"—a measure that includes paid and free media along with sources beyond TV—on turnout. Freedman and Goldstein's (1999, 1199) study of Virginia voters found that exposure to negative ads increased turnout, but the total number of campaign ads aired in one's media market had no impact on turnout. Using the 1992 and 1996 NES, Ansolabehere, Iyengar, and Simon (1999, 903) found a slightly negative relationship between exposure to ads and turnout.

In the last few years, however, two studies have appeared demonstrating a powerful and direct relationship between TV ads and turnout. Freedman, Franz, and Goldstein (2004, 732), using the same media broadcast data employed here, find that NES respondents in 2000 were as much as 10 percentage points more likely to vote if they watched much television (particularly daily news shows) in media markets that were bombarded with presidential ads. Hillygus (2005, 61) reports that exposure to TV ads in 2000 had an even larger impact on the *intention* to vote. Among those who early in the campaign did not intend to vote, exposure to ads increased intentions to vote by 18 percentage points. Hillygus concludes that "the millions of dollars spent on campaign advertising may serve not only to persuade voters to support a particular candidate, but also to persuade intended nonvoters to show up on Election Day" (2005, 61). In both studies, the impact of TV advertising is especially strong for certain segments of the population, but the average effect across the whole sample remains substantial: in Freedman, Franz, and Goldstein's case, 5.3 percentage points (the difference in the probability of voting for respondents with low and average exposure to ads; 2004, 732), and in Hillygus' 5.2 percentage points (18 multiplied by the 29% of respondents who initially reported they had no plans to vote; 2005, 58).

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In this essay, we reassess these claims about the 2000 presidential election. Like Freedman, Franz, and Goldstein (2004) and Hillygus (2005), we regard presidential elections as a promising setting in which to detect media effects on voting rates. The volume of advertising is enormous in some places and nil in others. The top of the ticket inspires the most interest and participation. Presidential races also have the advantage of being national contests. George W. Bush and Al Gore were on the ballot everywhere, in battleground and nonbattleground states, giving everyone some reason to pay attention to their ads.

The national character of the presidential race is an essential aspect of our analysis. The strategic imperatives of the Electoral College and the lack of correspondence between the boundaries of states and media markets lays the groundwork for a natural experiment *within* states (Strömberg 2002). For example, because of their proximity to Philadelphia (and the battleground state of Pennsylvania), citizens in eight counties in New Jersey were bombarded with 2,247 presidential ads in the final three weeks of the campaign in 2000.[1] During that same period, voters in 12 northern New Jersey counties close to New York City received just 16 spots. This situation is not unusual: we observe 12 states where at least one county received more than 1,000 presidential ads during the final three weeks of the campaign while at least one other received fewer than 100 ads. This phenomenon is not limited to states that border battlegrounds, for we also detect substantial differences in the volume of advertising within heavily contested states. By focusing on within-state variation, we control for varying levels of competitiveness created by the Electoral College and other statewide election activity. The fixed-effects approach we employ avoids the sort of distortions that may occur because of short-term strategic allocations made by the campaigns and long-term variations in voting rates and is the proper way to analyze what is, in effect, a collection of state-level natural experiments.[2]

Our analysis offers a second advantage over previous research by examining actual election returns rather than survey data. This avoids the well-known overreporting of turnout in surveys (Burden 2000; Martinez 2003; McDonald 2003). Overreporting poses no problems if this measurement error is uncorrelated with exposure to advertising. But it is reasonable to suspect that campaigns spur awareness of elections, potentially making respondents with greater exposure more prone to exaggerate or misremember their actions. By focusing on aggregate turnout rates, we also avoid a problem associated with the analysis of clustered survey samples. None of the survey analyses mentioned above accounts for the fact that respondents are grouped within geographically defined sampling units. By calculating the standard errors as though each of these observations were independent, these studies risk exaggerating the robustness and significance of their findings (Murray 1998).

The essay is structured as follows. We begin by briefly reviewing the theoretical arguments that have been advanced to explain why paid television ads increase turnout. The third section discusses the data used here, presenting evidence validating our measure of media exposure. The fourth section introduces the statistical model designed to estimate the effects of presidential ads, net of confounding factors such as the states' competitiveness in current and past elections. The fifth section presents the regression estimates of the overall effects of presidential ads, demonstrating the robustness of the findings by adding controls for the tone of the ads and other campaign activity. Our results show, contrary to others' findings, that televised presidential ads had little or no effect on turnout rates. We conclude by discussing the implications of our divergent findings for the literatures on voter mobilization and media effects.

Placing Advertising Effects on Turnout in Theoretical Perspective

Freedman, Franz, and Goldstein (2004, 725) argue that campaign ads inform people exposed to them about the candidates and their messages, and, partially as the result of this enhanced knowledge, increase these individuals' interest in the election and their sense of the stakes involved.[3] These increased levels of information and interest lead ultimately to higher levels of participation on Election Day, a fairly

[1]In other words, various presidential ads (almost always 30 seconds in duration) appeared 2,247 times over this period, mainly on the local ABC, CBS, FOX, and NBC affiliates (see below).

[2]Freedman, Franz, and Goldstein (2004, 738) include a dummy variable to indicate whether each respondent lived in a battleground state, but this approach does not fully control for cross-state variation.

[3]Information is measured by ability to recall candidates, accurately recall candidates, and accurately place Bush and Gore on a variety of issue scales. Engagement is measure by expressed interest in the campaign and the number of likes and dislikes of the Bush and Gore.

natural progression that comports with a series of empirical findings showing that voters are, on average, better informed and more interested than are nonvoters. The ubiquity of campaign ads coupled by advertisers' efforts to make their ads unavoidable helps insure their effect by overcoming the normal barriers that shield less informed and less interested citizens from exposure to political messages (e.g., Zaller 1992). Thus, Freedman, Franz, and Goldstein claim that campaign ads have a greater impact on less informed respondents than on well informed ones, though these differential effects do not apply to voting; they find that the effect of campaign ads on turnout does not vary with political information (2004, 733).

These ads appear, of course, against the backdrop of the presidential election that is more or less tightly contested, depending on one's locale. That level of competitiveness is vitally important to turnout; students of electoral politics have long recognized that competitive elections result in elevated levels of voting in all types of elections, from presidential and congressional (Ashenfelter and Kelley 1975; Crain, Leavens, and Abbot 1987; Kau and Rubin 1976; Rosenstone and Hansen 1993) to gubernatorial and legislative (Caldeira and Patterson 1982; Patterson and Caldeira 1983). In 2000, for example, turnout in the 20 states classified as battlegrounds by CNN was 57%, as compared to 53% for the nonbattleground states.[4] Cox and Munger (1989) note two broad categories of explanation for the relationship between turnout and electoral competitiveness, one driven by the perceptions of individual citizens and the other by the actions of elites. Some authors find support for the first, invoking the Downsian reasoning that individual voters are more likely to cast the decisive ballot in close races (e.g., Berch 1993; Downs 1957; Ferejohn and Fiorina 1974; Riker and Ordeshook 1968).[5] Some emphasize the second, noting the strong relationship between campaign activity and turnout (Jackson 1996a, 1996b). Some find support for both (Cox and Munger 1989; Rosenstone and Hansen 1993).

Television ads straddle these categories. They are obviously an important and expensive campaign activity, yet they also by their nature are designed to activate viewers' interest or sense of concern about the race. Ads may signal a close election to those who view them, raising the stakes of voting. Ads may also stimulate turnout directly, by encouraging voters to take an interest in the campaign and to acquire voting preferences. The overwhelming volume of advertising in the most heavily contested areas makes their message all but inescapable. There would seem to be, in short, ample reason to expect TV ads to stimulate voting.

These arguments are plausible but debatable. Given the publicity surrounding a presidential election, voters may not need campaign ads to discern the importance of the election. As for the hypothesis that ads themselves directly mobilize voters, content analysis reveals that relatively few of them mention Election Day or remind viewers to vote (Krasno and Goldstein 2002; Krasno and Seltz 2000).[6] LaRaja, for example, does not rank TV as a mobilization expense in his coding of parties' expenditures (LaRaja and Jarvis-Shean 2001; LaRaja and Pagoda 2000). Instead, that category is made up of spending on activities like canvassing or phone calls, traditional forms of grassroots campaigning that, unlike TV, do not spill over state lines.[7] This last observation relates directly to the burgeoning literature on mobilization experiments inspired by Gosnell (1927) and Eldersveld (1956). By and large, these studies reach the conclusion that more personal approaches work best, with face-to-face contacts producing more voters than telephone calls, which in turn are more effective than direct mail (Green and Gerber 2004; McNulty 2005; Michelson 2005). Mass communications are, by their nature, less personal, and television would seem to be among the least personal of all. In short, this literature suggests that TV commercials would have relatively weak effects on voter participation.

A final reason for uncertainty about the net effect of advertising is that the influence of any given ad may be contingent. Hillygus (2005, 52) speculates that one reason that analysts find greater campaign effects in individuals than in the aggregate is that individuals may move in opposite directions that essentially cancel each other out, leaving the

[4]See http://www.cnn.com/. Population and turnout figures come from the 2003 Statistical Abstract of the United States, Table 420.

[5]These perceptions are surely encouraged by the media coverage of battlegrounds and the unremitting attention of the candidates. For example, during a visit to Pennsylvania in August 2004, President Bush noted that it was his 32nd trip to the state since taking office (Seelye 2004). Most of that attention, and indeed much of the presidential candidates' travel, is designed to generate local media coverage (e.g., Lewis 1997).

[6]Part of this reticence is attributable to the campaign finance laws of the time which allowed parties and groups to evade regulation by avoiding words of "express advocacy" like "vote" (Moramarco 1999). That consideration, however, does not apply to candidates whose campaigns were automatically subject to federal campaign laws and still chose not to explicitly ask viewers for their support.

[7]Aside from their low cost relative to television, grassroots campaigning also offers the advantage of fairly precise targeting. Once their likely supporters are identified, campaigns do not have to risk stimulating turnout among opposing partisans.

impression of no net effect. A similar line of argument is prominent in the literature on campaign tone cited earlier. Although the evidence concerning the demobilizing effects of campaign ads is mixed (Lau et al. 1999), the hypothesis that negative ads offset the mobilizing effects of positive ads remains a subject of active investigation. Thus, two empirical questions arise: (1) What is the net effect of the volume of presidential ads? and (2) To what extent, if any, is the mobilizing influence of presidential ads masked by variations in their tone?

Data

Unit of Analysis. Because we seek to examine the impact of the variation in TV advertising *within* states, the unit of analysis here is the media market by state. For example, depending on their location with the state, most Indiana residents receive their television shows from one of five media markets: Chicago, Cincinnati, Dayton, Indianapolis, or Louisville. Each of these markets *within Indiana* comprises a separate case in this study. For convenience, we call these units "media zones." So the Chicago market spans two media zones, the collection of counties in Illinois and in Indiana where residents receive their television from the same set of transmitters.[8] Since our analysis focuses on within-state variation, we exclude states containing a single media zone as well as states for which we have information about only one media zone. Thus, the Minneapolis-St. Paul market figures in our examination of Wisconsin and not Minnesota, because no other major media market reaches the latter. The advertising dataset we examine here covered advertising in the largest 75 markets in 2000, reaching approximately 78% of the population living in the 48 continental states (Johnston et al. 2004, 74).[9] Given these constraints, the total number of observations here is 128. Voter turnout in these areas (calculated by the number of presidential votes cast divided by the population of voting-age citizens (see below) was 54.9% versus 54.5% across the entire nation. For a list of media zones ordered by state, see Table 1 below.

[8]One alternative, of course, is to use counties as the unit of analysis. Counties would vastly increase the number of cases, but would not offer analytical advantages since the amount of advertising is constant throughout the media market.

[9]There are 210 media markets in the United States, and CMAG now tracks advertising in all of them, making possible a replication of the current study once the 2004 data become publicly available.

Outcome and Campaign Variables. The dependent variable in our analysis is the turnout rate in 2000. In light of the concerns raised by McDonald and Popkin (2001), we measure turnout as the proportion of voting-age *citizens* who vote. Voting and population data were obtained at the county level and aggregated up to state-level media markets. Voting data come from the *America Votes* series (e.g., Scammon, McGillivray, and Cook 2001); population data from the 1990 and 2000 censuses and were interpolated for intervening election years to allow us to estimate turnout rates for these contests. Information about the geographic boundaries of the media markets as they existed in 2000 was coded from Nielsen Media Research's map of designated market areas during 2000–2001 (Nielsen 2001).

We demonstrate the robustness of our findings by augmenting our model with two additional campaign variables, candidate appearances and grassroots campaigning. Information about presidential and vice-presidential visits to each media market come from Althaus, Nardulli, and Shaw (2002), and this variable is scored as the log of the number of visits plus one. Voter contact data are derived from the 2000 Annenberg survey, which asked respondents a series of questions about whether they had been contacted by anyone from the campaigns or another group about the presidential election. Annenberg polled continuously during 2000, creating enough respondents ($n = 10{,}275$) to allow us to calculate contact rates from September 1 onward in each media zone.

Media Exposure. Television advertising data come from the Campaign Media Analysis Group (CMAG), a media-tracking firm that uses satellite technology to monitor television advertising. CMAG's system records the station, show, and time in which each ad appeared (see Goldstein and Strach 2003). It also creates a "storyboard," a virtual snapshot of each spot with a frame of video every five seconds and the full text of the audio. Storyboards allow coders to view directly the content of the ads and, among other things, determine whether they refer to the presidential or another campaign. Ads are divided into seven categories—campaigns for President, Senate, House, Governor, other offices, ballot initiatives, and genuine issue ads.[10] CMAG also supplies estimates of the

[10]Issue ads in this case are those spots judged by coders to address policy issues, not the thinly veiled efforts at electioneering that were much more common at the time (Krasno and Sorauf 2003). The latter are virtually indistinguishable from traditional campaign ads and are categorized throughout this paper with the type of election in which they appeared.

Table 1 Voter Turnout and Presidential Ads, by State and Media Market

State	Media Market	Turnout 2000	Turnout 1996	Senate Turnout 1994–8	Number of Ads (1000s)	GRPS (1000s)	Adult Citizens
AL	ATLANTA	0.48	0.43	0.36	0.10	0.33	27,290
AL	BIRMINGHAM-ANNISTON-TUSCALOOSA	0.52	0.50	0.42	0.01	0.03	1,301,336
AL	MOBILE-PENSACOLA	0.50	0.48	0.37	1.82	7.73	479,746
AR	LITTLE ROCK-PINE BLUFF	0.48	0.49	0.37	2.33	10.83	989,626
AR	MEMPHIS	0.40	0.41	0.34	1.42	7.69	152,046
CA	FRESNO-VISALIA	0.47	0.47	0.38	0.50	1.95	914,494
CA	LOS ANGELES	0.54	0.50	0.40	1.44	4.40	9,389,327
CA	SACRAMENTO-STOCKTON-MODESTO	0.55	0.53	0.45	0.97	3.73	2,069,901
CA	SAN DIEGO	0.54	0.51	0.42	1.23	3.14	1,788,073
CA	SAN FRANCISCO-OAKLAND-SAN JOSE	0.59	0.56	0.46	0.49	1.61	4,151,951
CO	ALBUQUERQUE-SANTA FE	0.59	0.57	0.45	4.03	9.38	53,054
CO	DENVER	0.59	0.55	0.47	0.07	0.23	2,269,413
CT	HARTFORD-NEW HAVEN	0.60	0.57	0.40	0.37	1.35	1,818,420
CT	NEW YORK	0.64	0.60	0.39	0.02	0.05	582,818
FL	JACKSONVILLE-BRUNSWICK	0.51	0.50	0.35	1.59	6.91	928,504
FL	MIAMI-FT LAUDERDALE	0.54	0.51	0.33	2.78	9.90	2,272,081
FL	MOBILE-PENSACOLA	0.55	0.53	0.36	1.82	7.73	432,227
FL	ORLANDO-DAYTONA BEACH-MELBOURNE	0.53	0.49	0.36	2.87	10.24	2,125,852
FL	TAMPA-ST PETERSBURG-SARASOTA SARASOTA	0.55	0.52	0.38	2.87	11.32	2,744,482
FL	WEST PALM BEACH-FT PIERCE	0.55	0.55	0.40	2.08	9.63	1,143,004
GA	ATLANTA	0.48	0.46	0.34	0.10	0.33	3,459,316
GA	GREENVILLE-SPARTANBURG-ASHEVILLE-ANDERSON	0.41	0.41	0.28	0.00	0.00	67,091
GA	JACKSONVILLE-BRUNSWICK	0.40	0.40	0.27	1.59	6.91	134,112
IA	DES MOINES-AMES	0.63	0.60	0.47	2.34	12.68	738,322
IA	OMAHA	0.56	0.56	0.39	0.37	1.82	149,924
ID	SALT LAKE CITY	0.64	0.65	0.49	0.01	0.02	13,934
ID	SPOKANE	0.56	0.61	0.43	2.04	7.38	205,765
IL	CHICAGO	0.56	0.51	0.40	0.85	3.51	5,467,936
IL	ST LOUIS	0.57	0.54	0.40	2.15	9.89	612,537
IN	CHICAGO	0.52	0.49	0.32	0.85	3.51	566,582
IN	CINCINNATI	0.54	0.54	0.40	0.68	3.20	84,309
IN	DAYTON	0.47	0.48	0.37	0.94	4.78	53,341
IN	INDIANAPOLIS	0.49	0.50	0.37	0.00	0.00	1,885,853
IN	LOUISVILLE	0.52	0.53	0.41	0.47	2.05	282,717
KS	KANSAS CITY	0.60	0.58	0.38	2.40	8.34	609,471
KS	TULSA	0.52	0.53	0.37	0.00	0.00	30,248
KS	WICHITA-HUTCHINSON	0.55	0.59	0.38	0.00	0.00	808,459
KY	CHARLESTON-HUNTINGTON	0.48	0.45	0.40	1.45	6.47	235,227
KY	CINCINNATI	0.51	0.48	0.36	0.68	3.20	295,987
KY	KNOXVILLE	0.43	0.42	0.39	1.72	8.18	59,755
KY	LEXINGTON	0.50	0.46	0.39	0.19	0.75	855,853
KY	LOUISVILLE	0.56	0.52	0.41	0.47	2.05	848,821
KY	NASHVILLE	0.45	0.42	0.34	1.39	8.21	130,445
MA	ALBANY-SCHENECTADY-TROY	0.58	0.58	0.47	0.00	0.00	102,694
MA	BOSTON	0.62	0.58	0.50	1.61	1.21	3,494,256
MA	PROVIDENCE-NEW BEDFORD	0.56	0.54	0.44	0.06	0.25	379,015
MD	BALTIMORE	0.53	0.47	0.41	0.00	0.00	1,994,894
MD	PITTSBURGH	0.48	0.45	0.37	1.98	9.41	22,262
MD	WASHINGTON DC-HAGERSTOWN	0.57	0.52	0.42	0.00	0.00	1,562,821
MI	DETROIT	0.60	0.55	0.44	2.86	11.59	3,496,447
MI	FLINT-SAGINAW-BAY CITY	0.60	0.56	0.46	2.10	9.38	882,050

Table 1 (continued)

State	Media Market	Turnout 2000	Turnout 1996	Senate Turnout 1994–8	Number of Ads (1000s)	GRPS (1000s)	Adult Citizens
MI	GRAND RAPIDS-KALAMAZOO-BATTLE CREEK	0.60	0.56	0.43	2.86	10.85	1,341,543
MI	GREEN BAY-APPLETON	0.54	0.54	0.38	3.02	13.13	19,154
MI	TOLEDO	0.55	0.51	0.39	0.73	4.04	72,539
MO	DES MOINES-AMES	0.64	0.55	0.47	2.34	12.68	2,890
MO	KANSAS CITY	0.58	0.54	0.39	2.40	8.34	942,516
MO	MEMPHIS	0.43	0.39	0.29	1.42	7.69	13,960
MO	OMAHA	0.59	0.57	0.45	0.37	1.82	4,867
MO	ST LOUIS	0.60	0.56	0.40	2.15	9.89	1,566,367
MS	MEMPHIS	0.47	0.46	0.29	1.42	7.69	255,400
MS	MOBILE-PENSACOLA	0.44	0.41	0.30	1.82	7.73	10,077
MS	NEW ORLEANS	0.46	0.43	0.28	0.41	3.00	67,196
NC	ATLANTA	0.54	0.56	0.46	0.10	0.33	7,127
NC	CHARLOTTE	0.51	0.46	0.35	0.00	0.00	1,510,581
NC	GREENSBORO-HIGH POINT-WINSTON SALEM	0.51	0.48	0.37	0.01	0.04	1,119,948
NC	GREENVILLE-SPARTANBURG-ASHEVILLE-ANDERSON	0.53	0.48	0.41	0.00	0.00	490,582
NC	NORFOLK-PORTSMOUTH-NEWPORT NEWS	0.48	0.43	0.32	0.01	0.06	111,772
NC	RALEIGH-DURHAM	0.50	0.47	0.36	0.00	0.01	1,663,530
NE	DENVER	0.58	0.57	0.51	0.07	0.23	35,832
NE	OMAHA	0.57	0.57	0.50	0.37	1.82	557,186
NH	BOSTON	0.63	0.57	0.35	1.61	1.21	751,256
NH	PORTLAND-AUBURN	0.66	0.62	0.40	1.67	7.11	58,576
NJ	NEW YORK	0.57	0.56	0.46	0.02	0.05	4,147,439
NJ	PHILADELPHIA	0.55	0.53	0.42	2.25	9.05	1,498,445
NV	DENVER	0.75	0.63	0.61	0.07	0.23	1,120
NV	LAS VEGAS	0.43	0.36	0.32	3.28	10.98	917,795
NV	SALT LAKE CITY	0.51	0.47	0.40	0.01	0.02	34,925
NY	ALBANY-SCHENECTADY-TROY	0.61	0.60	0.46	0.00	0.00	874,529
NY	BUFFALO	0.58	0.56	0.40	0.01	0.08	1,179,005
NY	NEW YORK	0.53	0.48	0.35	0.02	0.05	8,027,223
NY	ROCHESTER NY	0.60	0.58	0.43	0.00	0.00	734,584
NY	SYRACUSE	0.58	0.55	0.41	0.02	0.08	837,060
OH	CHARLESTON-HUNTINGTON	0.52	0.52	0.39	1.45	6.47	230,173
OH	CINCINNATI	0.59	0.57	0.43	0.68	3.20	1,205,592
OH	CLEVELAND	0.56	0.55	0.41	1.19	5.23	2,865,670
OH	COLUMBUS OHIO	0.55	0.54	0.40	0.95	5.17	1,490,051
OH	DAYTON	0.57	0.54	0.40	0.94	4.78	935,139
OH	TOLEDO	0.58	0.57	0.41	0.73	4.04	742,743
OK	OKLAHOMA CITY	0.49	0.50	0.35	0.01	0.01	1,170,607
OK	TULSA	0.52	0.52	0.36	0.00	0.00	892,229
OR	PORTLAND OR	0.64	0.61	0.48	3.56	11.98	1,562,988
OR	SPOKANE	0.79	0.81	0.59	2.04	7.38	5,457
PA	BUFFALO	0.48	0.45	0.28	0.01	0.08	48,070
PA	HARRISBURG-LANCASTER-LEBANON-YORK	0.52	0.48	0.31	2.00	8.97	1,215,825
PA	NEW YORK	0.52	0.50	0.31	0.02	0.05	33,296
PA	PHILADELPHIA	0.56	0.51	0.32	2.25	9.05	3,464,047
PA	PITTSBURGH	0.55	0.51	0.34	1.98	9.41	2,113,874
PA	WASHINGTON DC-HAGERSTOWN	0.50	0.47	0.32	0.00	0.00	107,698
PA	WILKES BARRE-SCRANTON	0.49	0.46	0.32	1.92	10.06	1,138,031
SC	CHARLOTTE	0.45	0.39	0.33	0.00	0.00	220,129
SC	GREENVILLE-SPARTANBURG-ASHEVILLE-ANDERSON	0.46	0.40	0.37	0.00	0.00	899,276
TN	KNOXVILLE	0.49	0.47	0.36	1.72	8.18	850,081

TABLE 1 (continued)

State	Media Market	Turnout 2000	Turnout 1996	Senate Turnout 1994–8	Number of Ads (1000s)	GRPS (1000s)	Adult Citizens
TN	MEMPHIS	0.52	0.51	0.42	1.42	7.69	842,616
TN	NASHVILLE	0.50	0.48	0.38	1.39	8.21	1,495,725
TX	AUSTIN	0.55	0.49	0.43	0.00	0.00	914,716
TX	DALLAS-FT WORTH	0.49	0.45	0.37	0.00	0.00	3,665,665
TX	HOUSTON	0.50	0.46	0.35	0.00	0.01	3,035,976
TX	SAN ANTONIO	0.47	0.44	0.33	0.00	0.00	1,346,766
VA	GREENSBORO-HIGH POINT-WINSTON SALEM	0.49	0.47	0.41	0.01	0.04	29,268
VA	NORFOLK-PORTSMOUTH-NEWPORT NEWS	0.49	0.45	0.39	0.01	0.06	1,177,971
VA	RALEIGH-DURHAM	0.46	0.43	0.36	0.00	0.01	25,127
VA	RICHMOND-PETERSBURG	0.55	0.51	0.46	0.01	0.07	954,011
VA	ROANOKE-LYNCHBURG	0.51	0.48	0.43	0.01	0.07	809,669
VA	WASHINGTON DC-HAGERSTOWN	0.63	0.56	0.47	0.00	0.00	1,525,799
VT	ALBANY-SCHENECTADY-TROY	0.64	0.59	0.48	0.00	0.00	27,812
VT	BOSTON	0.65	0.59	0.49	1.61	1.21	33,290
WA	PORTLAND OR	0.58	0.55	0.45	3.56	11.98	321,580
WA	SEATTLE-TACOMA	0.62	0.60	0.49	2.38	7.35	2,972,826
WA	SPOKANE	0.57	0.56	0.44	2.04	7.38	481,278
WI	GREEN BAY-APPLETON	0.65	0.58	0.45	3.02	13.13	754,206
WI	MILWAUKEE	0.68	0.58	0.46	2.70	13.25	1,573,666
WI	MINNEAPOLIS-ST PAUL	0.64	0.57	0.40	2.00	7.25	184,244
WV	CHARLESTON-HUNTINGTON	0.48	0.48	0.30	1.45	6.47	494,872
WV	PITTSBURGH	0.43	0.44	0.29	1.98	9.41	87,421
WV	ROANOKE-LYNCHBURG	0.48	0.49	0.43	0.01	0.07	7,192
WV	WASHINGTON DC-HAGERSTOWN	0.44	0.43	0.30	0.00	0.00	153,356
WY	DENVER	0.57	0.58	0.55	0.07	0.23	68,285
WY	SALT LAKE CITY	0.60	0.61	0.63	0.01	0.02	43,647

advertising cost and gross ratings points for each ad (e.g., the listed price of a 30-second spot during "Law and Order" in Peoria). Additional details on the CMAG data may be found in the appendix.

The storyboards also allow assessment of the negativity of each ad. Coders from the Wisconsin Advertising Project evaluated tone with the following item:

> In your judgment, 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 six more years of Jones.") or to contrast the candidates ("While Senator Jones has been raising your taxes, Representative Smith has been cutting them.")?

This simple three-way categorization is consistent with previous research (Jamieson, Waldman, and Sheer 1998), although contrast ads are occasionally treated as spots that are neither positive nor negative (e.g., Wattenberg and Brians 1999), or the midpoint between these poles (e.g., Ansolabehere, Iyengar, and Simon 1999).[11] Not surprisingly, this coding of advertisements' tone coincided almost perfectly with another set of items tracking which candidate or candidates were mentioned in an ad. Positive and negative spots referred to just one the candidates running, but different candidates; contrast ads named both.[12]

One aspect of the data set deserves specific attention at this juncture: the different ways in which TV advertising may be measured. The CMAG data include three separate metrics, the number of airings, the estimated cost of the advertising time, and gross ratings points. Each has its appeal and limitations.

[11]Kahn and Kenney (1999) and Lau and Pomper (2002) are exceptions.

[12]The content coding of the CMAG data came up in the litigation over McCain-Feingold, but the dispute centered on a different item meant to distinguish between electioneering and pure issue ads (e.g., Gibson 2003; Krasno 2003).

The number of airings has the advantage of being easy to understand, but may be skewed by the strategies used the advertisers. For example, spots aired on late-night TV might be plentiful because of their low cost but end up being seen by relatively few viewers. Comparing the spending on airtime, in turn, is distorted by the high price of advertising in the largest media markets.[13] For these reasons, gross ratings points (GRPs) is the measure used by advertisers to gauge viewership. One point is equal to 1% of the viewing audience; 1,000 points is ostensibly the equivalent of everyone seeing an ad 10 times, though we note below that this estimate may cover a variety of scenarios. We follow the convention of using GRPs as the measure of advertising volume (see Ansolabehere, Iyengar, and Simon 1999, 903; Johnston, Hagen, and Jamieson 2004, 70; Shaw 1999, 349), but we also confirm that the results remain unchanged when we instead use the number of ads.

By any measure, the sheer amount of political advertising in 2000 was impressive: the CMAG data set includes more than 970,000 airings of spots by Election Day, consisting of more than four million GRPs and at least $700 million in spending on airtime. Just under a third of these spots appeared in conjunction with the presidential campaign. As Johnston et al. (2004, Chap. 4) point out, the daily volume of televised ads surged toward the end of the election, so that 58% of ads, including spots aired for the primaries, appeared on or after September 1 and more than 27% of the year's total appeared during the final, hectic three weeks of campaigning from the middle of October on. Since it is likely that mobilizing force of any particular ad persists for a relatively short time (Ansolabehere and Iyengar 1997), we concentrate on presidential ads broadcast during this final period. If earlier advertising does affect viewers' likelihood of voting, this approach would lead us to overestimate the effect of TV commercials, given the strong correlation between advertising levels early and late in the campaign.[14] Nevertheless, to ensure the robustness of our findings, we tested a variety of plausible alternative specifications—all ads starting from July 1 and from September 1—and obtained results similar to those we report below. These and other supplementary results, as well as the data and computer code used to generate the tables presented below, are available at http: //research.yale.edu/vote/replication.html.

Figure 1 depicts the geographic distribution of media markets and presidential ads from October 16 to November 6, 2000, a period in which the candidates and their allies spent more than $58.6 million to air ads 83,679 times, accounting for more than 335,000 GRPs. The map shades each media market according to the total number of gross rating points that presidential candidates and their allies purchased. Unshaded areas are those served by smaller media markets that were outside the scope of CMAG data collection in 2000. The map illustrates the marked within-state variation in presidential advertising, particularly in states that border the battlegrounds. But even within some battlegrounds, we observe substantial variation. One county in Pennsylvania lies within the New York City media market, and several others receive their TV from Buffalo and Washington. These zones saw almost no advertising in the final days of the campaign, while residents in and around Harrisburg, Philadelphia, Pittsburgh, and Wilkes Barre-Scranton received almost constant attention.

Not surprisingly, the map also shows a powerful relationship between the volume of presidential advertising and the electoral value of each media market. By electoral value, we mean the combination of the competitiveness of the presidential contest within a state coupled with its number of electoral votes. Large but uncompetitive states (New York, North Carolina, and Texas) saw few ads. Small but competitive states (New Hampshire and New Mexico) received a great deal of attention. Enormous expenditures of money were lavished on large, competitive states (Michigan, Florida, and Pennsylvania). All in all, the pattern of media buys in 2000 looks much as one would expect based on a strategic allocation of campaign resources designed to secure victory in the Electoral College (Johnston, Hagen, and Jamieson 2004).

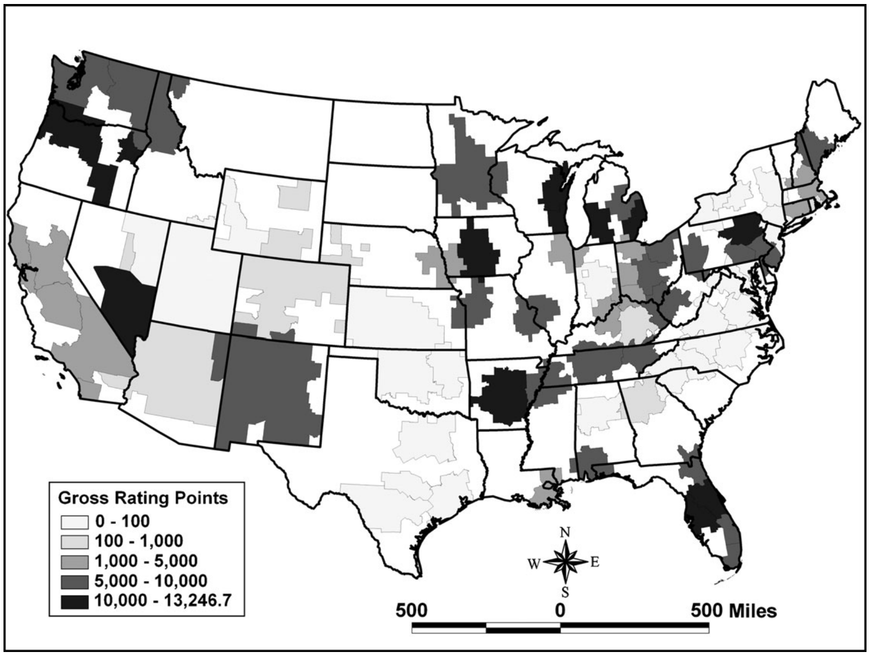
We examine the relationship between GRPs and turnout rates across media markets.[15] The basic premise of our analysis is that aggregate rates of exposure to ads are strongly related to the number of GRPs deployed in each media market. While

[13]Costs do figure later in our comparison of the effectiveness of various mobilization techniques. See the appendix for a discussion of the cost estimates in the CMAG dataset.

[14]The correlation between total ads broadcast through the entire year in a media market and ads broadcast in the final three weeks is .85, even with the disturbance created by the presidential primaries.

[15]Although we examine aggregate data, our analysis does not confront an ecological inference problem. We examine the extent to which aggregate inputs—televised ads—produce increases in aggregate voting rates. By contrast, a conventional ecological regression predicts an aggregate outcome, such as percent voting, using an aggregated version of an individual attribute (such as percent female). The latter type of regression is subject to well-known estimation problems.

FIGURE 1 Presidential Advertising (in Gross Rating Points) by Media Market



Freedman, Franz, and Goldstein (2004) are certainly correct to note that individuals within a single media market may vary considerably in their exposure to ads depending on their media usage, in the aggregate, the relationship between GRPs and recall of presidential advertisements is very strong. The one survey with sufficient numbers of respondents to support disaggregation into 75 major media markets is the National Annenberg Election Study survey (see Johnston et al. 2004), which asked 5,478 adults whether they could recall seeing any presidential ads during June and July of 2000. The raw correlation between the number of GRPs purchased during the spring/summer and rates of recall is .75. This figure actually understates the relationship between GRPs and recall, because the latter is subject to sampling error due to small Ns in several media markets. Absent sampling error, the disattenuated correlation is above .90. Interestingly, the correlation between the raw number of airings and recall is slightly weaker, which supports the convention of using GRPs as the unit of measurement (see, for example, Ansolabehere, Iyengar, and Simon 1999, 903; Johnston, Hagen, and Jamieson 2004, 70; Shaw 1999, 349).

Statistical Model

The basic statistical model, which we will later embellish in various ways, is as follows:

$$T_i = b_0 + b_1 X_i + \sum_{2}^{J} b_j Z_{ij} + u_i,$$

where T_i denotes the voter turnout rate in media zone i, X_i denotes the number of presidential ads aired in each media zone, Z_{ij} represents a series of dummy variables marking each state j, and u_i represents unobserved causes of voter turnout.

The key difference between our statistical approach and previous analyses is the inclusion of state-level fixed effects, the Z_{ij}. Analysts who exclude fixed effects are implicitly assuming that voting rates can be compared *across* states as well as within states. This is a strong assumption. Cross-state differences may reflect variations in electoral competitiveness across states amplified by the Electoral College, the presence or absence of other statewide elections, political culture, underlying demographics, or states' varying voter registration laws (e.g., Wolfinger and Rosenstone 1980). Unless the analyst accurately measures and controls for each source of interstate heterogeneity, cross-state comparisons may produce spurious estimates. The inclusion of state-level fixed effects eliminates from consideration all cross-state comparisons. Each fixed effect summarizes the unobserved state-level attributes, such as competitiveness or concurrent gubernatorial contests. Whatever causes state turnout rates to differ lies beyond the purview of a fixed-effects specification, which focuses on the effects of within-state variations in media exposure on within-state variation in voter turnout (see Greene 2002, Chap. 13).

A fixed-effects specification will produce unbiased estimates of b_1 if there is no systematic relationship between the volume of television advertisement within each state and unobserved within-state causes of turnout. The aim of the "regression discontinuity" (Cook and Campbell 1979, Chap. 3) approach used here is to capitalize on a data generation process that arbitrarily sorts voters within states into high- and low-exposure media zones. Nevertheless, two potential sources of bias warrant attention. First, even controlling for state-level fixed effects, there may be a relationship between media exposure and a geographic unit's enduring propensity to vote. Campaigns may target high-turnout areas in an effort to change the presidential preferences of groups who are most likely to vote (e.g., elderly voters). In order to address this potential source of bias, which would tend to produce overestimates of the effects of campaign ads, we augment our regression model to include past voter turnout rates within each unit. We examine two sets of control variables. One consists of the turnout rates in 1988, 1992, and 1996. The second consists of senatorial turnout in the most recent midterm election.[16] The rationale behind the second approach is that past presidential turnout may reflect the same allocation of media resources as the current election. By focusing on midterm elections, we are controlling for turnout rates in an environment that is unaffected by the Electoral College.

Second, there may be an incidental correlation between presidential advertising and advertising by candidates for other offices. A core media market within a state, for example, may be an attractive target for both presidential and senatorial campaigns. In order to control for transitory sources of voter turnout that may be correlated with presidential advertising, we control for the number of GRPs aired by each of the other types of campaigns (House, Senate, governor, other offices, ballot propositions, and issue ads).

A further modeling concern is heteroskedasticity. The number of voters within each media zone varies widely. It could be argued that media zones with larger populations have less variable voter turnout rates.[17] In addition, one might suspect that turnout rates near the 50% level would be more variable than rates close to 0% or 100%. Both suppositions rest on an analogy between voting outcomes and random sampling. Since this analogy may be false—it could be that more populous areas are subject to more political activity and therefore more disturbance variance—we treat heteroskedasticity as an empirical question. In order to assess the presence of heteroskedasticity, we perform Breusch-Pagan tests in which the disturbance variance is predicted by the log of population and the voting rate times 100 minus the voting rate. Finding some evidence of heteroskedasticity, we estimate our models using both OLS (with robust standard errors) and a multiplicative heteroskedasticity model (Greene 2002).[18]

This modeling approach is easily extended to accommodate interactions between the volume of presidential ads and the tone of these ads as well as other campaign activities. In light of the dispute over the supposedly demobilizing effect of negative ads, we consider two specifications to test the possibility that the turnout-enhancing effects of positive ads are offset by the turnout-reducing effects of negative ads. The most general specification allows ads that attack, promote, and contrast candidates to have distinct effects on voter turnout. An F-test (or likelihood ratio test, in the case of the multiplicative heteroskedasticity model) gauges whether the effects of these three categories of ads are statistically distinguishable from one another. We also model turnout as a function of the difference between the number of GRPs devoted to ads attacking and promoting candidates. Ansolabehere and Iyengar's (1997) work suggests that this difference should be positively associated with voting.

Finally, we consider two additional campaign variables, candidate visits and grassroots campaigning. Research shows that candidate appearances influence vote share (Holbrook 2002; Shaw 1999; Shaw and Roberts 2000), and to the extent that these events help raise interest in the campaign, they may also have been related to turnout in 2000. An array of experiments by Gerber and Green (2000), Michelson (2005), and Arceneaux (2005) argues for the effectiveness of canvassing as a mobilizing technique.[19] If

[16]For example, if a state held a Senate election in 1998, we used the 1998 turnout rate. If no Senate election occurred in 1998, we used 1994 turnout. An alternative approach is to include both 1998 and 1994 turnout, with dummy variables marking cases where no election was held. Both approaches yield similar results.

[17]Althaus and Trautman (2004) argue that the size of a media market is related to turnout rate, not variation in voting.

[18]The multiplicative heteroskedasticity model uses the parameterization $\sigma^2 = \exp\{a_0 + a_1 \ln(\text{population}) + a_2 P(1-P)\}$. This model is estimated via maximum likelihood in Stata SE/8.0 using the regh procedure.

[19]By comparison, phone calls (Cardy 2004; McNulty 2005), direct mail (Green and Gerber 2004), and leafleting (Nickerson 2006) are notably less influential.

candidate visits and grassroots campaigning are concentrated in the same areas in which the campaigns focus their advertising, then our analysis runs the risk of overstating the impact of TV commercials on turnout by attributing to ads what should be attributed to visits or canvassing. If, on the other hand, campaigns try to bring the candidates and their organizations into play in areas where advertising is relatively sparse, then we might underestimate the effect of TV ads. Because the causal effects of these control variables are not identified, we do not report the coefficients associated with them, but interested readers may obtain the full set of results from the replication materials.

Results

Table 1 lists the turnout rates, amount of presidential advertising, and population for the 128 media zones grouped by state. A few patterns stand out. First, Table 1 shows how cross-state comparisons may be potentially misleading. In this election, a great deal of advertising was directed toward the upper Midwest and Northwest, and relatively little toward the South. Whether due to election laws, demographics, party structure, or political culture, the South tends to have lower levels of turnout than the Midwest and Northwest. Regressions that pool across states may exaggerate the turnout effects of television advertising.

Second, within states, the connection between advertising volume and turnout seems to be ephemeral. For every instance in Table 1 in which one can find an apparent within-state relationship between ads and voter turnout (e.g., Kansas), one can adduce an example where the relationship fails to hold (e.g., Missouri) or runs in the wrong direction (e.g., Maryland). This informal mode of analysis foreshadows the statistical results presented below.

One fact that may not be immediately apparent from the table is that presidential advertising volume is poorly predicted by past voter turnout, once one controls for state. For example, after controlling for state fixed effects, we used an F-test to assess the null hypothesis that preelection attributes of each media zone had no effect on the number of GRPs purchased. This test involves regressing the number of GRPs on state-level fixed effects, as well as turnout in 1996, 1992, 1988, and the most recent senatorial election. The F-test of the joint significance of the past turnout variables is nonsignificant ($p=.18$). The weak relationship between advertising and past predictors of voter turnout lends credence to the regression discontinuity design, which uses media zone boundaries to "assign" otherwise similar voters to different levels of advertising. To the extent that there is a correlation between presidential ads and other contemporaneous predictors of turnout, such as candidate visits, it is a *positive* correlation. This means that when we control for short-term factors, the estimated effects of presidential advertising will become smaller.

Table 2 presents regression results based on a series of alternative model specifications. The first column reports a naive regression of voter turnout on media exposure, controlling for midterm election turnout rates but omitting state-level fixed effects. The estimates from this model imply that presidential ads have large and statistically significant positive effects on turnout. The problem with this regression is that it compares battleground to nonbattleground states, raising the possibility that the apparent effects of presidential advertising are confounded by other factors that are correlated with a state's competitiveness: voter interest in the campaign, coverage of the campaign by local news media, and voter mobilization activities. Lumping states together fails to capitalize on the natural experiment created by the variation in advertising and the boundaries of media markets. Moreover, since competitive and uncompetitive states are clustered geographically and therefore historically, institutionally, and culturally, pooling across states also risks introducing incidental sources of bias. Looking back at Table 1, it is no surprise to find that the amount of advertising in a media zone is related to turnout if only because so many areas with few ads are located in the uncompetitive states of the South, where turnout is traditionally low.

The drawbacks of comparing across states become evident when state-level fixed effects are added to the model. The estimated effect per 1,000 GRPs drops from 0.25 percentage-points to 0.02 percentage-points. The latter estimate is both substantively small and statistically insignificant. Notice, incidentally, that one of the common complaints about the use of fixed effects does not apply here (Beck and Katz 2001). When we add dummy variables for each state, the standard errors of the estimated ad effects become more, not less precise. The dummies consume degrees of freedom, but this loss is more than offset by reductions in disturbance variability, as the adjusted R^2 rises from .60 to .86.

The inclusion of additional controls for past voter turnout leaves the fixed-effects estimate essentially unchanged. The estimates suggest that turnout increases by approximately 0.05 percentage-points

Table 2 Regression Estimates of the Effects of Presidential Advertisements, Measured in Terms of Gross Ratings Points, on Voter Turnout

Percentage-point gains							
In Voter Turnout per 1000 GRPs	.25*	.02	.05	.06	.04	−.07	−.04
(Standard errors)	(.09)	(.08)	(.06)	(.05)	(.06)	(.06)	(.06)
(Robust standard errors)	(.08)	(.08)	(.05)	(.05)	(.06)	(.07)	(.06)
Control for Midterm Turnout? (most recent Senate election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control for Fixed Effects? (dummy variables for each state)		Yes	Yes	No	Yes	Yes	No
Control for Past Presidential Turnouts? (turnout in 1988, 1992, 1996)			Yes	Yes	Yes	Yes	Yes
Control for Other Types of Ads? (Senate, gubernatorial, House, ballot, local, and issue ads, each in 1000s)					Yes	Yes	Yes
Control for the proportion of the media market that reports campaign contact and the log of the number of candidate visits to the media zone						Yes	Yes
p-value of Breusch-Pagan heteroskedasticity test	.00	.03	.00	.00	.00	.00	.00
Adjusted R-squared	.60	.86	.94	.88	.93	.94	.89

N=128
*p < .05.

per 1000 GRPs. The advantage of introducing these covariates is that the adjusted R^2 climbs to .94, which, by reducing the disturbance variance, further reduces the standard errors. At the suggestion of a reviewer, we also show the consequences of dropping state-level fixed effects after controlling extensively for past voter turnout. Column 4 of Table 2 shows that the results are similar to those obtained using fixed effects.

As controls are introduced for ads placed by other types of campaigns, the size of the presidential advertising effect recedes slightly. Finally, when controls are added for the log of campaign visits and the proportion of the sample that reported campaign contacts, the estimated effect of presidential ads becomes weakly but insignificantly negative. The final column of Table 2 shows that this result holds regardless of whether fixed effects are included. In sum, all of the models that either take into account state-level effects or control extensively for past voter turnout generate weak and statistically insignificant estimates ranging from −0.07 to 0.06.

Table 3 shows that the pattern of estimates is unchanged when the estimator allows for heteroskedasticity. The multiplicative heteroskedasticity model parameterizes the disturbance variance as a function of population and the closeness of the turnout rate to 50 percent. Although population size and the turnout rate turn out to be significant predictors of disturbance variance, parameterizing the disturbance variance in this way has no effect on the substantive conclusions reported in Table 2, which used OLS.

Across an assortment of reasonable specifications, the effects of presidential ads appear to be quite modest. Moreover, when we classify states according to whether they were considered swing states, we find no significant interactions between battleground status and the effects of presidential TV ads, across all of the specifications listed in Table 2.[20] The lack of interaction reaffirms our basic finding that presidential ads have little overall effect and shows that the effect of these ads is not suppressed by compensatory campaign behavior. It is conceivable that in battleground states, campaigns might redouble their ground efforts in areas where they are unable to advertise. If that were so, we should see stronger advertising effects in nonbattleground states. We do not. Instead, we find the effects in the two subsamples to be statistically indistinguishable.

Nor do we find significant positive effects when the measurement of presidential ads is extended to include the entire fall rather than the last few weeks of

[20]The *p*-values associated with this interaction term for the seven specifications reported in Table 2 are .24, .67, .14, .19, .20, .27, and .19.

Table 3 Multiplicative Heteroskedasticity Regression Estimates of the Effects of Presidential Advertisements, Measured in terms of Gross Ratings Points, on Voter Turnout (bootstrap standard errors in parentheses)

Percentage-point gains							
In Voter Turnout per 1000 GRPs	.21*	.06	.08	.04	.09	.02	−.08
	(.08)	(.17)	(.11)	(.05)	(.14)	(.14)	(.06)
Control for Midterm Turnout? (most recent Senate election)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control for Fixed Effects? (dummy variables for each state)		Yes	Yes	No	Yes	Yes	No
Control for Past Presidential Turnouts? (turnout in 1988, 1992, 1996)			Yes	Yes	Yes	Yes	Yes
Control for Other Types of Ads? (Senate, gubernatorial, House, ballot, local, and issue ads, each in 1000s)					Yes	Yes	Yes
Control for the proportion of the media market that reports campaign contact and the log of the number of candidate visits to the media zone						Yes	Yes
Weighted Least Squares R-squared	.51	.89	.96	.86	.96	.98	.88

N = 128
*p < .05.

the campaign. Including all commercials aired after September 1 produces a pattern of results very much like what we present in Table 2: strong, significant effects when fixed effects or extensive controls for past turnout are omitted; weak, insignificant effects when such controls are added; and weak, insignificant negative effects when one controls for campaign contact and candidate visits. The same pattern holds when we consider presidential ads aired from July 1 on.[21] Interested readers may obtain these results using the replication materials.

To what extent do the negligible overall effects of presidential ads reflect the countervailing effects of positive and negative ads? In order to assess whether the mobilizing effects of presidential ads depend on advertising tone, we reestimated the models in Table 2, this time predicting voter turnout using three separate GRP variables: procandidate ads, attack ads, and comparative ads. For the linear models, F-tests were conducted in order to ascertain whether allowing the three categories of ads to have different coefficients significantly improved the fit of the models. In none of these cases were the statistical tests remotely significant ($p > .25$). For example, when controlling for past turnout and fixed effects, the OLS coefficients for procandidate, attack, and comparative ads are −.01 (.50), −.04 (.29), and .43 (.50), and the F-test for distinct coefficients generates a *p*-value of .74. The large coefficient for comparative ads seems to be an artifact of sampling variability.

In order to improve our ability to detect a statistical difference between the effects of positive and negative ads, we also conducted a second set of regression analyses using the difference between the GRPs allocated to procandidate and attack ads. This specification improves the statistical power of the test by eliminating the collinearity between positive and negative ads. Our estimates, however, were always insignificant and *negative*, suggesting that, if anything, attack ads are slightly more likely to stimulate voting than are positive ads. In sum, we find no evidence to support the hypothesis that presidential ads fail to increase voter turnout due to the countervailing influence of positive and negative ads. It appears that presidential ads have minimal effects on turnout regardless of tone.[22]

Conclusion

The strategic imperatives of the Electoral College coupled with the cost structure and geographic idiosyncrasies of states and media markets create a challenge for presidential campaigns and an opportunity for political scientists. No campaign can afford to advertise everywhere, but the boundaries of media markets frustrate their efforts to allocate their resources with maximum efficiency. Their desire to get

[21]We also checked the results for all specifications including ads aired prior to July 1 (most of which were aired early in the primary season) and found weakly significant positive results for some of the specifications that did not control for nonpresidential ads. This result seems to reflect an incidental correlation between turnout and primary campaign activity rather than the enduring effects of these ads. Dividing the ads according to season, we see no evidence that the joint effect of the ads is significant or that the turnout effects of ads increase as the election approaches.

[22]To conserve space, we have not presented the full regression results for the OLS or multiplicative-heteroskedastic models that estimate separately the effects of positive and negative ads. These results may be found in the replication materials.

the most for their money leaves some corners of battleground states untouched by the advertising while areas of some noncompetitive states are awash with commercials. Our analysis of the natural experiment created by these circumstances reveals that television advertising by the presidential candidates during the general election had a minimal effect on voter turnout in 2000. Even taking into account the huge expenditures on TV, presidential ads account for only a fraction of the turnout differential in battleground and nonbattleground states. For example, Table 1 shows that the amount of GRPs broadcast over the last three weeks of the campaigns ranged from a low of zero to a high of 13,247 (in Milwaukee) with a mean of 4,560 across all 74 media markets, and the largest fixed-effects estimate in Table 2 suggests that turnout rises by 0.05 percentage-points per 1,000 GRPs. Multiplying the two figures together reveals that 13,247 GRPs generated a 0.7 percentage-point increase in turnout in that media market

Another way to gauge the approximate magnitude of these effects is to calculate the cost of mobilizing voters with TV ads. The estimated price of the airtime for the 338,000 GRPs broadcast in the final three weeks of the campaign was $58.6 million.[23] The number of votes generated by this infusion of presidential ads is the product of the turnout effect (approximately .05) multiplied by the number of GRPs and the population of eligible voters in each media market,[24] summed over all of the media markets. This ratio gives us the cost per vote:

$$= \frac{\sum_{markets} \textit{pricetag for ads in each market}}{\sum_{markets} (GRPs)(\textit{turnout effect per GRP})(\textit{eligible voters}/100)}.$$

The denominator of this equation is 307,000 votes. Dividing $58.6 million by this figure produces a cost-per-vote estimate of approximately $200. This is twice as large as Green and Gerber's (2004) "generous" cost-per-vote estimate of direct mail or phone calls, and eight times larger that their cost-per-vote estimate of canvassing. TV advertising, at least in the form currently favored by candidates and their allies, appears to be an inefficient way of mobilizing voters.

[23]This figure surely understates the true cost of these ads, because it omits production, placement, and anecdotal evidence of inflation in the waning days of the campaign. See the appendix.

[24]The population figure is divided by 100 so that it is expressed in terms of percentage points. The estimated effects in the tables are likewise expressed in terms of percentage points.

Our results run counter to the general tenor of recent scholarship in this area, which emphasizes the influence that media exerts on the determinants of voter participation, knowledge about the candidates, and interest in the campaign (Vavreck 2000). Our results contradict Freedman, Franz, and Goldstein's (2004) and Hillygus' (2005) contention that exposure to advertising exerts a formidable influence on individuals' intention to vote and their actual turnout. These relationships may exist in survey respondents' self-reports, but we find no evidence that the flood of ads in certain areas brought many more voters to the polls in those locales.

Although at variance with the survey-based literature on media effects, the conclusions reported here are consistent with the literature on mobilization experiments. These studies have found that more personal approaches are far likelier to spur voting than less personal appeals (e.g., Green and Gerber 2004). Put another way, mobilizing voters is fundamentally a "retail" activity; potential voters respond to direct engagement from canvassers and even from "high quality" phone callers (Nickerson 2006). TV advertising is classic "wholesale" politics, an identical message delivered to thousands of people at once. Moreover, unlike public service announcements that implore people to vote and seem moderately successful in doing so (Vavreck and Green 2006), presidential ads rarely mention voting or going to the polls. Presidential ads seem only to signal the importance of the upcoming election, an implicit message that is readily available from other sources.

We should stress that this conclusion applies only to the particular phenomenon we study, voter turnout. As we have noted, mobilization is not the main goal of television advertising by presidential candidates. Students of advertising describe ad makers as engaged in an effort to persuade or, more specifically, to influence the public's perception of the various candidates (e.g., Goldstein and Ridout 2004; Jamieson 1996). Campaigns view turning out voters as a separate task, a division of labor clearly evident in the 2004 campaign as both sides strived to create grassroots organizations of paid and volunteer workers (e.g., Fessenden 2004; Halbfinger 2004). Thus, while television advertising appears to have almost no impact on turnout, it does not follow that these ads are ineffectual. Dollar for dollar, ads may be a relatively inefficient way to generate additional voters, but they might be a cost-effective means to attract votes. This speculation about the persuasive effects of advertising has already attracted scholarly attention, and using a natural experiment approach similar to ours, Huber and Arceneaux (2007) find substantial persuasive effects. The emergent empirical results suggest that presidential ads fit neither the minimal effects nor maximal effects thesis; rather, their effects depend on the nature of the dependent variable.

Appendix

The CMAG data

The media broadcast and cost data used in this paper are provided by the CMAG, an independent tracking company that uses satellite intercepts of open-air broadcasts. How reliable are these data? Goldstein and Strach (2003) report that surveys of several TV station's advertising records reveal no serious discrepancies with CMAG. These data have also been the subject of scrutiny because of their increasing use by media outlets reporting on campaigns (e.g., Rutenberg 2004) and in the McCain-Feingold litigation (Corrado, Mann, and Potter 2003). Nonetheless, it is worth noting that the price estimates used here almost certainly understate the true expenditure for TV advertising because they exclude production and placement costs, and, more importantly, they ignore the fact that prices for TV time increase as the demand for spots increases near Election Day. As a result, our calculations of the marginal price of using TV to stimulate turnout certainly understates the cost per vote.

A more difficult question is whether these data accurately capture the amount of TV exposure in the geographic areas we study. The main concern here is cable and satellite TV, since the data set includes only broadcast stations. Federal law protects broadcasters so that their transmissions appear without alteration on cable or satellite networks. In other words, Time-Warner does not sell advertising time for editions of the Channel Two evening news that appear on its system; viewers of that show see the same commercials whether they watch it through Time-Warner, DirectTV, or with an old-fashioned TV antenna.

The greater potential problem is the advertising that appears on cable networks like ESPN or CNN. If a substantial amount of presidential ads appeared on these networks it could potentially distort our measures of campaign activity. While no one tracks cable or satellite providers as thoroughly as CMAG tracks broadcast stations, industry groups estimate that political advertisers spent more than 30 times more money on broadcast TV than on cable in 2000 (Lieberman 2004). This imbalance continued in 2004 to the point that National Cable Communications, the leading marketer of "spot" cable advertising (time sold by cable systems like Time-Warner rather than networks like CNN) took out a series of full-page ads in September in *Roll Call*, *The Hill*, and *Campaigns and Elections* to remind political advertisers of their services (Grillo 2004), and there are signs that this neglect of cable has continued into the 2006 election cycle (http://newpolitics.net/new-tools-campaign/buycablememohtml.html). Among the reasons that spot cable has been overlooked by campaigns is the expense and inconvenience of dealing with 9,000 to 10,000 cable providers.[25] The result is that almost all cable advertising purchased by the campaigns has been acquired directly from national networks, rather than local cable providers. That would raise the number of GRPs throughout the country, though only by a small amount, without affecting the regional variations. Perhaps the best explanation, however, for broadcast TV's continued popularity with political advertisers is one of its signature programs, the local news. More than 40% of 2000's political ads appeared on local news shows as advertisers sought out undecided or weakly committed voters with at least a passing interest in public affairs, the most persuadable voters (cf. Zaller 1992).

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[25]The cost per household for a national buy is a fraction of the cost of a local buy on the same program, a major consideration for presidential campaigns (Grillo 2004).

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